CURRICULUM VITAE

ALEX McGUIRE PhD

I am a senior quantitative analyst and applications designer/developer with extensive experience in building mathematical models for exotic options in different areas of finance. Due to close contact with traders, and my own trading experience, I value solutions for their practicality and usefulness, rather than any theoretical elegance. I enjoy teaching, and am comfortable communicating my ideas to people with all levels of experience, including those with very limited knowledge of financial maths and software development.

While my recent development work has been in Scala, and my preference is for the functional, I am comfortable with different paradigms and have long experience developing in many programming languages

EMPLOYMENT

Jun 2015 - Date   **Topaz Technology Ltd**

Position: **Director/Developer**

Topaz began as a startup company developing a risk management and P&L application, principally in Scala, focussing mostly on the commodities space. The Topaz system is now in production at several institutions, incluging Shell, Glencore and Jeera.

While developing Topaz I have also provided a wide range of consultancy services for several customers, these include
- co-ordinating the merger of the IT systems of two downstream oil suppliers
- implementing a system to optimise constrained LNG charters for long term contracts
- modelling, valuation and backtesting of gas storage units
- significantly reducing the time taken by an overnight batch by applying more advanced Monte Carlo techniques
- architectural redesign of risk management systems

Sep 2009 - May 2015   **Trafigura Ltd, London UK**

Position: **Head of Risk Systems**

Duties: Responsible for rewriting the risk management systems of Trafigura, a commodity trading company. The challenge was to create from scratch a uniform real-time reporting application to sit in front of a number of legacy systems, before their eventual replacement. This tool, Starling, had a flexible pivot reporting framework providing the usual reports, P&L, P&L explanation, various greeks etc, as well as permitting intra-day trades and prices/vols to be uploaded seamlessly from traders' Excel blotters.

Starling was written in Scala, and was developed rapidly in part due to my team's depth of financial knowledge - none of whom had any financial experience before working with me. The team interacted directly with traders and other end users, rather than relying on business analysts.

Oct 2001 – Jul 2009   **EDF Trading Ltd, London**

Position: **Team Lead/Senior Quantitative Analyst**

Duties: Responsible for modelling the company's portfolio of exotic options. These mostly came about from physical assets, such as complex swing, storage and hydroelectric deals - including a number of coal power stations that constituted near 10% of the UK's entire power production. Many of the models required approaches that differed from existing literature, most notably with the construction of finely grained price curves from coarse market data, together with new price processes to describe the behaviour of these - in particular with respect to price spikes.

My team, which grew to eight developers, developed a risk management system in a mixture of Java, Scala, OCaml and Common Lisp to manage the portfolios that contained these complex deals.

Apr 2000 – Sep 2001	**Sempra Energy Trading, London**
Position:	**Team Lead/Senior Quantitative Analyst**
Duties:	

I designed several new models for Sempra's growing exotics business, and advised the structuring department on technical aspects of proposed deals.

Leading a small team of developers, I was responsible for the design and development of a new trading/risk management system. I left Sempra to follow the head of derivatives to EDF.

Apr 1997 – Aug 1999	**IBJ International, London**
Position:	**Exotic options trader / Quant developer**
Duties:	

At IBJ I made markets in exotic interest rate and FX options, as well as dynamically hedging the portfolio. I rewrote most of the models in the existing C++ system, giving them a more rigorous basis and generalising to a multi-factor setting. These models were significantly faster than those offered by commercial systems at the time.

Feb 1995 – Dec 1996	**Sumitomo Finance International, London**
Position:	**Options trader / Quant developer**
Duties:	

Originally hired as a junior trader to assist in the market making and hedging of a JGB options book, my increasing interest in finance theory led to my running small, yet relatively profitable books which took advantage of various inefficiencies in the Japanese and German bond option markets. These inefficiencies included mispriced volatility smiles, incorrect volatility/duration curves and breakdowns in the relationships between bond options, repo and futures markets.

FURTHER EDUCATION

1988–1992	University of Exeter PhD Commutative Algebra — "On the structure of partially ordered abelian groups with ICC, and integrally closed linearly compact domains"
1984–1988	University of Sheffield BSc (Hons) Mathematics I

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