KELVIN R. ROCHA, PhD

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SUMMARY OF QUALIFICATIONS

- Strong professional and academic background comprising Quantitative Research, Software Development, Applied Mathematics, and Engineering
- Proven track record of growing and leading strong, cohesive quant/data science teams
- Solid ability to conduct original research, resulting in several publications and a pending patent

EDUCATION

- Georgia Institute of Technology, **PhD, Electrical Engineering**, Concentration: Computer Vision, May 2008
- Georgia Institute of Technology, **MBA**, Concentration: Finance, May 2006
- Georgia Institute of Technology, **MS, Applied Mathematics**, July 2004
- Pontificia Universidad Católica, BS, Electronics Engineering, **Magna Cum Laude**, December 1997

EXPERIENCE

01/21–Present **Part-Time Lecturer, Financial Data Science, National University of Singapore (NUS)**, Singapore

- Created and now teaches a new, senior-level class that shows students how to apply Data Science into Quantitative Finance from a practical point of view, including sound software engineering best practices

10/19–Present **Lead Data Scientist, The London Stock Exchange Group (LSEG) Innovation Labs (Refinitiv)**, Singapore

- Leads a team of data scientists that apply machine learning (ML) and Natural Language Processing (NLP) via Python and cloud services to solve problems involving global equities, private companies, and FX
- Uses ML and NLP to create a new product (SentiMine, to be globally released this year into the market) that automatically generates sentiment for more than a hundred different financial-related themes for both equity research reports and company transcripts, including earning calls
- Created an alpha, multi-factor model for US equities using novel sentiment-based signals generated from Equity Research Reports
- Currently working on a product that would predict capital raising activities for private companies via Equity, Loans and Bonds

09/14–10/19 **Manager, Quantitative Research, NumerixS Investment Technologies Inc**, Vancouver, B.C.

- Led the quantitative research team that evaluated and modelled large volumes of historical and real-time data to design, develop and test computer-based, equity trading algorithms on a Unix server using Python, kdb+, and R
- Planned, designed, and coordinated the improvement and operation of computer-based trading systems
- Carried out programming and systems development to enhance research and production processes through automating and linking statistical tools, databases, and other systems

03/11–09/14 **Systems Developer, Orbis Investments** (Asset Management Firm, $40B AUM), Vancouver, B.C.

- Applied C#, VB.NET, and SQL Server to extend and support a complex proprietary trading system for equity, fixed income, and currencies for paper portfolios that uses market data from sources such as Bloomberg and that is utilized by equity, currency, and quant analysts as well as traders and portfolio managers
- Applied non-linear integer programming methods to solve complex constrained combinatorial optimization problems in which FX currency trades are efficiently allocated among a set of brokers
- Designed and implemented an intricate system that creates and computes custom portfolio benchmark prices on a daily basis by combining country and sector indices from providers such as FTSE, MSCI, S&P, and TSE

08/08–02/11 **Analytical Business Consultant, Bayser Consulting** (A Management Consulting Firm), Chicago, U.S.A.

- Worked under tight deadlines and provided management, sales, and marketing analytics to pharmaceutical manufacturers by analyzing large data sets, running test/control analyses, and developing complex business tools using Excel & Access (Macros), SQL Server, SQLite, VBA, VB.NET, C#, and ASP.NET
- Led a team that developed an application capable of extracting large amounts of consumer data from online forums and Twitter and performing pattern recognition on the data to understand how patients use drugs, the reasons of their discontent, and why they discontinue the treatments
- Analyzed large data sets of patient-level data, promotional data, and plan data and applied System Dynamics to identify points of intervention and understand the behavior of patients, physicians, and health plans
- Performed statistical analysis on large sets of sales and promotional data at the group practice level and designed a budget-neutral optimization approach that was expected to increase sales by USD$23,000,000

| 08/03–08/08 | **Research Assistant, Georgia Institute of Technology,** School of Electrical and Computer Engineering |

- Designed and implemented (via C++ and MATLAB) an algorithm that maximizes the visibility of a convoluted surface with respect to a viewpoint by evolving the surface image and using Calculus of Variations and constrained optimization
- Developed a novel algorithm that computes thickness, correspondences, and gridding in annular tissue type structures by solving sets of PDEs and implementing algorithms in C++ and MATLAB
- Created a new method (using C++ and MATLAB) to numerically solve Laplace's equation in annular regions with a high degree of accuracy by evolving a linear combination of harmonic functions
- Developed and implemented a reliable and fast approach to preserve the topology of evolving surfaces by using Calculus of Variations and dynamic clustering and efficiently solving large linear systems

| 08/02–08/03 | **Teaching Assistant**, **Georgia Institute of Technology,** School of Electrical and Computer Engineering |

