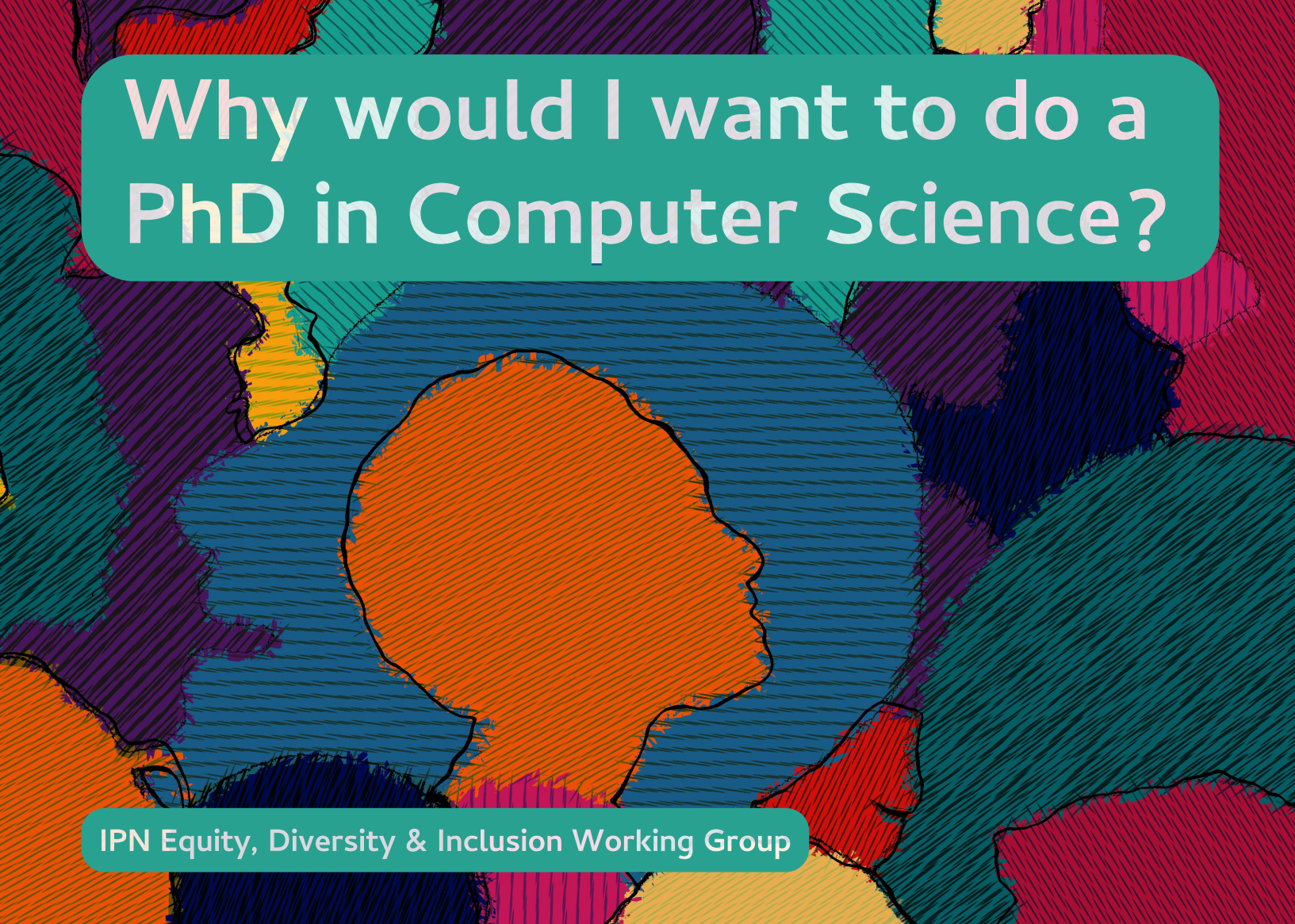
Why would I want to do a PhD in Computer Science?



IPN Equity, Diversity & Inclusion Working Group

Why would I want to do a PhD in Computer Science?

Editors
Lynda Hardman & Hanna Schraffenberger

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Foreword

Digital technologies have fundamentally transformed the way we live, work, and educate ourselves. An aspect of the digital transformation that is often overlooked is the remarkable contributions women have made and are still making in this field. Unfortunately, women continue to be under-represented in many fields related to Computer Science, Data Science and AI. Because of a lack of female role models in this area, both in academia and in industry, it is harder for young women to see these fields as ones they would potentially choose to study and start a career in. As a consequence, their immense potential remains untapped in research and innovation processes.

The first step in academia is the completion of a PhD — to many a one-way path to incarceration in the ivory tower. This is however definitely not the norm. The problem is that those who leave academia are no longer visible to current students. Therefore, I am delighted that the IPN Equity, Diversity and Inclusion Working Group has produced this booklet with diverse examples of career paths after completing a PhD in Computer Science, Data Science and AI.

These people are the talent that ensure continuous innovation by first developing knowledge during their PhD trajectories and then using the knowledge and skills from their PhD in the different roles they have taken on outside and inside academia.

To all those who are seizing these societally relevant opportunities, I extend my heartfelt wishes for the success in their careers and hope that many young women will be inspired by their journeys to follow them!

Marieke Huisman
Board member of ICT-Research Platform Netherlands

From the Editors

There are many leaks in the pipeline of attracting and keeping women in computer science and academia. You can't become a university professor without having completed a PhD at some point in your career. Students can see that the academic staff teaching them have done a PhD, and by (incorrect ;-)) inductive reasoning may conclude that if you do a PhD then you are "doomed" to work in the academic system for the rest of your career.

This booklet breaks this mould!

There are as many different career paths as there are role models in the booklet! The "standard" path is from PhD to postdoc and then a few years to assistant professor. This doesn't have to be the case — a dynamic career in industry could be a shorter or longer break from academia before realising that teaching bright young minds is extremely rewarding. After a few years of working as a postdoc and as junior faculty you might find the ivory tower too restrictive and head out to the wild world of start-ups.

A PhD is not 4 years of fun and excitement but it is a highly rewarding challenge. You have a long and fruitful career ahead of you — you can plan for the long term, or you can go with the flow and take turns that suit you at that moment along the way.

Browse through the careers that others have followed and take inspiration from them. Your own path will be different!

Lynda Hardman and Hanna Schraffenberger
Members of the IPN Equity, Diversity & Inclusion Working Group

Tessel Bogaard

https://www.linkedin.com/in/tessel-bogaard/

In my research I studied how to leverage metadata in search log analysis. Search log analysis focuses on the analysis of search behavior in search systems, based on log records. Here, sessions are defined to analyze behavior in context. My research was conducted using data from the National Library of the Netherlands, a digital library with professionally curated metadata describing the contents of the collection. For the analysis I used both the metadata of the documents clicked in a session, and the metadata of the filtering facets selected in the search interface.

I have investigated and developed analytical methods for search log analysis in three different settings. Firstly, analyzing logs using specific metadata values, to see whether behavior differs in different parts of a collection (which it did). Secondly, uncovering user interests based on a clustering of only the metadata values in sessions. This resulted in stable clusters with distinct behavioral patterns. Thirdly, I explored how to identify sessions of users searching for a specific topic not matched directly by metadata. This was a collaboration with the NIOD Institute for War, Holocaust and Genocide Studies, and the topics we investigated were World War II and feminism. Finally, I examined how to communicate the results of such analyses, and I developed a data visualization technique where I combined both behavior and metadata in a single user session graph. I evaluated this in a user study with 12 professional participants.

I have shown how leveraging the metadata in a search log analysis can enhance our understanding of how users search in different parts of a collection. And I was also able to provide concrete recommendations to the collection owners aout how to improve access to the collection.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
For my bachelor and master degrees I focused on theoretical computer science, with a minor in technical AI. Then, when I finished that I went straight to work in a tech start-up as a data scientist. The work there was interesting and I visited many different companies to help them with their data analysis. However I found that I did not like working in certain types of companies and that not all the work was challenging enough for me. So I started looking for a new opportunity. And I came across a position at the Centrum Wiskunde & Informatica in Amsterdam and started my PhD.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I loved the freedom to do research and to experiment freely. I loved the environment of like-minded people and the discussions about the research. It was fun to take deep dives in different topics, and I liked working with digital humanities scholars as well. Getting feedback and questions from domain experts is very useful and might send you into directions you would not have thought of otherwise (although that might be the case especially when doing data science).

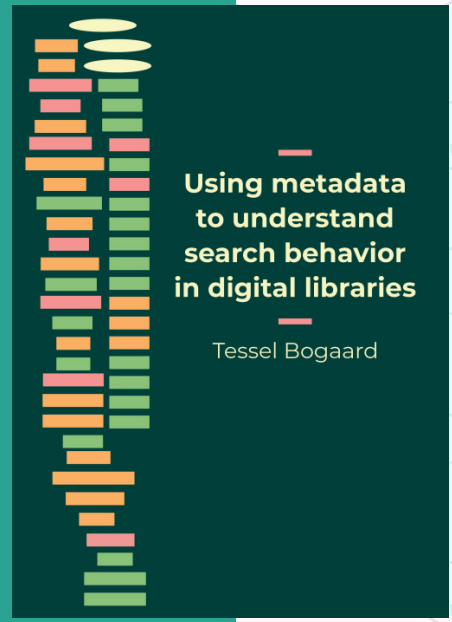
Also combining knowledge and expertise from very different domains is fun. Even though I focused on in essence discrete mathematics in my Bachelor's and Master's degrees, the more applied domain of data science is a lot of fun — there is a reason I am still doing this in my daily work at the newspaper!

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
As I have just finished my PhD, I am still thinking about what my next step will be. At the moment I am working as a data scientist for the newspaper NRC. And I am implementing parts of the analytical methods I developed during my PhD research and continue to develop them further in a professional environment. So my PhD work is directly influencing my daily work today.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
It really is a hard journey and a lot of work, but it is also more fulfilling than expected. Yes, it is a playground where you can work on the research you like, and at the same time it is not easy. But don't give up! Things might not go as planned, and you will need to learn to adapt and adjust, I can however say that it will be worth it. Whether you want an academic career or become a top professional in a specific field, there is a lot you can learn during your PhD research, both in terms of subject matter but also in terms of life experience.

Career Summary:

1995 - 1999	Bachelor's Degree, Creative Writing, Inholland University of Applied Sciences
1999 - 2005	Copyeditor/Writer for several different magazines (Preludium, magazine of Concertgebouw Orchestra and Concertgebouw, Quote Business Media, Elle, PropertyNL, Jazz & Music)
2006 - 2009	Primary School Teacher in Thailand
2009 - 2012	Bachelor's Degree, Computer Science, VU Amsterdam
2012 - 2014	Master's Degree, Computer Science, VU Amsterdam
2014 - 2015	Data Scientist, SynerScope B.V.
2016 - 2020	Researcher/PhD Candidate, CWI & VU Amsterdam
2023	PhD, Computer Science, VU Amsterdam
2020 - Present	Data Scientist, Mediahuis NRC



Astrid Pieterse

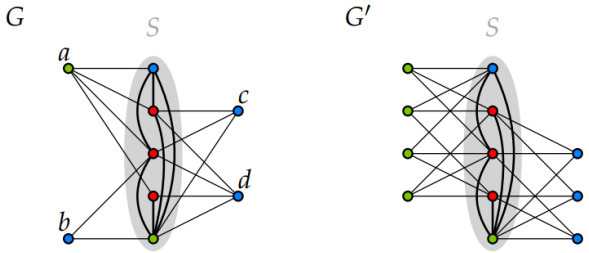
https://www.astridpieterse.nl/

My PhD research was about algorithms. I have done purely theoretical research — I don't think most of the algorithms in my thesis have ever been implemented. I have also obtained several so-called negative results, which prove something to be impossible. I would consider my research to be somewhat on the border between computer science and mathematics; resulting in a thesis with many theorems, lemma's, definitions, and proofs. My background in both was quite helpful.

