

FILIP MAZUREK

✉ filip@filipmazurek.com

🌐 www.filipmazurek.com/

🐙 github.com/filipmazurek

🆔 orcid.org/0000-0003-1121-8622

I am a fourth-year Ph.D. student working to extract the most performance possible from current-gen quantum computers. Additionally building the tech side of Avenu to create a better ticketing experience for nightlife goers and vendors.

EDUCATION

Duke University **Ph.D.** 🏛️ Electrical & Computer Engineering 📅 Expected May 2025
➤ Advisor: Prof. Kenneth R. Brown

Duke University **M.S.** 🏛️ Electrical & Computer Engineering 📅 May 2023 📖 GPA: 3.84 / 4.00

Duke University **B.S.** 🏛️ Computer Science 📅 May 2018 📖 GPA: 3.78 / 4.00

PUBLICATIONS

- Filip Mazurek, Arya Tschand, Yu Wang, Miroslav Pajic, Daniel J. Sorin “Rigorous Evaluation of Computer Processors with Statistical Model Checking,” In *Proceedings of IEEE/ACM International Symposium on Microarchitecture (MICRO)*, 2023
- A. Dalvi, Filip Mazurek, L. Riesebos, J. Whitlow, S. Majumder and K. R. Brown, “Modular Architecture for Classical Simulation of Quantum Circuits,” *2022 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2022.

EXPERIENCE

PhD Student Researcher **Duke University** 📅 Aug 2020 – Present 📍 Durham, NC

Advisor: Prof. Kenneth Brown

Collaborators: Profs. Daniel Sorin, Miroslav Pajic

- Developed novel statistical techniques to create confidence intervals based on *statistical model checking* (SMC)
- Used SMC to improve computer simulation analysis. Resulted in the publication and accompanying library “SPA”
- Applying SMC to improve parameter finding in quantum computer calibration (*in progress*)

Technology PhD Intern **Accenture** 📅 June 2023 – Aug 2023 📍 San Francisco, CA [Remote]

- Creating novel methods of quantum circuit decomposition to run large circuits on small quantum computers (*in progress*)
- Collaborated with client companies in the financial sector to incorporate quantum computing into their workflows

Lead Engineer **Avenu** 📅 March 2020 – Present 📍 Remote

- <https://apps.apple.com/us/app/avenu-events-with-friends/id1487333983>
- Lead an engineering team to build the Avenu iOS app and set up all supporting infrastructure

Research Intern **Argonne National Lab** 📅 May 2020 – Aug 2020 📍 Chicago, IL

Advisor: Dr. Yuri Alexeev

- Investigated optimal combination order for quantum computing simulation based on tensor networks
- Created testing framework for quantum simulation in preparation for running on the Aurora exascale supercomputer

UX Designer **Appian** 📅 May 2018 – Aug 2019 📍 McLean, VA

- Created detailed feature wireframes as expert on iOS and Android application design
- Developed training coursed for Designers and Product Managers to standardize design procedures

PROJECTS

Statistics for Processor Analysis (SPA) Library

- <https://github.com/filipmazurek/spa>
- Statistical analysis framework to evaluate computer architecture simulation through creating confidence intervals

DAX.Program-Simulator

- A quantum computer program emulation framework which integrates with quantum computers at Duke (*in progress*)
- Creates a tightly-coupled loop of the classical program analyzing quantum computer output and adjust error parameters

Quantum Experiment Software Control Setup

- Used the DAX (Duke Artiq Extensions) framework to set up experiment control for a sympathetic-ion cooling experiment
- Control system includes multiple laser frequency modulators, ion trap electrodes, etc. under real-time constraints