MARK LAVRENTYEV

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WORK EXPERIENCE

Microsoft - Business Applications Platform **Redmond, WA**
Software Engineer II, analytics team Feb 2023 – Present
- Delivered new real-time activity logging & usage pipelines for the business app platform, both for internal and customer analytics
- Reduced latency (from ~3 hours to ~5 minutes) for the customer diagnostics data export pipeline while maintaining reliability SLAs
- Provided SDKs and auto instrumentation for platform developers to collect telemetry for internal analysis and customer use

Software Engineering Intern (summers) May 2020 – Aug 2022
- Delivered tenant governance policy features (tenant isolation, sensitivity labeling) features in Power Platform admin center
- Built notification center & analytics alerts system for admin center

Systems & Technology Research **Woburn, MA**
Computational Research Intern Jan 2021 – Apr 2021
- Developed Prolog engine in Scala and instrumented the backtracking search to provide minimal reasons (cores) for query failures
- Integrated engine together with SMT solver (CVC4) into counterexample-guided system (similar to CEGIS) for configuration sythesis

Fidelity Investments **Smithfield, RI**
Data Engineering Intern May 2019 – Aug 2019
- Developed SQL library for parsing financial crime alerts; built views for risk management team for easy further analysis

Air Force Research Lab - Sensors Directorate (RYAT) **Dayton, OH**
Wright Scholar Research Intern Jun 2017 – Aug 2017
- Developed MOSSE correlation filter-based tool for fast training data image annotation; applied to vehicle detection problems
- Optimized machine learning face detection program running on Jetson TX2 to run in real-time

EDUCATION

Brown University **Providence, RI**
Sc.B. in Mathematics and Computer Science Sep 2018 – Dec 2022
- **Courses**: Logic for Systems (Formal Methods), Formal Proof & Verification, Compilers, Design of Programming Languages, Prescriptive Analytics, Abstract Algebra, Galois Theory, Number Theory, Topology, Algebraic Topology, Complex Analysis, Statistics
- **GPA**: 3.93/4.00

LEADERSHIP AND ACTIVITIES

Brown Formula SAE racing team **Providence, RI**
Captain Sep 2018 – Dec 2022
- Led the design, manufacture, testing, and racing of a formula-style race car
- Implemented processes to recruit members and manage sponsors, suppliers, and timelines across 15+ subsystems
- Engine tuning lead (2020 season); Brakes lead (2021-22); Suspension team member (Fall 2022); Captain (2022 season)

Brown University CS Teaching Assistant **Providence, RI**
Meta TA / Head TA / Undergraduate TA Sep 2019 – Sep 2021
- Meta TA (2021) - coordinated CS department TA program, including hiring undergrad TAs and outreach to prospective students
- Head TA for Prescriptive Analytics (Spring 2021), Logic for Systems (Spring 2020) - developed course materials, led grading, held office hours, organized TA staff, and served as main contact point for students with course questions
- Undergraduate TA - Design of Programming Languages (Fall 2020), Intro to Linguistics (Fall 2019)

PROJECTS

Forge
Brown University Nov 2020 – Apr 2021
- Core language developer; added support for configurable boolean decision diagram (BDD) solvers, custom SAT solvers
- Implemented language support for integers (via relations on two-variant atoms in the bitstring representation), basic arithmetic

SKILLS, LANGUAGES, INTERESTS

- **Languages**: English (Native speaker), Russian (Native speaker)
- **Programming languages**: Scala, Racket, Haskell, OCaml, Rust, C#, Java, Python, Prolog, Alloy analyzer
- **Interests**: programming language design, formal methods, compilers, developer tools