- Coordinated electronics laboratories on behalf of an Electrical Engineering professor as well as created, proctored, and graded all course examinations for the students
- Led tutoring sections for graduate and undergraduate students in Digital Signal Processing

| 01/01–05/02 | **Research Assistant, Utah State University,** School of Electrical and Computer Engineering |

- Developed two novel multiplierless algorithms for NASA using C and MATLAB to efficiently recover lost samples from 'noisy' images for high-speed, real-time onboard digital image processing
- Conducted statistical analysis and applied the Monte Carlo simulation method to a digital channel to evaluate the efficiency of the various multiplierless algorithms in channel equalization

| 08/98–08/00 | **Automation Engineer, Dominican National Brewery**, Santo Domingo, Dominican Republic |

- Managed and troubleshot the electrical controls of several production lines for packaging beer
- Designed and implemented automated improvement processes using Programmable Logic Controllers

| 05/98–08/00 | **Assistant Professor, Pontificia Universidad Católica Madre y Maestra,** School of Mathematics |

- Taught the following courses to classes ranging from 20 to 50 students: Differential Equations, Multivariate Calculus, Numerical Methods, Calculus I & II, and College Algebra

HONORS & ACTIVITIES

- Passed Level I CFA Exam
- Ibero-American **Mathematical Olympiad** participant and judge, 1992, 1994, 1998, and 1999
- Second and third place in the Dominican Mathematical Olympiads, 1992 and 1993
- Six-time Tough Mudder participant

LANGUAGES   Bilingual fluency in oral and written English and Spanish

PUBLICATIONS

Coauthored 12 mathematical modeling publications that demonstrate the ability to create original work within a team environment and to apply quantitative programming:

- Jean-Patrick Tsang and **K. R. Rocha**, *"Gain Competitive Intelligence through Posting Analysis,"* DTC Perspectives, March 2011
- Jean-Patrick Tsang and **K. R. Rocha**, *"Analysis of Blogs – Ignore at Your Own Peril,"* Pharmaceutical Management Science Association (PMSA) Conference, May 2010
- **K. R. Rocha**, G. Sundaramoorthi, A. J. Yezzi, and J. L. Prince, *"3D topology-preserving flows for viewpoint-based cortical unfolding,"* International Journal on Computer Vision, December 2009
- **K. R. Rocha**, A Variational Approach for Viewpoint-Based Visibility Maximization, PhD Thesis, School of Electrical and Computer Engineering, Georgia Institute of Technology, March 2008
- **K. R. Rocha**, A. J. Yezzi, A. Mennucci, and J. L. Prince, *"Viewpoint-based maximizing flows,"* Proceedings MICCAI Workshop on Interaction in Medical Image Analysis and Visualization, November 2007
- **K. R. Rocha**, G. Sundaramoorthi, and A. J. Yezzi, *"3D topology-preserving flows for viewpoint-based cortical unfolding,"* Proceedings IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis, October 2007
- **K. R. Rocha**, A. J. Yezzi, and J. L. Prince, *"A hybrid Eulerian-Lagrangian approach for thickness, correspondence, and gridding of annular tissues,"* IEEE Transactions on Image Processing, March 2007
- A. Duci, A. Yezzi, **K. R. Rocha**, and S. Soatto, *"Harmonic embedding for linear shape analysis,"* Journal of Mathematical Imaging and Vision, October 2006
- **K. R. Rocha**, A. J. Yezzi, and J. L. Prince, *"A hybrid Eulerian-Lagrangian approach for thickness, correspondence, and gridding of annular tissues,"* ICCV Workshop on Computer Vision for Biomedical Image Applications: Current Techniques and Future Trends, October 2005

- **K. R. Rocha**, T. Bose, and M. Larsen, *"A multiplier-free adaptive algorithm for channel equalization,"* Proceedings Asilomar Conference of Signal, Systems, and Computers, November 2002
- **K. R. Rocha**, Power-of-2 Quantized Algorithms for Recovering Lost Samples from Images, MS Thesis, Department of Electrical and Computer Engineering, Utah State University, May 2002
- **K. R. Rocha**, A. Vankatachalan, T. Bose, and R. L. Haupt, *"Multiplierless algorithms for high-speed real-time onboard image processing,"* Proceedings IEEE Aerospace Conference, March 2002

RECOMMENDATIONS

Several available on LinkedIn