For those interested in more detail: Many of the problems we are interested in solving algorithmically are known to be NP-hard and can (probably) not be solved efficiently. In this thesis we study preprocessing algorithms for such problems. In particular, we are interested in polynomial-time preprocessing algorithms that guarantee that the preprocessed instance is equivalent to the original one, and that its size is bounded by a function of some parameter of the original instance.

Such preprocessing algorithms are known as kernels, and the bound on the size of the resulting instance is the size of the kernel. Naturally, one can ask what the best-possible size is for a certain problem, with a certain parameter. In this thesis, we mostly focus on finding preprocessing algorithms for the very general constraint satisfaction problem. Given a number of constraints over a set of variables, the problem asks to set values to the variables that satisfy all constraints. We obtain kernel upper and lower bounds, depending on the type of constraints that occur in an instance.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
I have had an interest in algorithms since my first data structures course, and basically took every course I could find with the name “algorithms” in it during my MSc. I actually never really thought I would end up doing a PhD. That is, until my MSc final project, which I really enjoyed working on. So when my supervisor at the time asked me to do a PhD in the same field, I had to think about it for a little bit, but decided to go for it. So, my MSc research and PhD research are indeed on a very similar topic.



Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
Positive overall. I really enjoyed the chances I had to work together, both with my PhD supervisor and with others. Furthermore, having a breakthrough where you finally understand something is an awesome feeling. I've also always enjoyed explaining my research, whether at a conference or by a well-written (to my best abilities, at least) paper. During my PhD I spent a small part of my time on teaching related tasks. While grading gets boring after a while, giving instructions or explaining things one-on-one was always very rewarding work.
The theoretical nature of the research I was doing made that I spend many weeks staring at a whiteboard with basically little progress. I did struggle with this on more than one occasion, it made it difficult to stay motivated.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD I went to do a postdoc in Berlin, in the same field. For several reasons (some personal, some related to motivation, some related to unfortunate timing of a certain pandemic) I decided to leave after a bit more than a year. Living in Berlin was a great experience, I absolutely do recommend living abroad if you ever have the chance.
Today, I am a software engineer at Triodos bank. If I'm honest, a MSc suffices to do the job I am doing right now, though I have certainly grown as a person during my PhD and worked on perhaps less obvious skills. I am much more comfortable with public speaking than I used to be. And the PhD has definitely improved my analytic and reasoning abilities, as well as my ability to quickly learn my way in a new setting, whatever it may be.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
I don't think my PhD came with too many surprises. But for me personally, the transition from "solving someone else's research question" to "coming up with your own research questions" was definitely one of the hardest ones. Asking a question that is both interesting and (ideally) answerable is an art in itself.

Finally, make sure you get along with your supervisor, you're going to be stuck with them for a long time. I really enjoyed working together with mine, and that made everything a whole lot easier for sure.

Career summary:

2010 - 2013	BScEindhoven University of Technology, Eindhoven, The Netherlands // Computer Science and Engineering, Industrial and Applied Mathematics
2013 - 2015	MSc Eindhoven University of Technology, Eindhoven, The Netherlands // Computer Science and Engineering
2015 - 2019	PhD Tight parameterized preprocessing bounds: sparsification via low-degree polynomials (Eindhoven University of Technology, Eindhoven, The Netherlands)
2019 - 2021	Postdoc in Berlin from
2019 - now	Software engineer at Triodos Bank since February 2021 (employed via Harvest during the first year)

Charlotte Gerritsen

https://www.charlottegerritsen.com/

During my PhD I explored the interdisciplinary field of Artificial Intelligence and Criminology. Within my research I used agent-based modeling (ABM) and simulation to study the dynamics of different criminological phenomena from a biological, cognitive and social perspective.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?

After my Master in Criminology I got in contact with my later supervisor Prof. Jan Treur. He was interested in exploring the possibilities of applying AI techniques to other fields. In this case in the use of ABM to study crime and criminal behaviour. Interdisciplinary research in the intersection of AI and criminology was still in its infancy and we were not sure how the community would react to this approach. Therefore, I started with a junior researcher position to investigate whether it would lead to something. And it did. I got my first publication during this period in one of the major ABM conferences, AAMAS. Around that time the department had budget to support interdisciplinary initiatives and thanks to that I could continue my research as a PhD student.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?

I loved being a PhD student. While it was hard work and uncertain at times, I cherish this period. I have learned a lot and made friends for life. I especially liked attending conferences; being around experts in the field always inspired me.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD I worked as a postdoc researcher in one of NWOs research institutes, The Netherlands Institute for the Study of Crime and Law Enforcement. As a computational criminologist I continued working on projects where the fields of AI and Criminology meet. I have worked on a number of interesting projects, e.g. VR applications to help public transport employees deal with aggression, and serious gaming to help elderly learn how to act in case of a potential doorstep scam. In all these projects I used AI to study the dynamics of deviant behaviour, as well as to develop interventions to prevent such behaviour.
Currently I work as an associate professor at the Vrije Universiteit Amsterdam. My research still focuses on the interplay of AI and Criminology. I am a NWO VIDI laureate and my project is ongoing. Within this project I focus on the automated detection of negative emotions in large group settings and the contagion of these emotions between individuals in the crowd.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
The road of a PhD trajectory goes up and down. It isn't a paved path. You will do innovative research and the outcome cannot be guaranteed. Sometimes things go smooth and fine, other times you will encounter more obstacles. You might have to wait a long time for a notification from a journal or for approval from the ethical committee, or it might be difficult to find participants for an experiment. Fortunately, your supervisors are there to guide you.

Carreer Summary:

1992 - 1998	VWO, Sint Nicolaas Lyceum (Amsterdam, The Netherlands)
1998 - 2000	Propedeuse Law (Vrije Universiteit, Amsterdam, The Netherlands)
2000 - 2003	Doctorate Law (Vrije Universiteit, Amsterdam, The Netherlands)
2002 - 2005	Bachelor Criminology (Vrije Universiteit, Amsterdam, The Netherlands)
2005 - 2006	Master Criminology Vrije Universiteit, Amsterdam, The Netherlands)
2006 - 2010	PhD Artificial Intelligence: Caught in the Act: Investigating Crime by Agent-Based Simulation (department of Computer Science, Vrije Universiteit, Amsterdam, The Netherlands)
2010 - 2018	Postdoc researcher Netherlands Institute for the Study of Crime and Law Enforcement (NSCR)
2018	NWO VIDI laureate
2018 - 2021	Assistant Professor (department of Computer Science, Vrije Universiteit, Amsterdam, The Netherlands)
2021 - now	Associate Professor (department of Computer Science, Vrije Universiteit, Amsterdam, The Netherlands)

Martine de Vos

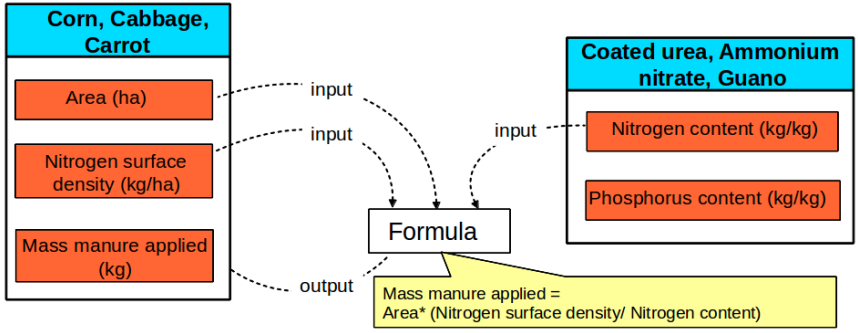
https://www.uu.nl/staff/MGdeVos

Spreadsheets are widely used in the domain of natural science. The domain knowledge of the developers is implicitly presented in both the content and the structure of the spreadsheet tables. In my research I developed methods to automatically annotate the content of the spreadsheets with concepts from external vocabularies. This adds meaning and context so the data can be used and understood by other people than the developers.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?

I really enjoyed doing my master's thesis and decided I wanted to continue with research. I applied for several PhD positions in my field, which was aquatic ecology. Unfortunately, this did not work out immediately, but I did get the chance to work at the PBL Environmental Assessment in the Modeling & Methodology team. Though this was not exactly my expertise, I liked it and learned a lot.

At PBL I discovered that the big simulation models I worked on, for example on climate and energy, were mainly developed by biologists, geographers and economists. In other words, scientists with no background in software engineering or computer science. I felt motivated to work on improving these models and making them more understandable. I also felt I needed good background knowledge to do so. That is why I decided to quit my job and become a PhD student in Computer Science at the VU University in Amsterdam.



Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I did my PhD research in computer science, although I was not educated in that domain. Fortunately, that was not a big problem. I gained a lot of new knowledge that allowed me to do my research just fine. I would have liked better programming skills, though.

I did struggle with the culture change. The scientific approach, conferences and type of people in computer science were different from those in environmental sciences. I saw technology as a tool and was mainly interested in its applications. My colleagues, on the other hand, were mainly interested in the technology per se. It took me a while to understand and appreciate their attitude. In fact, during my PhD research, I learned to think like a computer scientist and I am proud of that.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD, I worked at the Netherlands eScience Center as a Research Software Engineer. Together with my colleagues, I developed research software and collaborated with scientists from different fields and institutes. Currently, I am team leader of the Research Engineering team at Utrecht University. Our type of work is similar to that of the eScience Centre. However, my role is different because I am more involved in management and strategy.

During my PhD project I learned the essential academic skills, like how to do proper research and how to critically reflect on my own work. In addition, I learned how scientific ideas can be translated and implemented as software. It is the very combination of this theoretical and technical approach that is very valuable in my work. I understand how scientists do their research and I can help them make their ideas concrete and feasible.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

As a PhD student, I was given a lot of freedom to shape my own research project. That was fun, but also difficult. Fortunately, I already had a few years of work experience. As a result, I was more confident and had a goal in mind. It would have been a lot harder if I had started right after graduation. In other words, it is not a problem at all if you postpone doing a PhD. It can even be an advantage.

Carreer Summary:

1997 - 2005	MSc Biology + MSc Environmental Science at Wageningen University
2005 - 2006	Junior Researcher Environmental Science at Radboud University Nijmegen
2007 - 2011	Researcher at PBL Netherlands Environmental Assessment Agency
2011 - 2016	PhD student Computer Science at Vrije Universiteit Amsterdam.
2017 - 2019	Research Software Engineer at Netherlands eScience Center
2019 - now	Team Lead Research Engineering team at Utrecht University

Ulyana Tikhonova

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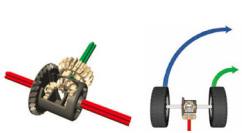
In my PhD project I investigated semantics of domain-specific languages. These are small software languages that focus on a particular application domain and raise the abstraction level of software development. In the collaboration with engineers of ASML I investigated what problems of applying domain-specific languages in (real-life) industry can be solved if we provide an explicit definition of the semantics of the language.

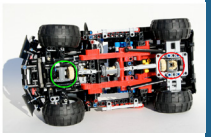
The main idea of my PhD is that the same way as in mechanical engineering one doesn't need to reinvent new solutions every time, we can identify and reuse design patterns for composing (the semantics of) domain-specific languages. Such a semantics definition helps users to understand the language and debug their domain-specific programs.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
Pursuing a PhD was my way to pursue the topic of my interest. I got hooked on the topic of Domain Specific Languages during my bachelor project in 2006. My academic supervisor shared with me the article on Language Oriented Programming, and it totally shifted my mindset — I started seeing domain specific languages everywhere — in every app, in every domain. But domain specific languages were not known to most software engineers, there were no supporting tools — so there was a lot of work to do! And I took this path.

