Alexander Fischer

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Education

University of Massachusetts, Amherst — Fall 2016–Spring 2020

- **Majors**: Computer Science, Pure Mathematics.
- **GPA**: 4.0.

Industry/Work Experience

Software Engineer, Microsoft — August 2020–present

- Microsoft AI Development & Acceleration Program (MAIDAP)—a rotation program for new graduates.
- Rotating between different teams every 6 months within Azure cloud computing service.
  - 1st rotation: created internal service to automatically classify Azure outage incidents into the responsible team to enable outages to be more quickly resolved.
  - 2nd rotation: created tools that assist data scientists in developing NLP models for LUIS natural language understanding service.
  - 3rd rotation: created internal service to automatically adjust number of Spot VMs and regular VMs in workload in order to maintain desired compute capacity with minimum cost.

Software Engineer Intern, Microsoft — Summer 2019

- Improved an internal tool used to analyze customer satisfaction data gathered from Office 365 customer surveys.
- Full stack development with C# on ASP.NET, SQL, Typescript, and React.

Software Engineer Intern, Microsoft — Summer 2018

- Added features to the Windows photo viewer and to the Photos Companion mobile app.
- Used C# with UWP for the desktop application and C# with Xamarin for the cross-platform mobile application.
- Designed and implemented new network protocol features to improve the photo transfer experience.

Teaching Assistant, University of Massachusetts Amherst — January–December 2017

- TA for classes 'Fundamental Concepts of Mathematics' and 'Programming with Data Structures'.
- Planned & ran discussion sections, held office hours, and graded.

Technical Skills

- **Programming languages**: C++, C, C#, Java, Python.
- **Technologies**: PyTorch, Azure, Git, Matplotlib, Linux, LaTeX.

Publications

- Alex Fischer, Don Towsley (2021). Distributing Graph States Across Quantum Networks. In *IEEE International Conference on Quantum Computing and Engineering*. Available: https://arxiv.org/abs/2009.10888
- David Balaban, Alex Fischer, Joydeep Biswas (2018). A Real-Time Solver For Time-Optimal Control Of Omnidirectional Robots with Bounded Acceleration. In *Intelligent Robots and Systems (IROS), IEEE/RSJ International Conference on*. Available: https://arxiv.org/abs/1707.04617

Academic Experience

Quantum Networking Group, University of Massachusetts Amherst — January 2020–present

- Devised new algorithm for preparing graph states in a quantum network.
- Proved our algorithm has better performance than that of prior work on the same problem.
- Work appeared as full paper in 2021 IEEE International Conference on Quantum Computing and Engineering (QCE2021), in poster session of QCE2020, and in flash talk in Workshop on Quantum Network Science (NetSci 2020 Satellite Workshop).
- Paper available at https://arxiv.org/abs/2009.10888.

Autonomous Mobile Robotics Laboratory, University of Massachusetts Amherst   January 2018–May 2019

- Modified novel control algorithm for time-optimal control of omnidirectional robots to improve algorithm's stability with respect to noisy robot motion.
- Implemented that algorithm in real time on real robots in C++.
- Work appeared as paper (second-author) in International Conference On Intelligent Robots and Systems, 2018.
- Wrote software to automatically calibrate latency values for robot motion.
- Paper available at https://arxiv.org/abs/1707.04617.

Research Experience for Undergraduates, University of Miami   Summer 2017

- Wrote software to analyze three dimensional images of mice optic nerves that were multiple gigabytes each, in order to assist medical researchers studying neuron regeneration.
- Implemented novel and existing computer vision algorithms in MATLAB and C++.
- Poster available at http://www.cs.miami.edu/reu-cfs/2017/posters/FischerPublicPoster.pdf.