

# Teaching Statement

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I view education as a fundamental cornerstone of academia, and it is a responsibility that I enjoy and take great pride in. I think of education and research as two activities that complement each other closely, and in particular I am a believer in *teaching informed by research*: linking undergraduate education with examples driven by real-world research challenges. Conversely, I also believe that the dissemination of ideas and concepts within the research community can benefit from didactic methods from the education field.

**Teaching Experience** My first teaching experiences started nearly a decade ago, where I worked as a part-time mathematics tutor for secondary school students. I enjoyed this greatly, so later during my undergraduate studies I took the opportunity to work as a “lab helper” answering student questions during first-year introductory programming labs. More recently, starting from the second year of my PhD, I had the chance to lead exercise sessions for the course *Programming Languages and Programming Methodologies* at KU Leuven (essentially a course on Prolog and its extensions). As part of this role, I independently ran two 2.5-hour sessions each week, teaching a new concept in Prolog with a short lecture, and then answering any student questions about the exercises as they arose. Solutions to the exercises were presented progressively throughout the session. Each session generally attracted between 20 and 30 students. In addition, I have done exam grading for a variety of other courses throughout my PhD, such as *Logic for Computer Science* and *Uncertainty in Artificial Intelligence*.

While KU Leuven does not have any formal teaching evaluation system in place for exercise sessions, I know that my teaching has been well-received: in 2021, I was honoured to win **two awards** from the KU Leuven engineering student union (*Vlaamse Technische Kring*); one naming me the **best teaching assistant** in the master’s in AI programme at the university, and another for the **best online teaching method** in the programme.

On top of my teaching duties, I took on a supervisory role for several master’s theses during my PhD, supervising a total of three students. All of these projects were done in collaboration with industry partners (Boeing and TUI fly), on various aspects of anomaly detection applied to aircraft maintenance. Finally, I have acted as an external assessor for two more master’s theses, one of which was outside of KU Leuven.

Although my current role as a postdoctoral research fellow does not come with formal teaching responsibilities, I have chosen to undertake a role as an academic mentor for the *Research in Industrial Projects for Students* (RIPS) programme at the Institute for Mathematical Sciences (IMS), Singapore. In partnership with the MOH Office for Healthcare Transformation, I mentored a team of four undergraduate students with diverse STEM backgrounds from universities in Asia and the US, throughout the summer of 2023. I met regularly with the team on the IMS campus as well as our industry partner, to develop a solution to a challenging project in digital phenotyping for predictive healthcare.

**Teaching Methodology** I characterize my teaching style as open, engaging, and interactive. As a dual citizen having studied and worked at four different universities in four different countries, I am cognizant of cultural differences and their possible impact in the classroom. During exercise sessions, I try to proactively visit students I see that are falling behind and ask questions that lead them back on track. Although such an approach may not scale to a larger lecture format, I still try to maintain some degree of interactivity by actively inviting questions from students and posing “what if” questions to the audience to check understanding. As far as possible, I try to ensure that I communicate with students the “why”—why are we learning this, and what are the applications—and not only the “how” and “what”.

When it comes to supervision of student theses, I maintain a similar philosophy to that for teaching: often, guiding a student to a solution can be a matter of *asking the right questions*. I keep open and straightforward communications with my students, and meet with them regularly. I give them the time and independence they need to try things out, but will proactively nudge them if I am concerned they are going off track.

**Course I Could Teach** I am keen to teach undergraduate courses on topics such as (classical) artificial intelligence, logic, databases, and theory of computation. If there is demand, I would also be excited to develop and teach more advanced graduate-level courses in areas such as database theory, finite model theory, and advanced topics in graphical models. In particular, I envision developing a course for graduate students (or advanced undergraduate students) titled *Advanced Propositional Reasoning*, that would cover *knowledge compilation*—covering compact representations of Boolean functions and their properties—and studying its applications to problems in artificial intelligence and data management.