My BSc project was part of the PhD work by another student of my academic supervisor. My MSc project was already an independent work on a domain specific language for astronomers at a Research Institute. That's when I discovered the importance of the semantics for a programming language.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
Pursuing PhD is a journey, it's like a small life, it has different phases that bring different joys and pains. Most of all I enjoyed traveling around the world for PhD schools, workshops, and conferences and meeting with really awesome people there. I loved discovering new places together with other researchers while talking about our (shared!) favorite topic. I loved to meet old acquaintances and still try to keep in touch with some of them.





I also enjoyed the absolute freedom of working on my project — I could determine my path, come up with my own ideas, and work on my implementation the way I liked. What I liked much less is writing. Every decision that I took I needed to thoroughly motivate and document on the paper. With plenty of reviewers (my own supervisors or conference reviewers), all with their preferred style of reading (some like more pictures, others like more formulas) and with their own opinion and preference on the topic — the writing process can be very painful. I think it hinders creativity and the possibilities to get an early feedback on raw ideas, especially for the newcomers. This is what the academic world could improve on.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
My first project after the PhD was an attempt to start up a spin-off company to bring results of my research to real work for real people. I was alone and burnt out by finishing my PhD, so I stopped with it and took the safe place of a postdoc on the related-to-my-favorite topic. After this I had a maternity break. And since two years ago I work at Axini B.V., a company that was started 15 years ago as a PhD spin-off of our CEO. We bring model-based testing to real work for real people.

The company where I work is small (20 people), and as a result the range of my responsibilities can be very wide. I do usual software development on our product; I use our product to do modeling and model-based testing for our clients; I consult and help our clients to use our platform; I give courses to clients and (guest) courses to students at universities; I coordinate student projects that we host in our company; I help manage our team (as a stand-by team lead and a scrum master).

The main advantage that I brought from my PhD experience is communication. I can step out of a current situation and see a bigger picture, I can grasp concepts on the abstract level and project them from one domain to another — and as a result I am very good at communicating ideas, problems, and solutions to our clients or potential users, to our managers, to my colleagues. It turns out to be very important when we work with people.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

What I discovered at the end of my PhD, that I could not imagine in the beginning, is that a PhD is not about research ideas and even not about research results, but rather about my personal development. What my supervisors looked at in the end were not my contribution to the field of domain-specific languages, but how well I could reason about and communicate my ideas, how well I could rely on the existing work in the field and how well I could manage with the challenges of the independent work, peers feedback, and keeping focus on finishing my project.

Career Summary:

2002 - 2006	BSc in Applied Mathematics and Informatics, St. Petersburg State Polytechnic University (St. Petersburg, Russia), with honors.
2006 - 2008	MSc in Applied Mathematics and Informatics, St. Petersburg State Polytechnic University (St. Petersburg, Russia), with honors.
2008	scholar of the Google Europe Anita Borg Memorial Scholarship (Europe)
2008 - 2010	software engineer at Institute of the Applied Astronomy of Russian Academy of Science (St. Petersburg, Russia).
2011 - 2017	PhD in computer science, Eindhoven University of Technology (Eindhoven, The Netherlands): Engineering the dynamic semantics of domain specific languages
2016	scholar of the STW take-off grant for PhD research spin-off (The Netherlands).
2018 - 2019	postdoctoral researcher, Centrum Wiskunde & Informatica (Amsterdam, The Netherlands)
2021 - now	software engineer and consultant at Axini B.V. (Amsterdam, The Netherlands).

Ameneh Deljoo

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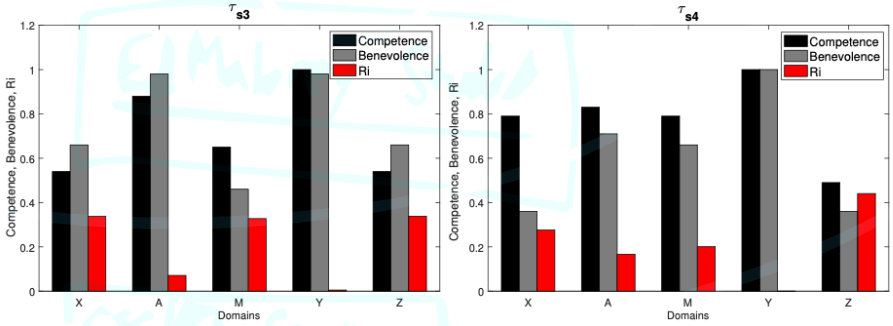
My PhD was part of a multidisciplinary collaboration, including system and networking and law groups. My work was to define a dynamic computational trust model that enables cyber-intelligence sharing through partner selection for collaborative cyber defense operations in a cyber alliance. This model motivates the selection of the three main trustworthiness factors, benevolence, competence and integrity. We showed that each of these factors plays an important role in evaluating the trust of a partner during cyber attacks. My PhD dissertation also includes a governance framework and risk and cost of collaborating for members of such an alliance.



When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
While working as a researcher for TuDelft, I was involved in many research topics regarding collaboration among different parties within ecosystems. I looked at many challenges and got interested to pursue my PhD. My prior education related to computer science and information technology and they helped me in my work on programming. All of this, my education and my experience working in the university, helped me to find direction during my PhD research.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I would say learning continuously, meeting new people and building a network which I still use in my current work were the most enjoyable experiences. Making friends and going out with my colleagues were extremely precious. I had struggles with my self-esteem and finding balance between private life and academic life. Some of them got improved and I learned over time how to find balance. I should have enjoyed my PhD time more by going out with my colleagues, take more breaks, travel more and not being scared to take risks.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

After I finished my PhD, I moved to industry to try and experience a different environment, I became a solution architect for a data sharing platform. My PhD helped me to incorporate data sharing challenges from my research to the business, and help both sides and learn from business challenges.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

You are going to read and hear so much criticism about your work but remember you are the one who knows the most.Time flies then enjoy and rejection is just the beginning.

Carreer Summary:

2010	BSc. in Computer Science (Zanjan University, Iran)
2012	MSc. in Information Technology (Shiraz University, Iran)
2012 - 2014	Researcher (Delft University of Technology, The Netherland)
2015 - 2020	PhD in Computer Science, Computational trust models for collaborative network orchestration (University of Amsterdam, The Netherlands)
2019 - present	Solution Architect, (KPN,, The Netherlands)

Svetlana Minakova

https://www.linkedin.com/in/svetlana-minakova-03946a12b

My PhD research was dedicated to optimizing Artificial Intelligence (AI) algorithms for execution on edge devices such as mobile phones, smart cameras or drones. In recent years, AI algorithms have been actively introduced in all areas of human activity. They watch our safety from the CCTV cameras, assist us with simple questions in banks and online stores, help doctors to diagnose diseases, and do many other important things. One of the recent trends is to execute AI algorithms directly on the edge devices, without sending data to the cloud as it was done before. This enables AI algorithms to run in real time and ensures privacy of data these algorithms use. However, it is difficult to achieve. Modern AI algorithms are big and resource-hungry and simply do not fit on edge devices. Thus, the algorithms have to be optimized, which typically involves a lot of specific knowledge and manual effort. In my thesis I proposed a methodology and a framework that automates a large portion of such optimization.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?

When I was finishing my masters, I had no plans to pursue a PhD. All I wanted is to dedicate my career to AI because I was (and still am) fascinated by this field. I devoted my master's thesis to the method of automatic construction of AI algorithms and wanted to continue working on this topic in the industry. However, at the moment of my graduation AI research was rather academic, and did pose as much interest for industries as it does nowadays. The idea to pursue a PhD came from an acquaintance of mine, and sparked interest in me. I ended up doing a PhD at Leiden University, and I do not regret making this decision.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?

My PhD journey was a great experience, although it was quite challenging. My favorite part was working on research projects with my supervisor, Todor Stefanov, and my colleagues, among which I would like to especially mention my former colleague Dolly Sapra who obtained her PhD at University of Amsterdam. It is a very special feeling, to be surrounded by bright minds, and to work together on cutting-edge technologies. However, strict deadlines make PhD studies quite stressful, especially since the outcome of research is uncertain.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

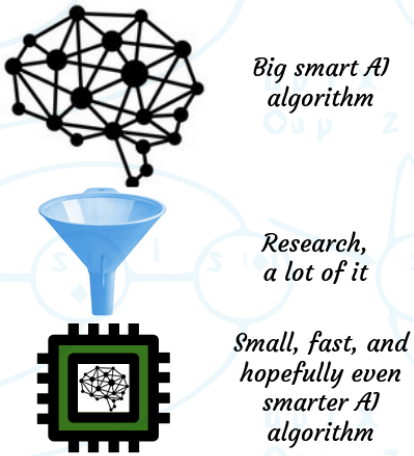
After my PhD, I have joined Signify Netherlands B.V. as an applied AI/ML Scientist. I am working on AI-based applications and I use the expertise obtained by me during my PhD daily. In fact, one of my projects is directly related to my PhD studies. I am also actively using other invaluable skills I have learned during my PhD journey, such as the ability to efficiently organize my time and ability to coach others. I am enjoying my job a lot, although it keeps me very busy.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

Many fresh-face PhD students assume they are going to suddenly come by great discoveries, making a great “leap” in their field. In reality, as a PhD candidate, you will be taking small steps every day. Furthermore, some of these steps will be in the wrong direction, and this is quite normal. Keep being passionate, and you will be surprised how much you can achieve.

Career Summary:

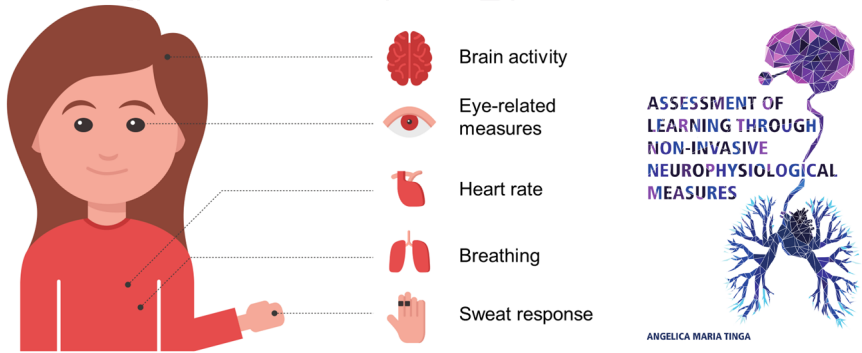
2011 - 2015	BSc Computer Science (Information Processing and Control Systems), Bauman Moscow State Technical University (Moscow, Russian Federation)
2015 - 2017	MSc Computer Science (Information Processing and Control Systems), Bauman Moscow State Technical University (Moscow, Russian Federation)
2018 - 2022	PhD Computer Science (LIACS), Leiden University (Leiden, The Netherlands)
2022 - 2023	Applied AI/ML Scientist, Signify Netherlands B.V. (Eindhoven, The Netherlands)



Angelique Tinga

https://www.linkedin.com/in/angeliquetinga/

In my PhD research I examined behavioral and neurophysiological processes during learning in virtual environments. I was mainly interested in whether you could assess learning through neurophysiological measures, which – in more layman's terms — are measures of bodily processes. Theoretically, if you would have insight into how people are learning over time with these types of measures you could identify who is learning well and who might need a little bit of help. As a next step, interventions could be applied to assist those that need some more help. In the experiments I conducted for my PhD research I measured brain activity, eye-related measures, heart rate, skin conductance, and breathing. Can you imagine how many sensors participants were equipped with?!



