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 • LaTeX

Experience

Interactive Brokers 🔗 | **February 2023 – Present**
Software Engineer • Java, Spring, EJB, JBoss, PL/SQL, Oracle | *Budapest, Hungary*
- 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 enhancments

Critical Systems Research Group 🔗**, BUTE** | **March 2021 – January 2023**
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 – January 2023**
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

Education

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

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)

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