






PÉTER SZKUPIEN

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Skills

Software Engineering • Algorithms and Data Structures • Database Theory • Model-Based Systems Design • Formal Methods
Programming languages: Java (3.5 years work experience); C#, Python, C++, C; SQL, PL/SQL
Technical skills: Linux • Git • Oracle • Spring, EJB, JBoss • Eclipse, EMF, Xtext • JUnit • UML, SysML • L^AT_EX


Experience

- Interactive Brokers**  **February 2023 – Present**
Budapest, Hungary
Software Engineer • Java, Spring, EJB, JBoss, PL/SQL, Oracle
- Developing complex, scalable server-side logic related to dividend reconciliation, using a large amount of data
 - Understanding business problems, giving technical solutions to them, and automating workflows to reduce manual work
 - Mostly backend tasks, rarely some UI enhancements
- Critical Systems Research Group**  **BUTE** **March 2021 – January 2023**
Budapest, Hungary
Research Assistant • Java, JUnit, Gamma , Theta 
- 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 – January 2023**
Budakalász, Hungary
Software Engineer Intern • Java, Eclipse, EMF, Xtext, Xtend
- 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 L^AT_EX documentation from models
 - Reached 80% code coverage (with reasonable misses) in the state machine simulation by creating 174 unit tests



Education

- Budapest University of Technology and Economics (BUTE)**  **February 2021 – January 2023**
Budapest, Hungary
Master of Science in Computer Science Engineering (Critical Systems major)
- Honours degree, 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 Sys. Based on Precise Formal Semantics* 
- Budapest University of Technology and Economics (BUTE)**  **September 2017 – January 2021**
Budapest, Hungary
Bachelor of Science in Computer Science Engineering (Systems Engineering major)
- Honours degree, GPA: 5.0 / 5.0
 - Thesis: *Generating Real-Time Tests from Timed Behavioral Models* 

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 L^AT_EX 
 - Starting as beginners, some of my students reached the top 20 in the national programming contest (OKTV)

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