When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
I must admit that I absolutely didn't want to pursue a PhD during my BSc. It was only during my MSc that I found out – somewhat to my surprise — that I actually loved doing research. At the time of this epiphany I was doing a research internship at TNO and got the advice to obtain a PhD if I wanted to continue working on research projects. As a next step I needed to find a PhD topic that excited me. This was quite challenging, because most topics seemed not challenging enough to work on for four years. So I took some time to find something that suited me in which I worked as a research assistant. The projects I worked on during my MSc and during my time as a research assistant were related to my PhD work in the sense that they included different measurement techniques and/or innovative technologies. Aspects that still excite me!

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
The part I enjoyed most was the freedom that I was granted. I need variety in my work and I was a bit afraid that doing PhD research might be too monotonous for me. I was extremely lucky that I found the perfect supervisor: He provided me the freedom I needed and stimulated me to pursue new ideas, but ensured I did not lose sight of the end goal. For example, I got the opportunity to go to MIT in the US where I worked together with people from different disciplines to develop a VR meditation application that I applied in an experiment. The experiment also became part of my dissertation.

Yet, there were several times at which I felt completely lost, doubted my decision to pursue a PhD, and mostly doubted myself. In the beginning of my PhD I only got rejections from journals and conferences. It is extremely demotivating when you are working very hard and are not managing to publish your work. In hindsight I learned a lot from the rejections. Yet, I am still working on improving my self-confidence up to this day. It's an ongoing process for me.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

After my PhD I worked at the national scientific institute for road safety research (SWOV) where I focused on human factors in vehicle automation. I am currently working at two places, Roessingh Research and Development and the University of Twente, researching human technology interaction in the domain of healthcare. As I am still working in a scientific environment it is very helpful that I have a PhD and that I have learned many skills that I still apply today. To be honest, I believe that many of those skills can also be developed without a PhD, but when you are working in a scientific environment it helps to have completed a PhD. It is crystal clear proof that you can manage to do research independently.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

First thing they should tell you: "Have you ever heard of imposter syndrome? No? Well, you are definitely going to experience it, so better get ready for it. Keep track of things you are doing well, even if they might seem small. And look back on this when you feel like you are not good enough.

Second thing they should tell you: “Time management skills are wonderful and can be helpful, but did you know that your well-being benefits most when you know how to be self-compassionate and that this is what will get you through the more difficult parts of your PhD?”

Third and last thing that should also absolutely be added: “But next to all this, enjoy the PhD. There are so many perks, like nice travels, having the opportunity to completely immerse yourself into a subject, to explore and learn and to share the journey with your fellow PhD-students. Believe it or not, before you know it your PhD-time is done and you are going to miss all these nice perks!”

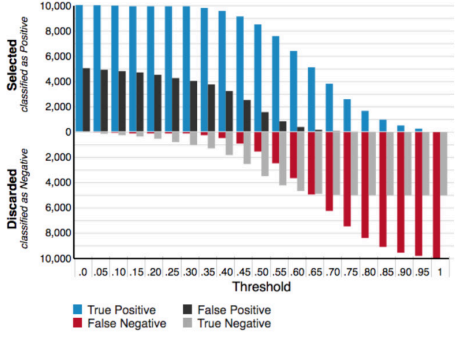
Career Summary:

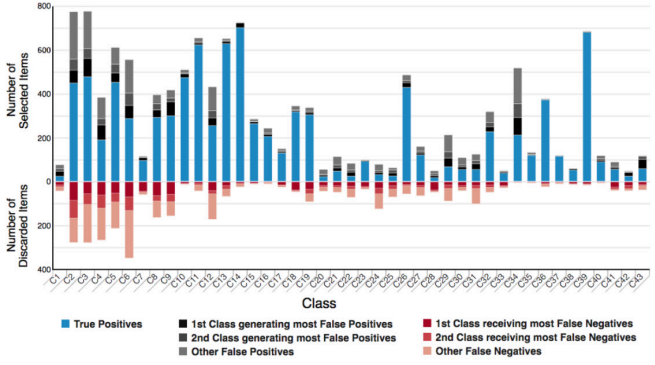
2007 - 2009	Propaedeutics in Social Educational Care (Hogeschool Utrecht)
2008 - 2012	BSc. in Cognitive and Neurobiological Psychology (Utrecht University)
2011 - 2014	MSc. in Neuroscience and Cognition (Utrecht University)
2014 - 2016	Research Assistant (Utrecht University, Department of Clinical and Health Psychology/Experimental Psychology)
2015 - 2016	Research Assistant (Max Planck Institute for Psycholinguistics, Department of Neurobiology of Language)
2016 - 2020	PhD in Cognitive Science and Artificial Intelligence (Tilburg University)
2020 - 2022	Project-leader and Researcher in Human Factors in Vehicle Automation (SWOV Road Safety Research)
2022 - now	Project-leader and Researcher in Human Technology Interaction in the Domain of Healthcare (Roessingh Research and Development/University of Twente)

Emma Beauxis-Aussalet

https://research.vu.nl/en/persons/emmanuelle-beauxis-aussalet

My PhD was part of a multidisciplinary collaboration, including biologists and AI researchers that built video analysis systems to recognise fish. My work was to enable the biologists to understand the AI error and bias. This AI could discriminate against fish, in similar ways other AIs create discrimination in society. I researched statistics and visualisations for assessing the AI error and bias to expect in practice. For instance, these graphs were designed for identifying bias due to systematic misclassifications. My PhD dissertation also includes variants showing the random error variability to expect in practice, and the statistics to estimate such variance.





When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
While working as an R&D engineer, I met academic researchers. They introduced me to academic approach and methods, and it greatly influenced my work as an engineer and designer. By then I knew nothing of the academic world, and started reading research papers for the first time. After a while, the groundwork laid by academic research attracted me more than engineering, although they are both as creative.

My prior education related design and engineering, and they nicely complemented each other in my work on visualization and AI systems. All of this, my multidisciplinary education and my experience working in the industry, helped me find meaning and direction in my PhD research. I was lucky that all my previous studies gave me important knowledge to apply in my PhD, and that my experience in the industry helped me understand how my research could contribute to society.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
Learning continuously was the most enjoyable experience. Meeting interesting people from different academic and cultural backgrounds was also extremely precious. There were also struggles with self-esteem and a personal tragedy. Some things take time to improve, but taking long breaks provides more immediate and non-negligible improvements. I should have had more breaks, which are usually possible during a PhD, and especially nice to do after traveling for a conference!

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
I continued working in academia, but first with a position oriented towards design more than academic research. My PhD experience helped me find my way into a variety of scientific topics, in order to guide interdisciplinary teams and innovative projects. It was great to be able to facilitate the integration of state-of-the-art technologies into new designs. Navigating through prior academic work was an essential skill I learned during my PhD, and that I later used to lead and help innovative team work.

Eventually, I returned to fully academic research with a heightened sense of its importance. I now supervise PhD students myself, and this is not something I would imagine while doing my PhD. Perhaps it would have helped me back then to see myself as a future PhD supervisor — and also become my own PhD supervisor.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
You will have too much or too little pride, either or both alternatively. But it should stabilise into a helpful sense of skepticism.

Career Summary:

2004	BSc. in Graphic Design (EDTA Paris, France)
2006	BSc. in Communication (IESA Paris, France)
2007	MSc. in Communication, cum laude (IESA Paris, France)
2008	MSc. in Computer Science (Ecole Centrale Paris, France)
2008 - 2011	R&D Engineer (Thales, Saclay, France)
2019	PhD in Computer Science, Statistics and Visualizations for Assessing Class Size Uncertainty (CWI & Utrecht University, The Netherlands)
2018 - 2020	Design Research Lead, Data-driven Transformation (Digital Society School, Amsterdam University of Applied Science, The Netherlands)
2020 - now	Assistant Professor of Ethical Computing (Vrije Universiteit Amsterdam, The Netherlands)

Ana Maria Şutîi

https://www.linkedin.com/in/ana-maria-sutii-7b246a23/

The result of my PhD work was MetaMod, consisting of a collection of mechanisms and meta-tools, that tackles modularity and reuse in the creation and application of domain-specific languages. The research I did with MetaMod was an exploration of ideas on better ways to create domain-specific languages, with an emphasis on the modularity and reuse qualities. A subset of these ideas lead to a collection of mechanisms for the design and implementation of DSLs, that I embodied in the implementation of some meta-tools.

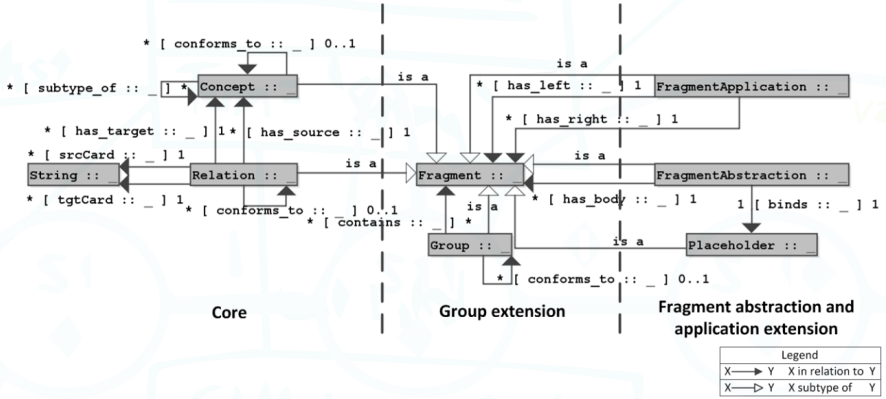


Figure 4.1: The meta-metamodel of MetaMod. This figure highlights the three parts of the meta-metamodel.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
I got interested in pursuing a PhD during my Master thesis work. I particularly liked doing the research part of my Master thesis, e.g. reading all those papers, and then the hours spent thinking of something useful for my Master thesis (I felt a bit like the old philosophers in my naivety). I also thought that I have so many years of work ahead of me, so I might as well start them by doing something that seemed interesting and challenging.

My previous study topics were very much related to the topics I did during my BSc and MSc. During my BSc, I took the Compilers track in the last year of university. Back then I did it because it was the most prestigious track, but I later discovered I actually liked it. Then, during my MSc, I also did my thesis in the section of Model Driven Software Engineering at the Computer Science and Engineering department. My master thesis subject was on “Improving Modularity in GLL”, GLL being a parsing algorithm for grammars of domain-specific languages.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?

My PhD experience was mixed. I had moments of excitement and deep thinking, but also moments of doubt on whether what I was doing was a complete waste of time. I was stressed that I did not publish anything of value, and that ultimately I did not produce something of value.

I am glad that in my last half year of the PhD I went to visit a group at Cornell University and do some practical work on building domain specific languages for the medical industry. I also visited a company in Stuttgart that was doing work with domain specific languages. I am grateful my supervisors allowed me to do this, although there was no immediate benefit for my PhD from it. These two experiences reinforced my intuition that I was more fit for industry rather than academia.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

After my PhD, I started working on a project at ING Labs (an innovation department within ING at that time) that is building domain-specific languages for the finance domain. I am still working there after more than 5 years. The match was perfect. I discovered that I prefer coding, and the engineering part, so I guess this fits me better. I have the occasional periods of deep thinking and of researching different problems we need to solve (with pros, cons, trade offs for different technologies to solve the problems), so here is where my PhD study experience kicks in. Another aspect is that during my PhD, I have met many people that I kept contact with, and some of them I worked with in my project as well.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
More than what you do for your PhD, is the people you meet along the way. I have met great people during my PhD, people that I still have connections with, and with some of them I also worked after my PhD.

