Péter Szkupien

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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: *Formal Methods for Better Standards: Validating the UML PSSM Standard about State Machine Semantics* (in progress)
- Thesis: *Step-By-Step Controllable Simulation of Component-Based Reactive Systems Based on Precise Formal Semantics* (in progress)

Budapest University of Technology and Economics (BUTE) 🔗   **September 2017 – May 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
Technical skills: Java, C#, C++, C • Git • Eclipse, EMF, Xtext • 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 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. 📄

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 (x2) from the Min. of Innovation and Tech.   **September 2021 – May 2023**
Faculty Scholarship (x8) from BME VIK   **September 2018 – June 2022**
IMSC Scholarship (x6) 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