

PÉTER SZKUPIEN



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About

I am doing the last semester of my MSc studies, experienced in Java and Eclipse-based technologies both from university and industry, with a strong theoretical background in software engineering. I enjoy learning new technologies and sharing my knowledge with others, as well as solving complex problems in teamwork by forging theoretical results into technical solutions.

Education

Budapest University of Technology and Economics (BUTE)  **February 2021 – January 2023**
Master of Science in Computer Science Engineering (Critical Systems major) *Budapest, Hungary*

- Current GPA: 5.0 / 5.0
- Scientific Students' Association Report (TDK): *Formal Methods for Better Standards: Validating the UML PSSM Standard About State Machine Semantics* (2nd prize)  
- Thesis: *Step-By-Step Controllable Simulation of Component-Based Reactive Systems Based on Precise Formal Semantics*

Budapest University of Technology and Economics (BUTE)  **September 2017 – January 2021**
Bachelor of Science in Computer Science Engineering (Systems Engineering major) *Budapest, Hungary*

- Honours degree, GPA: 5.0 / 5.0
- Thesis: *Generating Real-Time Tests from Timed Behavioral Models* 


Relevant Coursework

Algorithms and Data Structures • Database Theory • Computing Theory • Software Engineering • Formal Methods • Model-based Systems Design • Artificial Intelligence • Machine Learning • Linear Algebra • Probability Theory • Calculus


Programming languages: Java (2.5 years work experience); C++, C#, C (1 year university studies each)

Technical skills: Git (3 years exp.) • Eclipse, EMF, Xtext (2.5 years work exp.) • JUnit • UML, SysML • \LaTeX

Experience


Critical Systems Research Group  **BUTE** **March 2021 – Present**
Research Assistant • Java, JUnit, Gamma  *Theta*  *Budapest, Hungary*

- Tested an industrial-to-low-level model transformation by creating 15 test models and a test framework
- Implemented a model transformation for transition systems to split the transitions into deterministic micro-steps [1]

Prolan Process Control Co.  **June 2020 – Present**
Software Engineer Intern • Java, Eclipse, EMF, Xtext, Xtend *Budakalász, Hungary*


- With 3 colleagues, introduced model-based engineering in the development of 15 industrial communication protocols
- Developed a domain-specific language, a simulator, and an Eclipse-plugin-based debugger for state-machine-based systems, and implemented the generation of dynamic Java code (15K+ LOC) and \LaTeX documentation from models
- Reached 80% code coverage (with reasonable misses) in the state machine simulation by creating 174 unit tests

Project

Railway Interlocking Systems Simulator  • C#, WCF **May 2014 – August 2020**

- Improved the training of 400 children at the Children's Railway, Budapest for 3 years by developing a railway interlocking system simulator and integrating it into the training program of the institution

Publication

[1] P. Szkupien and V. Molnár, “The Effect of Transition Granularity in the Model Checking of Reactive Systems”, in Proceedings of the 29th Minisymposium of the Dept. of MIS BUTE, 2022, p. 54-57. 


Leadership / Activities

The Cornell, Maryland, Max Planck Pre-Doctoral Research School 2022  **1 – 6 August, 2022**

Budapest University of Technology and Economics • C++, C **February 2019 – June 2022**

- As Teaching Assistant, held 85+ classes for groups of 20-40 in various fields (programming, system modeling, databases)
- Wrote and reviewed 30 midterm test exercises, participated in the correction of 3000 tests, held 100 oral exams

Szent István Secondary School • C++, C# **February 2019 – June 2022**

- Taught programming to a group of 20 students on a weekly basis, wrote 15 pages of lecture notes in \LaTeX 
- Starting as beginners, some of my students reached the top 20 in the national programming contest (OKTV)

Children's Railway **September 2014 – August 2020**

- With 2-3 colleagues, organized weekly free time activities, summer camps, and family days for a group of 30 children
- Led the 3-member committee of the 60-person youth leader community for 3 years as a contact person to the management, checking the schedule and budget of events, monitoring workgroups, and organizing trainings

Awards

National Higher Education Scholarship (4 semesters) from the Hungarian Gov. **September 2021 – May 2023**

Faculty Scholarship (8 semesters) from BME VIK **September 2018 – June 2022**

IMSC Scholarship (6 semesters) from BME VIK **February 2018 – June 2021**

- Awarded to the 5 top-performing students out of more than 300 in every semester during BSc studies