

Erik Davis

Software Engineer, Mathematician

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Experience

- Sept 2018 – Senior Software Engineer, *Rigetti Computing*, Berkeley.
Present Developed software for the simulation, control, and application of near-term intermediate scale quantum computers.
- Developed software tools and infrastructure (program analysis, compilation) for pulse-level control of Rigetti's hardware.
 - Codeveloped a novel application of machine learning to quantum program synthesis.
 - Implemented a new simulation mode for Rigetti's gate-based quantum simulator.
 - Led a CouchDB to Postgres data migration, and related visualization improvements for internal data.
- June 2017 – Data Scientist, *Conversant*, Chicago.
- August 2018 Research and development of a large-scale, distributed graph analytics platform for digital advertising with Apache Spark.
- Implemented graph clustering algorithms for a massive (multi-billion edge) graph.
 - Investigated data-anomalies and performed cost-benefit analyses of proposed infrastructure changes.
 - Developed a new internal data product with applications to household level audience expansion and attribution.
- August 2016 – Postdoctoral Research Associate, *University of Arizona*, Tucson.
May 2017 Conducted research on stochastic shortest path problems.
- March 2016 – Technical Consultant, *DimensionalMechanics Inc.*
June 2016 Provided support on mathematical problems arising in the development of a novel machine learning system.

Education

- 2010–2016 Ph.D. Mathematics, *University of Arizona*, Tucson, AZ.
2004–2009 B.S. Mathematics, *University of Texas*, Austin, TX.

Publications

- *Consistency of Modularity Clustering on Random Geometric Graphs* (with S. Sethuraman), arXiv:1604.03993, *The Annals of Applied Probability*, 28(4), 2003-2062.
- *Approximating Geodesics via Random Points* (with S. Sethuraman), arXiv:1711.06952, *The Annals of Applied Probability*, 29(3), 1446–1486.
- *Automated Quantum Programming via Reinforcement Learning for Combinatorial Optimization* (with K. McKiernan, M. Sohaib Alam, and C. Rigetti), arXiv:1908.08054.
- *An Open-Source, Industrial-Strength Optimizing Compiler for Quantum Programs* (with R. Smith, E. Peterson, and M. Skilbeck), arXiv:2003.13961, *Quantum Science and Technology*.

Awards

- 2010-2011 NSF VIGRE Fellowship, *The University of Arizona*.
2016 Bartlett Fellowship, *The University of Arizona*.

Computer Skills

- Languages Python, Scala, SQL, Javascript, Common Lisp, C, C++, R
Technologies NumPy, SciPy, matplotlib, pandas, Spark, Hadoop, Hive, Postgres, scikit-learn, CVXOPT, TensorFlow, OpenAI Gym, Flask, React, GraphQL, CouchDB, Docker, git