

Justin Yirka

Candidate for B.S. in Computer Science and B.S. in Mathematical Sciences
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Curriculum Vitae

Research Interests

Complexity theory, Algorithms, Quantum Computing, Formal Methods

Education

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| Bachelor of Science in Computer Science | 2014 - 2018 |
| Bachelor of Science in Mathematical Sciences | |
| Dual degree program | |
| Virginia Commonwealth University (VCU) | |
| ○ Member of Honors College | |
| ○ Minor in Physics | |
| ○ GPA: 3.97 | |
| International Baccalaureate Diploma | 2014 |
| Gar-Field Senior High School, Woodbridge, VA | |
| ○ IB Diploma score: 37 out of possible 45. 87 th percentile globally. | |
| ○ GPA: 4.57 | |

Research

Research Internships

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| • Undergraduate Research Assistant | 2015 - 2016 |
| Quantum Computing Lab, Virginia Commonwealth University | |
| ○ Supervisor: Sevag Gharibian, Ph.D., Department of Computer Science | |
| ○ Topic: Computational complexity of physical problems | |

Pre-prints

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| • S. Gharibian and J. Yirka. The complexity of estimating local physical quantities. | 2016 |
| Available at https://arxiv.org/abs/1606.05626 | |

Research Poster Presentations

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| • S. Gharibian and J. Yirka. The complexity of estimating local physical quantities. | |
| ○ 20 th Annual Conference on Quantum Information Processing (QIP 2017) | 2017 |

Networking

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| • J. Yirka. Evaluation of TCP header fields for data overhead efficiency. | |
| ○ 30 th National Conference on Undergraduate Research (NCUR 2016) | 2016 |
| ○ VCU Symposium for Undergraduate Research and Creativity | 2015 |

Invited Talks

- | | |
|--|------|
| • Quantum complexity of estimating local physical quantities. | 2016 |
| Weekly department seminar, Department of Computer Science, VCU | |

Funding and Scholarships

- Presidential Scholarship 2014 - 2018
Virginia Commonwealth University. Approx. \$110,000 USD.
Details: Top scholarship offered. Full cost of 4-year tuition, room, and board.
- Travel grant for poster presentation at QIP 2017 2017
VCU Honors College. \$500 USD.
- Travel grant for poster presentation at NCUR 2016 2016
VCU Honors College. Approx. \$550 USD.
- Presidential Scholarship (declined) 2014
Worcester Polytechnic Institute. Approx. \$80,000 USD.
- Rensselaer Medal Merit Scholarship (declined) 2014
Rensselaer Polytechnic Institute. Approx. \$100,000 USD.

Teaching Experience

Teaching Assistant

- Algebra with Applications (MATH 151), Virginia Commonwealth University 2016 - present
Graded assignments, offered weekly help sessions, assisted with in-class assignments.
Details: 1st year mathematics course. Up to 24 students.
- Honors Rhetoric (HONR 200), Honors College, Virginia Commonwealth University 2015
Critiqued student research papers and methods, assisted with in-class assignments.
Details: 1st year honors writing and composition course. 17 students.

Instructor

- Lifeguard, first aid, and management certification classes, 2016 - present
Prince William County Department of Parks and Recreation, Woodbridge, VA
Details: Planned and managed hands-on classes of up to 40 students.

Student Supervision

Mentor

- Derek Pham, Virginia Commonwealth University 2016
Details: Part of VCU Honors freshman mentorship program.

Awards and Honors

- Dean's List – Seven-time recipient 2014 - 2017
VCU School of Engineering, VCU College of Humanities & Sciences
- VCU Scholar Award 2015
Virginia Commonwealth University
- Launch Award for Outstanding Research Poster 2015
VCU Symposium for Undergraduate Research and Creativity
- Volunteer of the Year 2014
Prince William County Schools, VA
Details: Awarded for commitment to grade school robotics program.

- Youth Salute national youth leader nominee 2013
National Council on Youth Leadership, Prince William County chapter

Service

University Service

- Member, Student Advisory Board 2016 - present
Department of Computer Science, Virginia Commonwealth University
Details: Advise on student concerns. Participate in faculty hiring interviews.
- Senior Reader, Senior honors graduation dossiers 2016 - present
Honors College, Virginia Commonwealth University
Details: Review dossier submissions for graduation. Coordinate other readers.
- Organizer, Local Hack Day in Richmond, VA at VCU 2016
School of Engineering and RamDev club, Virginia Commonwealth University
Details: Hosted event for over 30 attendees, including high school students.
- Volunteer, High School Computer Science Day 2016
Department of Computer Science, Virginia Commonwealth University
- Judge, Launch award for Outstanding Research Poster 2016
VCU Symposium for Undergraduate Research and Creativity
- Research Ambassador volunteer 2016
VCU Symposium for Undergraduate Research and Creativity

Organization Service

- Founder and President, RamDev – Software Development Club 2016 - present
Virginia Commonwealth University
Details: Plan weekly meetings, including securing funding and involving student, faculty, and industry speakers.
- Treasurer, Association for Computing Machinery Programming Club 2016 - present
Virginia Commonwealth University

Community Service

- Volunteer, FIRST and Vex robotics competitions 2011 - 2015
Prince William County Schools, VA
- Mentor, FIRST Tech Challenge robotics team 2014
Wilder Middle School, Richmond, VA

Employment

- Teaching Assistant 2016 - present
Math Department, Virginia Commonwealth University, Richmond, VA
- Lifeguard and First Aid Instructor 2016 - present
Prince William County Department of Parks and Recreation, Woodbridge, VA
- Waterpark Supervisor 2011 - 2016
Prince William County Department of Parks and Recreation, Woodbridge, VA

- Undergraduate Research Assistant 2015
Quantum Computing Lab, Virginia Commonwealth University, Richmond, VA

Programming Experience

- “GeoViewer” Android app 2016
Semester project for VCU CMSC 355: Software Engineering.
Details: Group project in Agile development. Enables users to visit geocached photos shared by other users.
- “Run Planner,” implemented in Mathematica / Wolfram language 2016
Developed at RamHacks 2016 hackathon.
Details: Utilizes GPS data to plot jogging route of given distance along city road network.
- “GroupMe Stats” Android app 2016
Developed at VT Hacks 2016 hackathon.
Details: Uses GroupMe API to provide user with interesting statistics on Android platform
- Zero Robotics International Space Station Programming Challenge 2012 - 2014
Competed in MIT sponsored robotics competition for robots aboard ISS. Implemented in C++.
Qualified for international finals two years in a row.
- After-school student management system 2013 – 2014
Course project for senior computer science course. Developed for use by school staff.
Details: Implemented in Java. GUI application provides database for student information.
- Padlock inventory system 2012 – 2013
Course project for junior computer science course. Implemented in Java.

Selected Courses

Virginia Commonwealth University

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| • Theory of Computation – 2016 | • Multivariate Calculus – 2015 |
| • Computer Organization - 2016 | • Differential Equations – 2015 |
| • Algorithms and Data Structures – 2016 | • Linear Algebra – 2015 |
| • Operating Systems – 2016 | • Mathematical Reasoning – 2015 |
| • Software Engineering – 2016 | • Intro to Statistics - 2016 |
| • Artificial Intelligence – 2016 | • Graphs and Algorithms – 2016 |
| • Intro to Data Science – 2016 | • Abstract Algebra – 2016 |
| • Programming Languages – 2017 | • Advanced Calculus - 2017 |
| • Intro to Natural Language Processing - 2017 | |