Haider Riaz Khan

Software Engineer and Physicist

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Employment

Software Engineer - Medidata Solutions (NYC, USA) Jan 2016 - Feb 2017

- Designed and developed a Java based automated framework for ETL applications that consolidated Amazon Web Services and Pentaho (data integration program).
- Contributed to the ongoing development of an innovative testing tool called BIT-TAG; a combinatorial and adaptive Java software program to generate test data for big data applications.

NSERC Neuroengineering Fellow - Ruthazer Lab, Montreal Neurological Institute May 2014 - April 2015

- Authored CANDLE-J; a 3-D image denoising software designed as an ImageJ plugin. CANDLE-J is very adept at processing deep in vivo 3D multiphoton microscopy images where the signal to noise ratio is low (SNR).
- The program is written in Jython, Java, and C. The Java Native Access (JNA) library is utilized to incorporate native C libraries. Binaries are available for Mac OS X, Windows, and Linux systems.

Research

Theoretical biophysics - Supervisor: Paul Francois, McGill University Jan 2015 - April 2015

Employed in silico evolution to develop a robust formalism for T-Cell activation. The system is described using coupled differential equations and the evolutionary simulations are performed using MatLab.

Neurophysiology - Supervisor: Erik Cook, McGill University Dec 2012 - May 2014

Developed MatLab routines to measure the cross-correlation of microsaccades and microstimulations (in area MT of the visual cortex). Created a library of MatLab functions to compute joint metrics of neural activity. The joint metrics are computed for both single unit and multi unit neuronal spikes.

Education

Master of Arts; Philosophy - University of Waterloo Sep 2017 - Aug 2018

Thesis: *The Phenomenological Origins of Property* (Advised by John Turri)

Areas of Specialization: Foundations of Quantum Theory, Cognitive Science, and Political Philosophy

Bachelor of Science; Physics and Computer Science - McGill University Sep 2010 - Apr 2015

Physics Subjects: Classical Mechanics, Thermal Physics, Quantum Mechanics, Electromagnetism, and Electronics

CS Topics: Object-Oriented Programming, Dynamic Programming, Functional Programming, Data Structures, Graph Algorithms, Greedy Algorithms, Computational Complexity, and Linear Programming

Programming

- Java, C, Python, JavaScript
- GCC, javac, Jenkins, Maven
- AWS, Pentaho, MATLAB, ImageJ
- Git, Bash, SonarQube, Latex, SQL

Awards & Honors

- Paul Seligman Memorial Scholarship (University of Waterloo 2018, $1200)
- Dean's Multidisciplinary Undergraduate Research List (McGill 2015)
- NSERC-CREATE Neuroengineering Award (McGill 2014, $5,625)
- Alexander Rutherford Scholarship (Western Canada High School 2010, $2,500)

Publications

- Nan Li, Jeff Lei, **Haider Riaz Khan**, Jingshu Liu, Yun Guo. Applying Combinatorial Test Data Generation to Big Data Applications. *ASE 2016: Proceedings of the 31st IEEE/ACM International Conference on Automated Software Engineering*, Pages 637-647, August 2016, Singapore.

Presentations & Talks

- Automated Software Engineering (ASE) 2016, Singapore Management University
- Student Summer Colloquium Presentation (2014), McGill University
- Honours Physiology Project Presentation (2014), McGill University