Career Summary:

—	Colegiul Național Roman Vodă, Roman, Romania
2007 - 2011	BSc Faculty of Automatic Control and Computer Science, University POLITEHNICA of Bucharest, Buchar
—	Software engineer Intern at Google, Munich, Germany
2011 - 2013	MSc Computer Science and Engineering, Eindhoven University of Technology, Eindhoven, The Netherlands.
2013 - 2017	Modularity and reuse of domain-specific languages: an exploration with MetaMod (Eindhoven University of Technology, Eindhoven, The Netherlands)
2018 - now	Software engineer at Xlinq, part of ING

Elise van der Poll

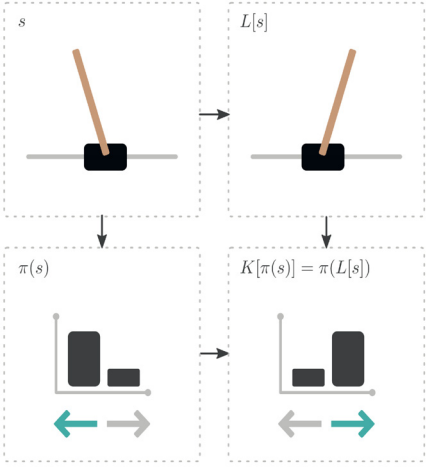
https://www.elisevanderpol.nl/

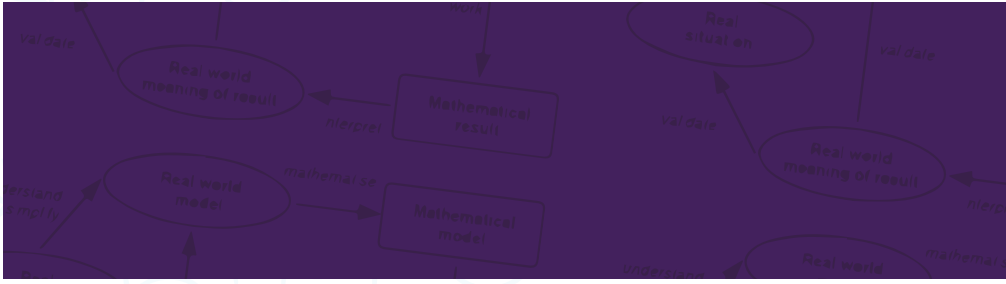
The goal of my PhD was to make reinforcement learning work on real tasks. That's a topic one can retire on, and one aspect of reinforcement learning that makes it difficult to apply to many problems is that reinforcement learning algorithms tend to require prohibitively many interactions with the environment to learn good policies. For that reason, I worked on learning and using symmetry and structure in reinforcement learning problems. An agent should not learn what is already known. For example, when a bipedal robot moves its left leg, the right leg should mirror this movement. Leveraging knowledge of inherent symmetry and structure is an important step towards building systems that scale.

I'm interested in taking concepts like equivalence, similarity and geometry and using them to improve reinforcement learning and planning algorithms and deep learning models.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?

It was never my plan to pursue a PhD, rather to start working as a software engineer after my Bachelor's degree. Bert Bredeweg, my thesis advisor at the time, convinced me to do a Master's. I joined the Master's in Artificial Intelligence with a focus on Machine Learning. When I took a course on autonomous agents taught by Diederik Roijers, I fell in love with sequential decision making algorithms. I did my MSc thesis on deep multi-agent reinforcement learning for traffic light control under the supervision of Frans Oliehoek. I wanted to continue doing research and started applying for PhD positions. I was able to secure a PhD position on reinforcement learning and planning under the supervision of Max Welling in AMLAB, the machine learning research group at the University of Amsterdam.





Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
My PhD experience was overall a very positive one. AMLAB is a research group with a lot of room for creativity and fundamental research. I had almost complete freedom to pursue directions I was interested in. It took quite a while for me to start publishing first author papers, about 3 years, which was a long time for the lab I was in. Once I started publishing, though, the ideas kept coming easily and it was a great experience.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
Directly post-PhD I joined Microsoft Research in Amsterdam, where I joined the new AI4Science team as a Senior Researcher. I'm still doing research and my PhD study has been essential in teaching the skills of being an independent machine learning researcher and guiding project directions. Working on machine learning with important applications in mind has been a wonderful experience.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

Hard work is neither sufficient nor necessary to do good research. Creativity is an underrated skill and you can get better at it. Other people will be better than you at certain things and that's fine. Saying yes to something means saying no to something else.

Career Summary:

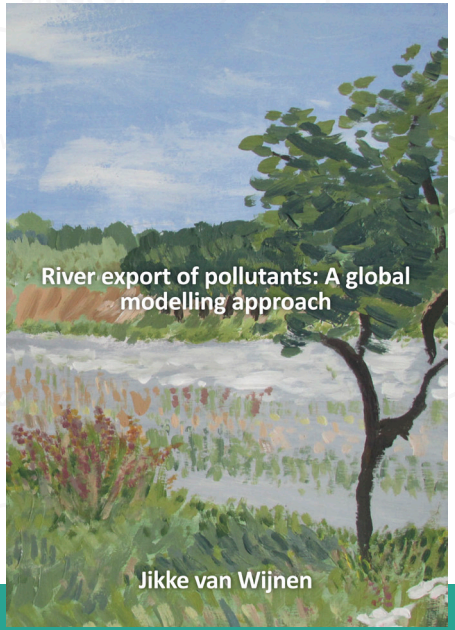
2002 - 2008	VWO, RSG 't Slingerbos, Harderwijk, Netherlands
2009 - 2014	BSc in Artificial Intelligence, University of Amsterdam, Netherlands
2014 - 2016	MSc in Artificial Intelligence, University of Amsterdam, Netherlands
2017 - 2023	PhD on Symmetry and Structure in Deep Reinforcement Learning, University of Amsterdam, Netherlands
2022 - now	Senior Researcher at Microsoft Research AI4Science Amsterdam

Jikke Wijnen

https://ww.ou.nl/profiel/jvw

My dissertation River export of pollutants: A global modelling approach develops, describes a global model to simulate the environmental impact of new water pollution challenges. I extended an existing model for nutrients in the aquatic environment, GlobalNEWS, to calculate the nutrient load in new (future) scenario's and to estimate the load of chemicals and microplastics in the coastal area's as a result of river transport.

In my thesis, four case studies are described: In the first case study we made a scenario for 2050 that includes large scale growing of energy crops (biofuel). For this scenario we calculated the nutrient transport by rivers to coastal areas. In the second case study we calculated the emissions of nitrous oxide to the atmosphere as a result of this scenario. In the third case study, the model was extended to calculate river transport of triclosan, a chemical used for hygiene, all over the world. And finally, in the last case study we modified the model for the global transport of microplastics. The figure below summarizes my PhD-research schematically.



When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
I studied chemistry and graduated in Biochemistry and Environmental Chemistry. When I joined the Open University in 1987 it was not necessary to obtain a PhD: I had a lot of teaching assignments and combined them with a bit of research. About twenty years later, university policies changed: to continue doing research, obtaining a PhD degree was necessary. So around 2014 my research activities formally became a PhD trajectory and in 2015 I published my first article in a scientific peer reviewed magazine.

In a research group of the department Environmental Sciences we studied nutrient transport by rivers to coastal areas using a model, GlobalNEWS. In that time, biofuels were seen as promising alternatives for fossil fuels. I used this model to calculate the effect of full scale transition to biofuels – and the subsequent use of nutrients in the fields – on the quality of the water in rivers and the coastal regions. After this study more related questions arose: Can we the model so that it is suitable to calculate the pollution of chemicals in rivers? And microplastics?

In this way my PhD took shape, step by step, or publication by publication, and in 2020 I finally defended my thesis.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I was lucky starting my PhD when I was already working and doing research on this theme. Therefore I had a kick start and had my first scientific article published in about one year. I also liked starting without a strict PhD plan detailing which topics I was supposed to tackle in which sequence and in which time frame. As a result there was no time pressure as I had a permanent position at the OU; I was able to move from one research question to the next in a natural flow. The flipside of this was that I had very little research time in the beginning, about one day a week. Although this time was expanded at the end of the PhD track, the combination of teaching and research remained challenging.

I really enjoyed to focus my research on modelling. I enjoyed the contacts with fellow-researchers in my field and the resulting collaboration (which still continues!).

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD I continued with my teaching assignments, but now I'm also involved in European research projects, for example the Co-Adapt project (now concluded), and the international Horizon 2020 LABPLAS project on microplastics (in which I work close together with Radboud University) . I supervise two PhD-students, doing research on microplastics, and several MSc and BSc students.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
They never tell you about the challenges and pitfalls of scientific publishing. When you submit your first article to a peer reviewed magazine, you find out that the whole process of submitting, feed-back, rewrites, resubmitting, and so on takes ages. It's like a game that you enjoy or not.

On the other hand: if your PhD consists of published articles (and this is not so in all scientific disciplines), it also takes away some of the stress of finishing your PhD. Once you reach the day of submitting the whole PhD thesis to the committee and defending your thesis, you know that each article already has been scrutinized by a group of peers. They approved so you can be reasonably sure that the thesis will be accepted and that at the defense you will get no disagreeable surprises.

Career Summary:

1987 - now	Open University, Faculty of Sciences, department of Environmental sciences (until 2019 I worked also for the department of Informatics. From 2014-2020 I did PhD-research and graduated in 2020)
1989-2003	University of Amsterdam, Environmental and toxicological chemistry (research)
1986 - 1989	Chemistry teacher at the Murmellius Gymnasium, Alkmaar
1980 - 1986	University of Amsterdam, Chemistry (Biochemistry and Environmental chemistry)

Fahimeh Alizadeh Moghaddam

https://nl.linkedin.com/in/fahimeh-alizadeh-moghaddam

The ICT sector consumes a large portion of the total energy supply in the world. The increasing number of ICT users, services, and infrastructures also suggests that the energy consumption of the ICT sector will grow even more significantly in the coming years. As a matter of fact, software defines how ICT infrastructure should be utilized. Inefficiencies in software propagate easily throughout the entire system. Therefore, software should be the main focus of energy efficiency solutions in the ICT sector.

In my PhD studies, I explore the relationship between energy efficiency and self-adaptability of software systems. I distinguish between architectural solutions and infrastructural solutions. As for the former, software architecture is used as the main instrument to carry over energy-related design decisions. As for the latter, I evaluate the effectiveness of optimization algorithms and software-defined infrastructures. I also work on a domain model for self-adaptive software systems. The model includes both architectural and infrastructural concepts, which provides the reader with a clearer image of all ingredients to enable self-adaptability.

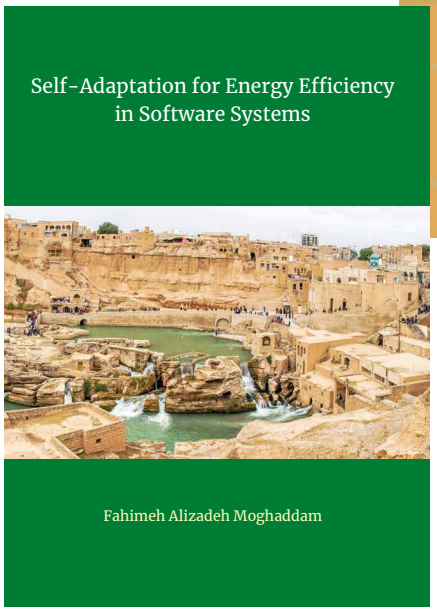
When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
I was always interested in Academia and research. However, I didn't know exactly what research topic I would pick. Until, I started my master studies at University of Amsterdam, in which I did explore quite a bit in the cloud computing area. I was very much inspired by how optimization plays an important role in fulfilling the efficiency requirements in large scale distributed systems. This led me to apply for the open position from the System and Network Engineering group. The position was a joint program between University of Amsterdam and Vrije Universiteit Amsterdam. Luckily, I got the opportunity to work with two research groups during my PhD studies.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
During my PhD studies I got to work with many talented people and could improve both my hard and soft skills. I very much enjoyed the fruitful conversations I had with my supervisors and the time I spent at conferences and courses, which were generously offered to PhD students. However, I also had my share of challenges. One to share that maybe others could relate to as well is that in the beginning of my PhD studies, I could improve on scoping my research projects better, including a clear definition of the research question for each experiment, a clear definition of done (DoD) and a clear understanding of dependencies to other research teams or companies.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

Right after my PhD studies, I started as a data engineer/machine learning engineer in the Dutch market. At first I had an internal position at Randstad Groep Nederland, which is one of the largest staffing companies, for a couple of years. Then, I started my Zzp company and took assignments as an independent engineer. So far, I have worked with a number of large organizations and in different domains, for which the skill set earned during my PhD studies has helped enormously.

