Randall Martyr

Researcher in Quantitative Energy Finance,
Applied Probability and Stochastic Control

+ CONTACT

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+ PROFESSIONAL SUMMARY

My goal is to have an intellectually satisfying career that draws on my background in information technology (including computer programming and information security) and mathematics (both pure and applied).

Through my studies in information technology and subsequent professional ventures, I have garnered experience in using C-style programming languages such as C/C++, Java, PHP and Python.

Through my studies in financial mathematics, I have researched topics in financial, insurance and energy markets (including the non-technical regulatory aspects) and gained some experience in time series modelling.

I have recently been involved in joint academic-industrial research projects, often taking on an additional (and necessary) role as liaison between those team members having strong technical expertise (mathematicians, software engineers) and others with non-technical expertise in, for instance, management, business and finance.

Finally, I have demonstrated the ability to learn new concepts on-the-fly as the project or task demands.

+ EXPERIENCES

Postdoctoral research assistant at Queen Mary University of London (11/2015 - Present)

From late November 2015 to May 2016, I worked on optimal stopping and optimal singular stochastic control problems for the research project "Optimal prediction in local electricity markets" (grant EP/K00557X/1). During this period I had three manuscripts based on my PhD thesis accepted for publication in top tier journals, namely, Advanced in Applied Probabiliity, Journal of Applied Probability, and Mathematics of Operations research.

Since May 2016 I have been researching applications of stochastic control, microeconomics and game theory to power systems markets for the EPSRC grant EP/N013492/1 entitled "Nash equilibria for load balancing in networked power systems". This is highly interdisciplinary project, which involves academics in probability theory, dynamical systems and complex networks, studies the mathematics of energy trading in the real-time electricity imbalnce market. There are two named industrial partners for this project, Upside Energy and Future Decisions Ltd.

PhD studentship with Tempus Energy Systems (2012-2015)

Tempus Energy (formerly Alectrona Grid Services) was an industrial partner on my PhD project from September 2012 to September 2015. During this time I developed algorithm prototypes for automated demand-side management and predictive energy trading. I also assisted in making these prototypes production-ready and integrating them into a predictive energy trading platform.

+ EDUCATION

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2012-2015 **PhD Financial Mathematics**

The University of Manchester

Oxford Road
Manchester
M13 9PL

United Kingdom

2011-2012 **Msc Mathematical Finance (Distinction)**

The University of Manchester

Oxford Road
Manchester
M13 9PL

United Kingdom

2007-2010 **Bsc Information Technology and Mathematics (Hons.)**

The University of the West Indies

Cave Hill Campus

Cave Hill, St. Michael

Barbados

West Indies

Topics studied   Mathematics, computer programming, Information security, database management systems, finance theory (CAPM, APT), derivative securities, option pricing, econometrics and time series analysis, power systems economics

Awards   Numerical Algorithms Group (NAG) Prize in Mathematical Finance (2012); University of Manchester Research Scholar Award (2012-2013); Faculty of Pure and Applied Sciences Dean's Prize (2010), Systems Consulting Limited (SCL) Prize for Information Technology and Mathematics (2009), The Arthur Lewis Awards for OECS Nationals (2008).

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+ Publications

2016 **Dynamic programming for discrete-time finite horizon optimal switching problems with negative switching costs, Adv. Appl. Prob 48(3), pp. 832-847** .

2016 **Finite-Horizon Optimal Multiple Switching with Signed Switching Costs, Mathematics of Operations Research 41(4), pp. 1432-1447.**

2016 **Solving finite time horizon Dynkin games by optimal switching, to appear in Journal of Applied Probability.**

2016 **Optimal Entry to an Irreversible Investment Plan with Non Convex Costs (joint work with Tiziano De Angelis, Giorgio Ferrari and John Moriarty), preprint (submitted).**

2016 **Pricing put options for electrical power systems balancing reserve (joint work with Dávid Szábó), preprint (submitted).**

+ LANGUAGES

English (native)

+ IT PROFESSIONAL SKILLS

Operating systems   **UNIX, Linux, Windows**

Programming skills   **C, C++, Java, Python, MATLAB**

Web   **HTML5, PHP, javascript, mySQL, CSS**