Xiaochuan Yang, Ph.D.

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Summary

Highly experienced Senior Statistician with a Ph.D. in Mathematics. Proven track record in data validation, statistical reporting, and the creation of guidelines for statistical processes. Strong ability to work autonomously and deliver innovative solutions for complex statistical challenges in various domains including social statistics, energy, and agriculture.

Work Experience

- **Researcher and Lecturer in Data Science** (2021-Present) Brunel University, London, UK
  - Teaching quantitative courses including Python programming, machine learning, deep learning, data analytics, time series analysis, stochastic calculus, statistical models
  - Supervising a Ph.D. student in the field of credit risk modelling with Hawkes processes
  - Publishing in the field of stochastic modelling, statistical analysis of stochastic processes
  - Organising industrial mathematics research seminars
  - Secured funding for research in the area of quantitative risk manangement
- **EPSRC Postdoctoral Researcher** (2020-2021) University of Bath, UK
  - Published papers in the area of extreme value theory and central limit theorems
  - Conducted probability tail estimates for risk metrics such as VaR and shortfalls
- **FNR Luxembourg-Singapore bilateral researcher** (2018-2020)
  - Published papers fundamental to risk modelling: high frequency statistics of Gaussian processe, point processes, extreme value theory, central limit theorems
  - Taught Partical Differential Equations (Master's course, Univeristy of Luxembourg), crucial for financial instruments pricing
- **Assistant Professor** (2016-2018) Michigan State University, East Lansing, USA
  - Taught actuarial science fundamentals: probability and statistics
  - Published papers in statistics of Gaussian processes, Levy processes, and jump diffusions

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Professional Skills

- **Quantitative Risk Management Know-how**:
  - Stochastic Models: GARCH, EWMA, EVT, Point Processes, diffusions, factor model…
  - Dependency Modelling: Variance-Covariance, Mixture, Copula, Self-Excitement
  - Statistical Estimation of VaR, ES, EL, PD, LGD
  - Monte Carlo, Historical Simulation
  - Pricing: Stochastic Calculus, Semimartingales, PDE, `QuantLib`
  - Regulatory Approach: EBA guidelines, CRR, Basel III pillars, IRB, IFRS 9, IPEV guidlines
- **Technical Skills**:

  - Statistical Software: Highly proficient in R and SAS, with extensive experience in data validation, reporting, and documentation
  - Advanced Python Programming; Git version control; SQL
  - Mastery of Computing Libraries: `numpy`, `numba`, `scipy`, `jax`
  - Analytics and Machine Learning: `pandas`, `scikit-learn`, `PyTorch`, `XGBoost`, `SHAP`, `matplotlib`, `seaborn`
- **Research Skills**
  - Aquired a robust analytical mindset through 10 years of reseasrch in quantitative fields
  - Critical evaluation of existing methodologies and development of original ideas for new challenges
  - Ability to quickly learn *any* new field

Consulting Experience

- **Defence Data Research Centre & Alan Turing Institute** (2023) Exeter, UK
  - Topic: toxin diagonosis by cellular morphology; challenge posed by Defence Science and Technology Lab
  - Managed the entire pipeline from data processing to model validation, using tools like `pandas`, `sklearn`, `XGBoost`, `PyTorch`; Explained model decision with `SHAP`
- **NHS Rheumatology** (2021) Bath, UK
  - Topic: Machine Learning for damage detection in Psoriatic Arthritis
  - Proposed physiological-based networks and clustering framework; clustered patients with similar diseases using vectorized data representation; investiaged disease progression over time

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Education

- **Ph.D. in Mathematics** (2016) Université Paris-Est, Paris, France
  - Thesis: “Dimensional properties of regularities of jump diffusion processes”
  - Received a PhD thesis prize of $6000 (one of 13 recipients in France that year)
  - Funded by the DIM Scholarship from the Île-de-France region
  - Jump diffuions widely used in modelling risk factors and emerging generative AI
- **Master in Applied Mathematics** (2013) Université Paris-Est, Paris, France
  - Courses: stochastic calculus, PDE, interest rate models, Levy processes, non-parametric statistics, limit theorems, stochastic models, signal and image processing with wavelets, Python
  - Bezout Scholarship recipient
- **Bachelor in Applied Mathematics** (2009) Jilin University, China (top 6 in mathematics)
  - Courses: statistics, algorithms, differential equations, numerical analysis, C programming
- **French Language Training** (2011) Caen, France. DALF Level C1.

Langueges

- **Bilingual**: English, Chinese
- **Level C1**: French