I learnt from my PhD studies to form a coherent storyline when presenting an idea to an audience. I learnt to work as a team member for a common goal. Last, but not least, the technical and theoretical background from my PhD studies, gives me a solid foundation for the type of assignments I take in the market.



What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

Plan, plan, plan and then incrementally move towards the goal.
Just make sure that your mini-steps are contributing to your end goal.

Career Summary:

2006 - 2011	BSc. in Computer Engineering (Sharif University of Technology, Tehran, Iran)
2012 - 2013	MSc. in System and Network Engineering (University of Amsterdam, Amsterdam, The Netherlands)
2013 - 2017	PhD in Computer Science (University of Amsterdam & Vrije Universiteit Amsterdam, Amsterdam, The Netherlands)
2018 - now	Working as a data engineer and machine learning engineer in the field of data science in the Dutch market

Anne Verwegen-Dirkson

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Patients share a lot of experiences with each other online. For instance, they share information about the side effects they are experiencing or tips on how to make their disorder more bearable. These experiences could be of enormous value. My PhD research was focused on developing methods to automatically extract patient experiences from these online conversations. Specifically, I worked on extracting side effects and the coping strategies that patients use for dealing with them. I also partnered with medical researchers to better understand what automated extraction from online forums could offer in terms of medical knowledge. We found that automatic extraction could find previously unknown side effects. We also found that for side effects automatic extraction could give comparable results to surveys, which require more time and effort from patients.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
My bachelor focused on studying the mind or brain from different perspectives: philosophy, psychology and neuroscience. Afterwards, I continued my studies into neuroscience. During this master I touched upon programming for the first time. I needed Matlab during my first internship to analyse some data. I had always thought I didn't like computers but I realised that I had always thought that would entail working with hardware or fixing computers and such. I discovered that programming was in fact something I did enjoy.

After the research master, we were encouraged to do a PhD. I worked as a teacher and travelled to consider if this was the path for me instead of just the most logical step or what people expected me to do. In the end, I decided doing research appealed to me. I wanted to do a job that would allow me to be curious, and solve problems. I was applying for neuroscience PhD positions for a few months and I was rejected a lot. It was just not a good fit for me in many ways: the work culture did not fit me, the topics were very specific and I often did not have exactly the type of (lab or imaging) experience they were looking for.

Then a computer science PhD vacancy in the medical domain opened up. I decided to apply because although it was not neuroscience, I was excited about the topic and the position fit all of the things I wanted in my PhD. For instance, I loved the broad scope which contrasted starkly with the highly specific topics of the neuroscience PhDs. Not unimportantly, it would allow me to learn how to program and do data science which I had discovered I enjoyed. And that was that. It is still one of the best decisions I ever made.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
If I am honest, my experience was a mixed bag. The first two years were wonderful. I got to work with inspiring, lovely people and learned a lot. Of course there were challenges but overall it was a time where I got to be creative and curious. The next two years were very tough due to the pandemic. Suddenly, I was working at the kitchen table on my own. The research itself could go on but I had lost my supportive colleagues, and my reference point for what was normal. Rejections of articles were a big dent in my self confidence and I worked far too hard. At some point, I was heading for a burnout. Any successes also felt rather hollow as you cannot attend any conferences to share your results.

I know that many PhD students had similar experiences, because working at home on your research alone is not a good way to do a PhD. Hopefully that is not a situation that will be repeated, but in general I recommend any future PhD student to look for support with their colleagues and to be open about challenges and rejections you face.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

For about a year, I have worked as a forensic data scientist at the Netherlands Forensic Institute. In general, we develop data science tools for the police, justice system and other organisations within the ministry of Justice, as well as for other teams within the Forensic Institute such as the researchers that evaluate DNA from crime scenes. I work in a team of around 20 other data scientists in an Agile framework where we work full-time on a single project in bursts of three weeks.

My PhD helps me in terms of content: I still work with textual data often, as well as with chat conversations, although not exclusively. On top of that, there are many professional skills that I gained that serve me in my current job, such as my ability to work with partners from many organisations, and my writing and communication skills. I also notice that colleagues that start in my position directly after their master take more time to start fulfilling a leading role and to pick up on new topics.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
I want to share two things. The first is that you are probably going to have rejections of your work. This is completely normal. It will be fine and all the others before you have also had this.

The second is that you should invest in your relationship with your supervisors. You will work very closely with them and your enjoyment of your PhD will be impacted by how your collaboration goes. Everyone works and communicates in different ways and it is worth figuring out how you want to work together and what you expect from each other.

Career Summary:

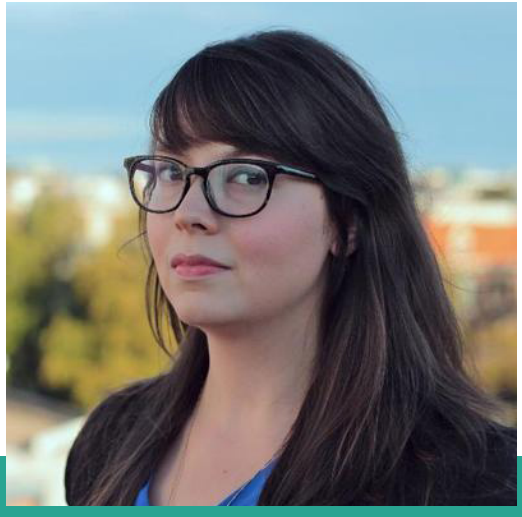
2011 - 2014	BSc University College Maastricht, Maastricht University
2014 - 2016	MSc Neurosciences, Vrije Universiteit
2016 - 2017	Junior Teaching Fellow, University College Maastricht
2018 - 2022	PhD Computer Science, Leiden University
2022	Winner Klein Rietveld Memorial Innovation Award
2022 - now	Forensic Data Scientist, Netherlands Forensic Institute

Anca Dumitrache

http://ancad.ro

In my PhD, I studied how to capture and interpret inter-annotator disagreement in crowdsourcing, and how to use this disagreement to get better taining data for natural language processing models. I did my PhD in the User-Centric Data Science group at Vrije Universiteit Amsterdam, where I was part of the CrowdTruth project.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
My PhD came as a continuation of my MSc thesis work on crowdsourcing and gamification. My thesis advisor liked the work and saw potential in it, so she offered to continue the project as a PhD student.



Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I am very grateful for the opportunity to pursue a PhD. I see it as a defining part of my career, and I have truly learnt a lot in the process. I really enjoyed the freedom to pursue novel topics and the space for creative thinking. Industry work is more tied to getting immediate results, so often this kind of creative freedom is not possible. As for what I would improve on the experience — I would build up my resilience. Everyone faces rejection during a PhD, and it is important to power through these difficult moments and not take them too personally.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD, I decided to work as a data scientist. I currently work at Albert Heijn, where I am a part of the recommendations team. I am responsible with the Mijn Bonus Box project, which gives personalized recommendations for products on offer to our customers. Also, I am still involved with the academic world, supervising MSc students and attending research conferences to stay up to date with the state of the art in the field. I still use a lot of the skills developed during my PhD, both technical (modeling, experiment design) and non-technical (scientific communication, coaching more junior data scientists).

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

A PhD is a marathon, not a sprint. It can seem like slow progress at times, but each small step builds up to something bigger. It is also important to pace yourself and keep a good work life balance, as that will ensure you have the energy to do good work for the full duration of the PhD.

Career Summary:

2004 - 2008	High school: CNLR, Bistrita, Romania
2008 - 2011	BSc, Computer Science, Jacobs University Bremen, Germany
2011 - 2013	MSc, Artificial Intelligence, VU Amsterdam
01/2014 - 06/2014	Research intern at IBM Watson
06/2016 - 09/2016	Software engineering intern at Google AI
2013 - 2018	PhD, User-Centric Data Science research group, VU Amsterdam
2013 - 2018	Research scientist, Center for Advanced Studies (CAS), IBM
2019	Data scientist, FD Mediagroep
2020	Data scientist, Talpa Network
2020 - present	Senior data scientist, Albert Heijn

Josje Lodder

https://www.ou.nl/profiel/jol

For my PhD project I designed, developed and tested of a tool for teaching logic. Learning Logic is a matter of practicing a lot. Logic tasks have two characteristics: the solution consists in different steps and there are many different routes towards the solution. So the tutor system I developed should be able to recognize mistakes ánd should be aware of the different routes towards the solution. The tool I developed helps students to practice with three kind of tasks. The system provides examples of solutions, recognizes mistakes, and gives feedback in order to direct the student in the right direction. The teaching tool is open source available for all students.
The tools for the three kind of tasks:

- ideas.science.uu.nl/logex/
- ideas.science.uu.nl/logax/
- ideas.science.uu.nl/logind/

My PhD-work combined computer science with logic and educational sciences. The combination of disciplines with didactics/educational sciences you see often at Open Universiteit research as the OU has the statutory task of contributing to the innovation of Dutch higher education.

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
In my starting days the OU was very ‘education-focused’: innovation of higher education was and is an explicit task for the institution. I worked as an assistant professor at the Open University and the development of the tool was one of my projects. But during the years university policies evolved and obtaining a PhD became increasingly important. So when I got the opportunity to integrate the development of the tool into a PhD trajectory — which also meant dedicated research time — I gladly jumped in. My age — late fifties — was not a problem: at the Open Universiteit: we are used to people who start their studies at an advanced stage in life.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I was in my late fifties when I started my PhD, and for me it was partly a continuation of what I was doing — developing the tool — which I enjoyed very much. The PhD status meant dedicated research time, regular meetings with my supervisor and also meeting other PhD's-students. It also meant that I published some articles about my work and contributed to conferences, something I probably wouldn't have done otherwise as I was mainly focused on our students. This gave my project a much wider exposure.

As my supervisor was connected to two universities (Utrecht University and Open Universiteit), I had regular meetings not only with my colleagues at the OU, but also with PhD-students from the two institutions. I also liked the contact with the students who tested and evaluated the tool in different stages of development. What I liked less, was analyzing the loggings that these tests generated, especially when the reviewers asked for more detailed information. I would gladly have had some support in that. And at the end of my PhD trajectory GDPR became a thing. This was really a search, trying to find out what you could and could not do. Nowadays this has become clearer and support offices can advise you but in those days it was a struggle.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD in 2020 not much changed until I retired January 2023. We continued developing the tool, e.g. we improved dashboard and made video tutorials... The tool still is available for students worldwide and from time to time I still get feedback from students or teachers from all over the world.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
I'd say: just get started and do not worry beforehand about what could go wrong.

