Justin Yirka

Candidate for B.S. in Computer Science and B.S. in Mathematical Sciences
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Research Interests

Quantum computing, Complexity theory, Algorithms

Education

B.S. in Computer Science   2014 - 2018
B.S. in Mathematical Sciences (concentration in pure math)
    Dual degree program
    Virginia Commonwealth University (VCU), Richmond, VA
- University Honors College candidate
- 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 (88th percentile globally).

Research

Research Internships

Joint Center for Quantum Information and Computer Science (QuICS),   2017
University of Maryland (UMD)
    Supervisor: Andrew Childs, Ph.D.
    Topic: Pure-state tomography with Pauli observables

Quantum Computing Lab, Virginia Commonwealth University   2015 - 2016
    Supervisor: Sevag Gharibian, Ph.D.
    Topic: Computational complexity of local physical problems and of quantum oracles

Research Papers

S. Gharibian and J. Yirka. The complexity of simulating local measurements on quantum systems.
    Available at https://arxiv.org/abs/1606.05626

    To appear in:
        Proceedings of 12th Conference on the Theory of Quantum Computation, Communication, and Cryptography (TQC 2017).

    Contributed talk:
        12th Conference on the Theory of Quantum Computation, Communication, and   2017
        Cryptography (TQC 2017). Presented by S. Gharibian.

    Poster presentation:
        20th conference on Quantum Information Processing (QIP 2017).   2017
        Presented under a different title.

See my LinkedIn for information on programming experience, additional employment, and courses taken.

Invited talk:
Weekly department seminar, Department of Computer Science, VCU   2016
Only undergraduate to be invited within previous 5 years.

J. Yirka. Evaluation of TCP header fields for data overhead efficiency.
Available at http://scholarscompass.vcu.edu/uresposters/148/
Poster presentations:
- 30th National Conference on Undergraduate Research (NCUR 2016)   2016
- VCU Symposium for Undergraduate Research and Creativity   2015
  Awarded "Launch Award" for Outstanding Research Poster.

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.

NSF Research Experience for Undergraduates (REU).   2017
Combinatorics and Algorithms for Real Problems REU, UMD. Apprx. $6,000 USD.
NSF-CCF-15601931
Details: Stipend and housing to fund summer research position with UMD QuICS.

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.

Awards and Honors

Dean's List – ten-time recipient   2014 - 2017
VCU School of Engineering, VCU College of Humanities & Sciences

University Student 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.

Teaching Experience

Teaching Assistant
Algebra with Applications (MATH 141), Virginia Commonwealth University   2016 - current
Assist with in-class exercises, offer weekly help sessions, grade assignments.
Details: First-year mathematics course. Up to 24 students.

Honors Rhetoric (HONR 200), Honors College, Virginia Commonwealth University   2015
    Critiqued student research papers, assisted with in-class work and discussions.
    Details: First-year honors writing and composition course. 17 students.

Instructor
Lifeguard, first aid, and management certification courses,   2016 - current
Prince William County Department of Parks and Recreation, Woodbridge, VA
    Details: Plan and manage highly-dynamic courses for a variety of students in
    non-traditional class environments. Class sizes of up to 40 students.

Mentor
1st year student, Virginia Commonwealth University   2016
    Details: Part of VCU Honors freshman mentorship program.

Service

University Service
Student Advisory Board member   2016 - current
    Department of Computer Science, Virginia Commonwealth University
    Details: Advise on student concerns. Participate in faculty hiring interviews.

Senior Reader, Senior honors graduation dossiers   2016 - current
    Honors College, Virginia Commonwealth University
    Details: Review dossier submissions for graduation candidates. Coordinate other readers.

Panelist, Undergraduate conference preparation sessions   2017
    Honors College, Virginia Commonwealth University

Organizer, Local Hack Day of Richmond, VA hosted at VCU   2016
    Hosted through RamDev software club (see below)
    Details: Planned and hosted an event for over 30 students including 12 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

Organization Service
Founder and President   2016 - current
    RamDev – the software development club at VCU
    Details: Secure funding for, advertise, and plan weekly meetings featuring student, faculty, and
    industry speakers. Encourage increased collaboration and growth in CS department.

Treasurer   2016 - current
    Association for Computing Machinery Programming Club

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