

Louis Tessler

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[contact info redacted]

Education

Macquarie University, Sydney NSW

Present

PhD student

Macquarie University, Sydney NSW

September 2020

MRes in Physics. (Optimising Quantum Algorithms for Combinatorial Optimisation)

Final grade: 89%

NYU Polytechnic School of Engineering, Brooklyn NY

May 2014

BSc in Math and Physics, concentration in Nuclear Engineering, minor in Computer Science

Grade point average 3.405 (Cum Laude)

Pertinent Coursework

Mathematics : Numerical Analysis, Partial Differential Equations, Chaos and Dynamical systems, Linear Algebra (graduate level), Discrete math, Real Analysis.

Physics : Computational Physics, Applied Nuclear Physics, Cosmology, Radiation and Dosimetry, Quantum Mechanics, Mathematical Physics

Technical Skills

Programming languages : C++, C#, Python, matlab, labview (limited)

Programming libraries : XNA (C#), Pyserial (Python), Matplotlib (Python), Tkinter (Python)

Lab / Machinery : Oscilloscope, Function Generator, Arduino micro-controller, Band saw, Drill-press, Lock-in Amplifier.

Professional Experience

Technical staff at Riken, Wako JP

October 2017-2018

Improved and maintained QuTip quantum information package

Researcher at NYU Shanghai, Shanghai CN

2015-2017

Validated a scheme for quantum error correction

Found relativistic correction to entanglement purification criteria

Contributed to paper on Grover's algorithm

Used Principal Component Analysis to examine quantum algorithms

Acted as Editorial Board Member for Science Direct journal submission

Researcher at SLAC National Accelerator Laboratory, Menlo Park CA

Summer 2014

Created and tested a program to control, take data from and display the results of a Scanning

Transmission X-Ray Microscope (STXM) in use at a synchrotron.

Researcher at NYU Polytechnic School of Engineering, Brooklyn NY

Summer 2013

Numerically simulated the behavior of quantum systems in 1 and 2 dimensions.

Considered both time independent and time dependent cases.

Heavy focus on the particulars of how atomic excitations occur.

Freelance tutor via wyzant.com, New York NY

2012-2013

Publications

Sanders Y, Berry D, Costa P. C. S, Tessler Louis, Wiebe N, Gidney C, Neven H, Babbush R (2020)

Compilation of Fault-Tolerant Quantum Heuristics for Combinatorial Optimization Physical Review X

Byrnes T, Forster G, Tessler L, (2018), *Generalized Grover's algorithm for multiple phase inversion states* Physical Review Letters

Tessler L, Byrnes T, (2018) *Bitcoin and quantum computing*, Manuscript submitted for publication

Byrnes T, Ilyas B, Tessler L, Takeoka M, Jambulingam S, Dowling J P, (2017), *Lorentz-invariant entanglement distribution for the space-based quantum network*, Manuscript submitted for publication

Ebubechukwu O. Ilo-Okeke, Tessler L, Dowling J P, Byrnes T, (2017), *Remote quantum clock synchronization without synchronized clocks*, Manuscript submitted for publication

Tessler L, Bergmann M, Look P V, Byrnes T, Quantum error correction for an alphabet of states, Manuscript in preparation

Tessler L, Byrnes T, *A self-correcting quantum memory with ensembles of qubits*, Manuscript in preparation

Talks

September 2017: Lorentz-invariant entanglement distribution for the space-based quantum network
Short talk presented at Asia Quantum Information Science conference, Singapore

Noteworthy projects

<u>Cenozoic</u>	2018 (ongoing)
Machine learning for automatic pricing of online goods and services. Developed process to efficiently turn sales data into statistics in real time. Developed reliable way of using statistics in pricing strategy (exploit v. explore) Built server back end and launched on AWS.	
<u>Laosh.io</u>	2016
Attempted internet business focused on the education market in China. Responsible for front end and business development. Engaged in challenges outside of my technical focused core competency.	
<u>Inverse</u>	2014
Designed and built a game about physics and movement in a world of optical illusions.	
<u>Crowd Modeling</u>	2014
Designed and implemented a model of a crowd of people in a confined space with applications in designing evacuation safe buildings and more efficient passageways.	
<u>Future Echo</u>	2013
Designed and built an "edutainment" game about visualizing the speed of light delay.	

Awards and Activities

Awards	:	Dean's list (Fall 2012, all of 2013 and 2014), Accomplished competitor 2012 University Physics competition. Winner Hero city hackathon for best bitcoin idea (2014)
Competitions	:	Google Games (2013), IEEE xtreme programming competition (2013), 2012 University Physics competition, FIRST robotics competition (2008,2009)
Professional organizations	:	Polybots robotics club, APS, IEEE