Career Summary:

1698 - 1974	Gymnasium beta, Almelo
1974 - 1978	Doctoraal mathematics, Utrecht University
1987 - now	Assistant professor at OUNL
2020	PhD The Design and Use of Tools for Teaching Logic OUNL, Heerlen, Netherlands

Abdallah El Ali

https://abdoelali.com

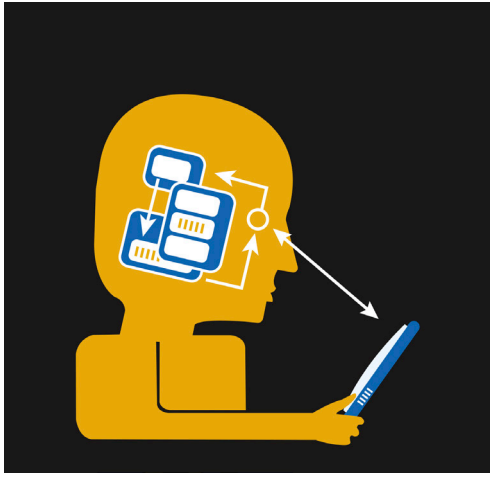
My PhD dissertation was motivated by evidence that attentional costs of using smartphones in urban settings can negatively impact the user experience, and even risk user safety. To that end, I introduced the concept of minimal mobile Human Computer Interaction (HCI), a subset of eyes-free mobile interaction that allows minimal combination of the visual modality with other sensory modalities to minimize attentional demand, frustration, and situational impairments. I explored mobile interactions that require minimal reliance on touchscreen interactions, in order to enhance users' experience of interacting with their smartphones, especially in an urban context where interaction costs (whether perceptual, cognitive, motor, or social) are higher. I approached this problem by focusing on two key approaches: drawing on context-awareness (sensing) techniques and 3D gestural input techniques. These techniques help improve urban mobility and support mobile map-based navigation.

I am a human-computer interaction (HCI) researcher with a background in Cognitive Science. I am a tenured research scientist at Centrum Wiskunde & Informatica (CWI), within the Distributed & Interactive Systems (DIS) group. I am also on the executive board of CHI Nederland (CHI NL).

I'm currently leading the Affective Interactive Systems (AIS) research area within the DIS group. Previously, I did my Postdoc at the HCI Oldenburg lab, part of the Media Informatics and Multimedia Systems group at the University of Oldenburg / OFFIS (Germany). I received my PhD in Computer Science from the University of Amsterdam (Netherlands), working at the Information and Language Processing Systems (ILPS) group. During my PhD, I also had the wonderful opportunities of doing an internship at Telekom Innovation Labs (Berlin) and Nokia Research Center (Tampere).

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?

During my master's in Cognitive Science at the University of Amsterdam (UvA), I attended an invited talk on emerging mobile interaction techniques by Simon Jones. He was the former director of the now foregone Human-Computer Studies (HCS) lab at the UvA. I was totally inspired by this type of work, which I now know is a core part of HCI research :). This led me to apply for a PhD position in that area. I'm eternally grateful to Frank Nack (my PhD daily supervisor) and Lynda Hardman (my PhD "promotor") for offering me a PhD position in HCI, given how varied my background at the time was. It was not trivial to shift to Computer Science.



Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
In retrospect, I personally had a great experience during my PhD. Though my time then had its fair share of challenges, from thinking computationally to the common student challenges of publishing in top conferences and journals. These challenges were due to: (a) not having a core computer science background, which meant a lot of extra self-study (b) the dissolving of the HCS lab six months after I joined and being reassigned to the Information and Language Processing Systems (ILPS) group, which meant less exposure to HCI research. Despite these challenges, later I realized both aspects actually contributed to my skills and growth as a researcher. Most importantly, I had the chance to meet and learn from some of the most wonderful, fun, and intelligent people at ILPS.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
Right after my PhD I wanted some exposure to industry, so I worked as a consultant UX Designer at Osudio, an e-commerce agency based in Amsterdam. This wasn't for me at the time, so I moved to the University of Oldenburg to work with Susanne Boll as a postdoctoral HCI researcher. I'm very glad I did, as Susanne was extremely supportive in all possible ways, and helped contribute greatly to my development as a researcher. During my postdoc, I also had the lucky and fortunate opportunity of meeting Pablo Cesar at the CHI conference in Denver, Colorado. He helped bring me back to Amsterdam to work with him at Centrum Wiskunde & Informatica (CWI), where I still happily work today as a tenured researcher :).

Despite how differently each lab operates and how varied my work experiences have been, I'm forever grateful for my time as a PhD student at the ILPS group. Especially the supervision and mentorship I received from Frank Nack, Lynda Hardman, and Maarten de Rijke. They helped me maintain a collaborative attitude at all times, and taught me discipline and rigor in science and research, irrespective of subject matter. These are timelessly valuable skills that are still applicable today.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

Make sure you find a "good" supervisor/mentor. By "good", I mean someone who is willing to put in the time and effort to help nurture your future in the best possible manner, as ultimately that's a win for all parties. So seek good people that you feel comfortable with, not necessarily famous labs or exotic locations :), and my feeling is that one's PhD will flow smoothly.

Career Summary:

1999 - 2002	Manarat Al Riyadh International (Riyadh, Saudi Arabia)
2002 - 2006	BA Linguistics, American University of Beirut (Beirut, Lebanon)
2006 - 2008	MSc Cognitive Science, University of Amsterdam (Amsterdam, The Netherlands)
2009 - 2013	PhD Computer Science (Information and Language Processing Systems), University of Amsterdam (Amsterdam, The Netherlands)
2014 - now	UX Designer, Osudio (Amsterdam, The Netherlands)
2015 - 2018	Postdoctoral Researcher, University of Oldenburg / OFFIS (Oldenburg, Germany)
2018 - 2022	Research Scientist, Centrum Wiskunde & Informatica (Amsterdam, The Netherlands)

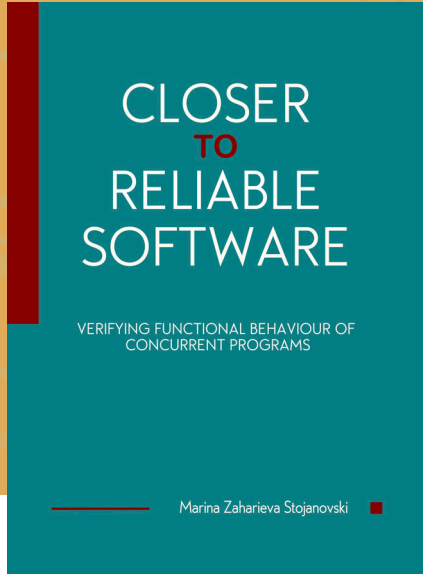
Marina Stojanovski

https://www.enlighten.services

My PhD research was in the field of formal verification. That's a form of static verification of the correctness of software, which does not include any execution of tests, but includes formally proving the correctness of the programs by using mathematical logic.

These static formal verification techniques exploit the advantages of formal methods to statically prove that the implementation of a program satisfies its formally written specification. This makes formal verification especially powerful: any execution of the program is guaranteed to behave correctly. Therefore, these techniques are especially attractive for safety-critical systems, where correctness of the code is a crucial requirement.

In my PhD thesis, I have introduced several novel formal techniques for verifying concurrent software.



When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
The learning component has always been my main driver in everything I do. When I started working as a software engineer early in my career, after one to two years, I felt I needed a new, bigger challenge.
I researched different opportunities in Europe, and pursuing a PhD stood up as an attractive one. I chose this PhD position as it was a nice combination of both mathematics and computer science, both areas that I liked.
My previous education in Computer Science and Software Engineering had given me the foundation for my PhD work, but I have to admit that most of the material was completely new to me.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
It was a very valuable experience. It made me grow a lot as a person, both personally and professionally. I enjoyed the freedom to conduct independent research and work on new ideas. I enjoyed making valuable connections with exceptional researchers and professors from my department, and I especially loved traveling and attending conferences, connecting with other researchers in the field, gaining new perspectives, and learning about the latest advancements in my area of study.

It's true a PhD journey has a lot of challenges, but the sense of accomplishment and fulfillment that comes with successfully completing a PhD is exceptional. When I think about that period now after 10 years, I feel like I would do a PhD again :)

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
Although I enjoyed my PhD and early on I did see myself pursuing an academic career, later I was attracted to learn more about business, and to apply and increase my knowledge and experience in industry.

After finishing my PhD, I joined a consulting firm specialized in software quality. I worked with engineering teams advising them on building better software, I advised technology leaders to make the right strategic decisions in IT, and I advised private equity firms to make the right decisions when investing in a software-based company.

I am currently working at Leaseplan, a global leader in the leasing industry. I work as a CIO advisor, supporting the key strategic digital decisions Leaseplan makes while transforming itself to a digital and product-centric company and with that transforming the whole industry.

I've also been coaching tech startups in the last two years, as I do like to stay connected with the startup world. And I recently started developing e-learnings, with which I hope to share my knowledge and expertise to a much broader audience.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey? I'll share three pieces of advice.

1. Build a strong relationship with your supervisor, that person will be your main source of guidance and support throughout the PhD journey.
2. Manage time effectively. As a PhD you have a lot of time and flexibility, but when not managed well, it can be so little time. Set clear goals for yourself, design your schedule, and don't spend a lot of time in isolation if you see you are not making enough progress. Use your time wisely, work in small steps and get frequent feedback.
3. Take breaks and use your holidays. As a PhD you have a lot of benefits, and a lot of additional holiday days. Enjoy this flexibility and take breaks when needed, that will help you look at the problem with much better clarity and will make your work more effective.

Career Summary:

2005 - 2009	Bachelor of Computer Science: Ss Cyril and Methodius University, North Macedonia
2008 - 2011	Software engineer, Ein-Sof, North Macedonia
2009 - 2011	Master of Software Engineering, Ss Cyril and Methodius University, North Macedonia
2001 - 2015	Doctorate in Computer Science: Formal Software Verification – University of Twente, the Netherlands
2015 - 2020	Sr IT Strategy Consultant, Software Improvement Group, Netherlands
2020 - now	Digital Strategy Consultant, CDIO Office, Leaseplan Digital

Aysenur Bilgin

https://www.linkedin.com/in/aysenurbilgin/

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?

For my undergraduate degree, I studied computer engineering. After working in consulting for a year, I decided to move abroad and study business administration for my master degree. At that time, my plan was to find a job that will allow me to use my computer science skills and be creative with technology. During my job search, I applied to both companies and also universities.

I developed a keen interest in pursuing a PhD after working as a Researcher in the intelligent home lab of University of Essex. In fact, I was offered the research job that has led me to pursuing a PhD instead of the job that I had applied for, which was a different project.

During my undergraduate studies, I had introductory level information on the topic of my PhD, however the research that I have conducted prior to my PhD was the most relevant.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?

My PhD experience was challenging but rewarding. I was lucky to have a great community not just for my research but also socially. The part I enjoyed the most was to collaborate not only with peers from the similar research background but also with people from different research backgrounds, such as sociology. Also, attending conferences, presenting my work, and interacting with fellow researchers from around the world were priceless joy for me. One aspect I would have liked to improve was time management. However, all in all, it was a great learning journey.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?

Right after my PhD, I got interested in working on other topics in (now what we call) data science and pursued several post-doc projects in University of Amsterdam and CWI. I then went on to experience applied data science in industry through a data scientist role at 2 different companies. Currently, I am self-employed and in early stages of entrepreneurship with 2 other partners. We are setting up a tech company that develops and distributes software products (e.g. mobile applications) with the aim to make AI technologies accessible and easy to use. In all these experiences, my PhD study provided me with a solid foundation in research and analytical skills in various levels of strength throughout different roles. And on top of that, the sense of perseverance that PhD has taught me helps with almost anything.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?

