

# Bryan Coutts

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<b>EDUCATION</b>	Bachelor of Mathematics, University of Waterloo Honours <i>Computer Science, Combinatorics and Optimization, Pure Mathematics</i> Graduated April 2017
<b>TECHNICAL SKILLS</b>	Best languages: Python, C, C++ Other known languages: Java, bash, Racket, Javascript, SQL, Haskell, MATLAB Math specializations: Optimization, Quantum Computing, Functional Analysis
<b>WORK EXPERIENCE</b>	<p><b>Quantitative Researcher</b> February 2021 - Present Jane Street, New York, NY</p> <ul style="list-style-type: none"><li>• Research and build models to price and trade financial instruments.</li></ul> <p><b>Software Engineer</b> January 2019 - January 2021 Google, Mountain View, CA</p> <ul style="list-style-type: none"><li>• Design and implement changes and features to improve the quality of local search results.</li></ul> <p><b>Operations Research Engineer</b> September 2017 - October 2018 Veyo Logistics, San Diego, CA</p> <ul style="list-style-type: none"><li>• Designed and implemented prototype VRP solver that outperforms open source alternative Jsprit by 10-30% on real data, with much lower running time.</li><li>• Primary maintainer of production routing workflow.</li></ul> <p><b>Undergraduate Research Assistant</b> May 2017 - August 2017 Institute for Quantum Computing, University of Waterloo, Waterloo, ON</p> <ul style="list-style-type: none"><li>• Conducted research regarding the applications of semidefinite optimization to quantum information theory.</li><li>• <a href="#">Preprint</a> submitted for publishing.</li></ul> <p><b>Software Engineering Internships</b> 2012 - 2015</p> <ul style="list-style-type: none"><li>• Veyo (Summer 2015): Developed algorithm and prototype for finding mileage saving vehicle trip merges.</li><li>• Afiliias (Summer 2013): Wrote software to automatically generate statistical reports.</li><li>• Agri-food and Agriculture Canada (Winter 2012): Developed software pipelines for the analysis and display of genomic data, and wrote software to improve the quality of several related genomes.</li></ul> <p><b>Instructional Support Assistant</b> January 2014 - April 2014 Instructional Support Group, University of Waterloo, Waterloo, ON</p> <ul style="list-style-type: none"><li>• Held office hours, ran tutorials, and handled course administration for CS 136.</li><li>• Worked on <i>Seashell</i>, a browser IDE to develop and run C and Racket programs.</li></ul>
<b>RELEVANT PROJECTS</b>	<p><a href="#">optQCA</a> Python</p> <ul style="list-style-type: none"><li>• Trains general quantum neural nets, generalizing the structures used in <a href="#">this paper</a>.</li></ul> <p><a href="#">mmrl</a> Python</p> <ul style="list-style-type: none"><li>• Developed a program to identify which replay files were produced by which matches for Melee tournaments, using MLE and mixed-integer linear programming.</li></ul> <p><a href="#">SGSolver</a> Python</p> <ul style="list-style-type: none"><li>• Developed a program to determine how to optimally play stochastic games, including solving a specific scenario in no-limit Texas hold'em poker, using linear programming.</li></ul> <p><a href="#">bacTSP</a> C++</p> <ul style="list-style-type: none"><li>• Wrote a branch-and-cut TSP solver that can solve instances of hundreds of nodes.</li></ul>