

Tim Leys



Personal Data

24 years, Belgian

Contact

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Languages

Dutch (First Language),
English (Good knowledge)
French (Basic knowledge)
German (Basic knowledge)

Programming languages

Python, C, C++, C#, Bash
Scripting, Java, Lisp
(common-lisp and scheme),
Haskell, Prolog

Other Technologies

OpenSource, Ubuntu, \LaTeX ,
AToMPM, Eclipse Modeling
Framework (ecore, viatra,
sirius), Java EE, Ionic

Hobbies

Music (guitar and
bass-guitar), climbing and
bouldering, board games,
cycling, and mountainbiking.

Summary

I'm a researcher at the **University of Antwerp** at the faculty of exact sciences. Currently, I am pursuing a degree of Doctor in Philosophy in computer science. I am part of the **Formal Techniques in Software Engineering** lab. My thesis supervisor is **prof. Guillermo Alberto Perez**.

Experience

- 2020 - present day **Researcher at University of Antwerp (BAP)** <https://www.uantwerpen.be/>
PhD. Student
Currently I am pursuing a degree in Doctor of Philosophy: Computer Science at the University of Antwerp.
- 2019 **Het Bijlesbureau** <https://www.hetbijlesbureau.be/>
Tutor
I was a tutor at "het Bijlesbureau". Here students can apply for tutoring and additional help in their studies. I particularly tutored students for mathematical courses or statistics.
- 2019 **Sint-Gabriel College** <https://www.st-gabriel.be/>
Interim Teacher
I was an interim teacher for the STEM (Science, Technology, Engineering and Mathematics) course at the Sint-Gabriel college in Boechout. During the course students learned to create programs for the Arduino circuit board and make simple circuits with sensors and LED components.
- 2016 **Beeple** <https://www.beeple.eu/>
Mobile Developer (student)
I was in charge of developing and debugging the mobile applications of the Beeple platform, a platform for easy online staff management.
- 2015 **Kazou Antwerp** <https://www.kazou.be/>
Warehouse Manager (student)
I was in charge of gathering the necessary supplies for departing vacations and to reorganize the the items that returned from vacations. I would help monitors in deciding the necessary supplies for their vacation.

Education

- 2020 – Present Day **PhD. in Computer Science** Faculty of Exact Sciences, UA
Thesis Subject: Automata based verification techniques.
- 2017 – February 2020 **Master Computer Science: Software Engineering** Faculty of Exact Sciences, UA
Distinction: Great Distinction
Thesis Subject: Towards an Agent-Based Modeling Platform with Precise Semantics
- 2013–2017 **Bachelor Computer Science** Faculty of Exact Sciences, UA
Distinction: Great Distinction
- 2007–2013 **Secondary School** Sint-Gummarus College Lier
Mathematics and Sciences (with 8 hours of mathematics)

References

Ask me via e-mail.

A Feasibility Study Towards a Model-Driven Data Mining Framework Research Internship

Promoter: Serge Demeyer

Abstract: With the advance of Industry 4.0, supply chain and marketing contexts see an increased interest in data mining techniques. An example application is the high cost of excess inventory. Data mining can identify customer behavior to make sophisticated guesses for the right amount of stock. These contexts, however, often deal with a great amount of stakeholders. Each stakeholder has his own interests in the outcome of these algorithms or the algorithms themselves. Model driven engineering and domain specific modeling offer a lot of techniques to tailor languages to the needs of each stakeholder. Therefore, we propose a framework for implementing data mining algorithms, using domain specific models and model transformations. Moreover, we show the possibilities of adding computation traces automatically and how we can evolve the models when changes happen in the input language.

The Current State of Agent-Based Modeling and ABM Tools Research Internship

Promoter: Hans Vangheluwe

Abstract: The field of agent-based modeling (ABM) has become a very popular field of study. This relatively new paradigm allows modelers to model individual behaviour of each entity in a system to create virtual "micro-worlds". The idea for such an organizational structure strongly relates to multi-agent systems. Multi-agent systems aim to solve complex problems by dividing it into smaller problems and assigning them to agents. The purpose of this study is twofold: (1) We want to analyze the relation between MAS and ABM by reviewing the current literature of these topics. (2) We want to identify whether ABM tools implement the key features of agents and ABM, as well as determine whether repeatability can be achieved across platforms. We will do this by implementing an example model in a selection of tools and analyze the tools' features and output traces. The selected tools are DEVS, NetLogo, Repast, and SARL.

Towards an Agent-Based Modeling Platform with Precise Semantics Master Thesis

Promoter: Hans Vangheluwe

Abstract: Agent-based modelling and simulation (ABMS) is a powerful technique for modelling complex systems that consist of multiple interacting entities. In ABMS, each entity is represented as an autonomous agent that observes and acts on an environment. The field of ABMS, however, is very divided and, although most research groups have similar interpretations of the concepts in ABMS, a universal agreement on a definition of an agent-based model remains absent. This problem manifests itself in the available agent-based modelling and simulation tools, since no tool is available which has formal or even precise semantics. The lack of uniformity results in a field where models are created on an individual basis and reuse-ability is scarce. In this study, we tackle this problem by investigating how agent-based modelling is currently realized and propose a formalism with precise semantics that captures the essential characteristics of agent-based modelling. Additionally, we present a tool which implements the proposed formalism. This new tool, SARLforSIM, is evaluated against a selection of current agent-based modelling and simulation tools. We performed a comparative study by implementing the same population dynamics model in each of the tools and investigated how they realize the features of an agent-based model. Finally, we also investigated the reproducibility of the model in the different tools.