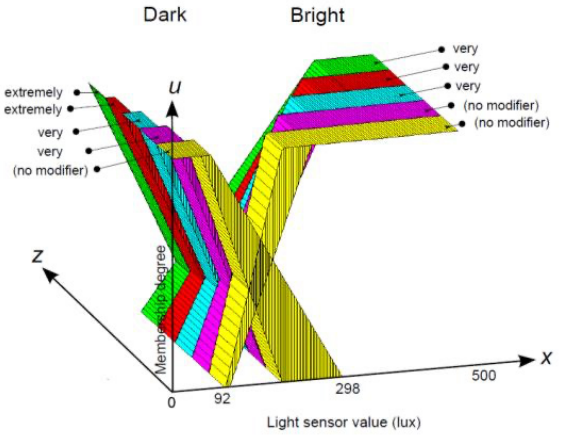
It takes time and persistence to make progress and achieve breakthroughs. Success criteria can vary according to the topic, community, location and most importantly one's self. However, under any circumstance, I would advise to define the steps and make incremental progress. Also, be open to setbacks and failures, these are part of the process. And don't forget to maintain a balance between your research and other aspects of life, such as family, friends, and hobbies. The ideas may strike any time, so always keep room for new ideas or be open to pivot.

Career Summary:

1996 - 2003	High school Bornova Anadolu Lisesi, Izmir, TR. Study and live in Sydney, Australia through exchange program during my undergraduate study. Study and live in the UK throughout my masters and PhD. Work and live in the Netherlands. Travel to the US, Europe, India for conferences, meetings, or holidays.
2003 - 2008	BSc Bogazici University, Istanbul, TR
2008 - 2009	Industry work: Support Engineer in Atos Origin, Istanbul, TR
2010 - 2011	MBA University of Wales, London, UK
2011	Research position at University of Essex
2011	PhD: A Linear General Type-2 Fuzzy Logic Based Computing With Words Framework Applied to Ambient Intelligent Environments, University of Essex, Colchester, UK
2015 - 2019	Several academic positions at University of Amsterdam, CWI, Amsterdam, NL
2019 - 2023	Industry work: Data scientist positions at Viqtor Davis and Dataiku, Amsterdam, NL

PhD summary:
This thesis explores the Computing With Words (CWWs) paradigm, which aims to mimic human thinking by using words instead of numbers for computation and reasoning. It introduces a new type of general type-2 fuzzy sets, called Linear General Type-2 (LGT2) Fuzzy Sets, to better model words in the CWWs paradigm by quantifying the third dimension of type-2 fuzzy sets.

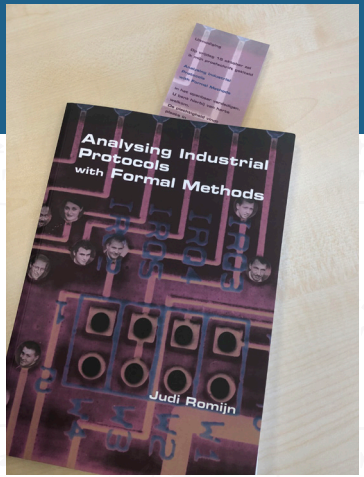
The study presents an interdisciplinary approach, combining linguistics, neuroscience, and psychology to develop a novel CWWs framework using LGT2 Fuzzy Sets. The framework is validated through simulations and real-world experiments, such as an Ambient Intelligent Platform for Cooking Recipes Recommendation (AIPCRR) prototype. The results show improved performance and user acceptance compared to the Interval Type-2 (IT2) based CWWs framework, demonstrating the potential of LGT2-based CWWs for enhancing natural communication between humans and machines.



Judi Romijn

https://nl.linkedin.com/in/judiromijn

When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
Already in high school, I liked mathematics a lot. Especially in the 4th year, I had a very good teacher, and I got the hang of it. So, when I was looking for a study, mathematics, philosophy, and computer science were options. I chose computer science, because it felt the most applied. Moreover, I was reassured by the University of Amsterdam people at the open days that it was no problem that I had no prior programming knowledge, and that this was even preferred, because then I would not have to unlearn bad programming habits.



For my graduation work, I was supervised by Paul Klint, working on a specification language design, a combination of term rewriting and puzzles. I really liked this, and thought about how I could continue this. I knew a lot of other PhD students – including my future husband – and I decided to do a PhD, and to delay the choice to go to industry.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
My PhD project was quite an applied project. It was done in collaboration with the research lab at Philips. They wanted to use different formal methods on industrially relevant case studies. It was a nice project, with a well-defined goal and approach, and much autonomy, and I learned much about a variety of formal methods. I had several supervisors, and the discussions with them were both instructive and an opportunity to influence the choice for the next case study from the options available. I was very excited when I found an error in a FireWire protocol standard and was able to the IEEE standardisation committee.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
After my PhD, I still postponed the choice to go to industry, and took a post doc position in Nijmegen, on a European project on the verification of hybrid systems. I enjoyed the creative freedom of academia and was afraid I would lose this when going to industry. The project was very interesting, and I enjoyed the international collaborations, but we were addressing quite complex problems and it was difficult to create true impact with our research.
Therefore, when I moved to become assistant professor in Eindhoven, I moved back to research that was closer to my PhD topic, and I looked at how to use formal methods for protocols. I submitted a proposal for an NWO Vernieuwingsimpuls grant, and actually did the interview when I was pregnant. It felt very reinforcing when I got the grant: this confirmed for me that it was possible to combine developing a new research line with starting family life. My job in Eindhoven started basically when I came back from maternity leave. I was lucky at that time to have a female director at the faculty, with whom I could talk about the challenges of getting back to work, in particular in the first weeks when daycare for my firstborn was not arranged yet.

After a staring period, I worked 4 days a week, and have since found that this is the lower bound to keeping up, and being taken seriously as a part of the team. Because of the grant, I had fewer teaching obligations, which allowed me to spend more time on research and supervision. However, when the project ended, I had to devote more time to teaching and organizational issues. Privately, I also went through a challenging period, because my mother died. I took some time off to assess what I wanted to do in my career, and I felt there was a mismatch between the job requirements on the one hand, and my talents and interests on the other hand. This made me decide to leave academia and get a job in industry after all.

I then worked for Movares, doing risk analysis for public infrastructure projects. This was new, practical, relevant to society, and I enjoyed that I had lots of puzzling to do again. I worked there for 10 years, but as I became more senior, I had to spend more time on acquisition, managing and coaching, rather than doing the work myself. I again found there was a growing mismatch with what I enjoyed most.

After some reflection on how I wanted to continue, I realized I would like to go back to more hands-on experiences, and also back to the programming. I taught myself modern programming languages (Python, Java), and managed to get an internship at the internet provider Freedom. There I worked on data analysis. It was very inspiring to be part of the chaotic world of a startup company and a great way to improve and update my programming and data analysis skills. The Freedom experience enabled me at the end of my contract to obtain a position as a data engineer at Crunchr at the beginning of 2023.

As a data engineer, I'm at the forefront of the primary process: solving puzzles through programming and helping out customers with technical issues and requests regarding their data and metrics. For now, I'm enjoying myself immensely.
Looking back on my career, I do not regret any step that I took. In every position I learned so much, and I worked together with very nice people. I found that I thrive on a balance between solitary work and collaboration, and that I enjoy multidisciplinary and applied projects.
What I learned from my research experiences is to see every problem as a kind of project: what are the questions that we need to answer, what should we do, who should we get involved, and what is the strategy and the tooling that we will use? Who does what?
I also learned that although I enjoy contact with customers, I prefer to focus on the technical responsibilities, and for me it works well if other people do the sales or the project management.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
Be in contact with other PhD students, talk with them, and not just about their research, but also about their experiences. Joint solidarity between PhD students in the international community is very important. Go to international schools, and go to Dagstuhl!

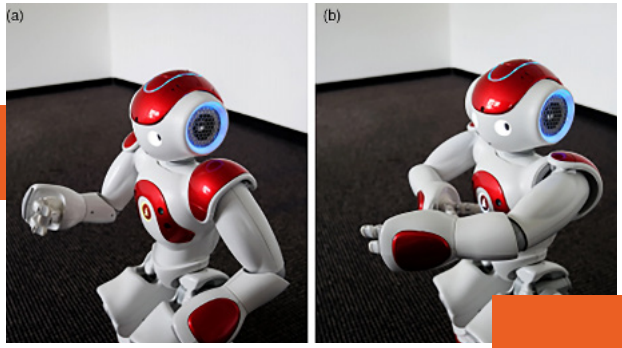
Career Summary:

1983 - 1989	high school (Zaandam, Netherlands)
1989 - 1995	MSc (University of Amsterdam, Netherlands)
1995 - 1999	PhD title (University of Twente, Netherlands)
1999 - 2001	Post doc Radboud University, Assistant Professor Technical University
2009 - 2019	Movares, 2021 - 2022 Freedom Internet, 2023 - now Crunchr

Mirjam de Haas

https://www.linkedin.com/in/mirjamdhaas/

My PhD research was part of a collaboration between 5 universities and two robot companies and was about using a social robot to teach children a second-language. My specific focus was on children's engagement with the robot tutor and the second-language tasks they received. I conducted multiple experiments with over 200 toddlers and preschoolers to investigate how interested they were in the interaction with a robot, and whether this decreased, increased or remained the same over repeated interactions and how the robot's behavior influenced their engagement. My findings showed that children's engagement decreased over time, but that behavior of the robot can increase children's engagement by the use of feedback and iconic gestures (gestures that depict the meaning of a word).



When, how, and why did you get interested in pursuing a PhD? Were your previous study topics during your BSc and MSc closely related to your PhD work?
During my bachelor and master I was already interested in conducting research, I interned twice in a research group (once at the research institute TNO, once at the Technical University of Eindhoven). Moreover, I already worked with social robots during my master program AI and my master thesis was about using a social robot in a healthcare setting with children. I was lucky that at the moment I started to look for future career options, I found the job description for my PhD which combined my internship experiences and master courses.

Each PhD experience is different. How was your experience? What parts did you enjoy the most? Which would you have liked to improve?
I was part of a European project, which meant that there were 5 other PhD candidates working on this robot project. This immediately created a tight social bond and we had a chat group, often saw each other, had social events and discussed each other's work. This part I loved and would recommend to set up for every PhD student, create a group with co-PhDs with who you can do social things but also receive feedback on your ideas. Looking back, I would have loved to have gone abroad during my PhD for a semester, learning about a different work environment and meeting new people to conduct studies with.

What did you do after your PhD? What do you do now? How does your PhD study help in your daily work and responsibilities today?
I continued working in academia, I first started an assistant professor at Tilburg university, loved working in a different position at the same department. And after that I changed universities, I started to the HU university of Applied Sciences where I continued my research and education on social robots. My experiences during my PhD helped me for coming up with new research topics, learning about these topics, conveying new ideas in a transparent manner and they help me today with the supervision of my own PhD students.

What is it (good or bad) that no one tells to a fresh-face PhD student when they start their journey?
The end goal is your PhD diploma, however you should not forget to enjoy the journey towards the goal. Not only career-wise, but do not forget to focus on your own personal life too. For instance, if you go to a conference at a nice location, stay longer and see the country. It is a unique career path, something in between a student and a scientist but use the flexibility of the PhD to develop yourself with new hobbies, or meeting new people etc. You might find something that you end up love doing!

Career Summary:

2013	BSc. Artificial Intelligence (Radboud University Nijmegen, Nijmegen, the Netherlands)
2014	Semester abroad (University of Strathclyde, Glasgow, United Kingdom)
2016	MSc. Artificial Intelligence (Radboud University Nijmegen, the Netherlands)
2022	PhD in Cognitive Science and Artificial Intelligence. Staying engaged in child-robot interaction (Tilburg University, Tilburg, the Netherlands)

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Do you enjoy studying for your MSc degree? What careers have you been considering? A well-paid job in industry? Working for local or national government? Continuing on to do a PhD?

"A PhD?!? But then I can only become a university professor!"

Not at all! A PhD lets you explore a topic to the point that you become a world expert and after that you can transfer this expertise to industry, local or national government or more!
Check out the very different career paths of everyone in this booklet! And talk to other people about their experiences!