Xuanrui Qi

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Education

Oct 2019 — Aug 2021 (expected)	**M.S. in Mathematical Science**, *Graduate School of Mathematics, Nagoya University*, Nagoya, Aichi, Japan. **Advisor**: Jacques Garrigue
May 2019	**M.S. in Computer Science**, *Tufts University*, Medford, MA, USA. **Advisors**: Samuel Z. Guyer, Cyrus Omar (University of Michigan, unofficial)
May 2018	**B.S. in Computer Science, *magna cum laude*, with honors in thesis**, *Tufts University*, Medford, MA, USA. **Second major**: international relations. **Minor**: mathematics. **Advisor**: Samuel Z. Guyer
June 2014	**High School Diploma**, *Shenzhen Middle School*, Shenzhen, Guangdong, China.

Research Interests

Computer Science	Type theory & type systems, proof assistants & formalization of mathematics, functional programming languages
Mathematics	Category theory, topos theory and categorical logic, algebraic geometry.

Research Positions

July 2020 –	**Research Assistant**, *Graduate School of Mathematics, Nagoya University*, Nagoya, Japan. Research assistant position funded under the COCTI (Certifiable OCaml Type Inference) project of the Tezos Foundation, and supervised by Professor Jacques Garrigue.
June 2018 – August 2018	**Research Visitor**, *Graduate School of Mathematics, Nagoya University*, Nagoya, Japan. Hosted by and worked with Professor Jacques Garrigue.
March 2017 – May 2018	**Research Assistant**, *Department of Computer Science, Tufts University*, Medford, MA, USA. Research assistant under Professor Samuel Z. Guyer, working in the RedLine Systems Research Group.

Other Positions

2019 – 2020	**Intern/Contractor**, *SiFive*, San Mateo, CA, USA. An intern engineer at, then a contractor with SiFive, working with Murali Vijayaraghavan on verifying RISC-V processors in Coq.
2016	**Intern**, *Institute of Automation, Chinese Academy of Sciences*, Beijing, China. Interned at the State Key Laboratory of Control and Management of Complex Systems, working on computer vision.

Research Publications

Research Papers

1. Reynald Affeldt, Jacques Garrigue, **Xuanrui Qi**, and Kazunari Tanaka. Proving Tree Algorithms for Succinct Data Structures. The 10th International Conference on Interactive Theorem Proving (ITP 2019).

Theses

1. **Xuanrui (Ray) Qi**. Elephant Tracks II: Practical, Extensible Memory Tracing. Senior Honors Thesis, Tufts University, 2018. Thesis committee: Sam Guyer (chair), Kathleen Fisher.

Refereed Talks & Presentations

1. Reynald Affeldt, Jacques Garrigue, **Xuanrui Qi**, and Kazunari Tanaka. Experience Report: Type-Driven Development of Certified Tree Algorithms in Coq. The Coq Workshop 2019.
2. **Xuanrui (Ray) Qi**. From Tactics to Structure Editors for Proofs. Off the Beaten Track 2019 (OBT 2019).
3. **Xuanrui (Ray) Qi**. A Practical and Extensible Framework for Garbage Collection Tracing. SPLASH 2018 Student Research Competition.

Teaching Experience

Teaching Assistant

- Mathematics of Machine Learning, Global 30 Program Special Mathematics Lecture, Fall 2020, Nagoya University (Instructor: Prof. Henrik Bachmann)
- Calculus II, Global 30 Program, Spring 2020, Nagoya University (Instructor: Prof. Serge Richard)
- Calculus I, Global 30 Program, Fall 2019, Nagoya University (Instructor: Prof. Serge Richard)
- Concurrent Programming (COMP 50CP), Fall 2017 & 2018, Tufts University (Instructor: Prof. Mark Sheldon)

Other Courses

- Peer instructor (instructor of record), Spring 2018, Experimental College, Tufts University

Awards and Honors

- MEXT Honors Scholarship for Privately-Financed International Students, Government of Japan, 2019-2020
- Programming Language Mentoring Workshop scholarship awardee, ICFP 2017