Alexander Fischer

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Education

University of Massachusetts, Amherst Fall 2016–Spring 2020

- Graduated with 2 Bachelor of Science degrees in Computer Science and Pure Mathematics.
- **GPA**: 3.98.

University of Colorado, Colorado Springs During high school, Fall 2014–Spring 2016

- Online math classes while in high school.
- **GPA**: 3.91.

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.

Teaching Experience

Teaching Assistant, University of Massachusetts Amherst January–December 2017

- TA for 300 level Mathematics class 'Fundamental Concepts of Mathematics' (intro to proof-based mathematics):
  - Planned & ran my own discussion sections.
  - Held office hours.
  - Graded exams and homework.
- TA for Computer Science class 'Programming with Data Structures': graded homework.

Awards

- **Putnam Exam, 2017** (a national mathematics competition for undergraduate students): Scored 19 points, ranking in the top 17% of the country.
- **Jacob-Cohen-Killam Math Competition, 2017** (competition for University of Massachusetts students): won second place, including a $1000 prize.

Industry 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.

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.