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Rauan Akylzhanov

Work Experience

2019 July - present **Senior Analyst**, *Macquarie Group Limited*, London.

I briefly summarise my commercial Python development experience below:

- Supporting the intraday data platform (low latency tick architecture): developed libraries to handle connection and user-oriented data queries, to compute fixings in real-time.
- Being responsible for the data quality, designed complex data cleaning algorithms to detect outliers in large trading datasets and wrote the scripts to query different servers and run daily validation of the generated fixings.
- Based on the platform, implemented new market liquidity measures along with a high frequency trading signal for the desk as a part of a machine learning experiment to predict stock dynamics. As part of the signal generation process, wrote data aggregation queries in Q. I designed unit tests in Bamboo to ensure the quality of the software I developed.
- regular morning report to the team members on the daily progress

Software Skills

fluent Python, C/C++, BaSH, Unix/Linux, PyCharm, Git, TensorFlow.

familiar with Q, Bazel, KDB+, Bamboo CI, Dask, ReactJS, C#, Scala, Flask.

Work Experience

2018 Oct - 2019 July **Research Associate**, *Queen Mary University*, London.

I develop elements of harmonic analysis associated with a Dirac-like operator affiliated with a semi-finite von Neumann algebra (quantum version of Hörmander theorem). Exploring the gravity induced from a fixed Dirac-like operator, I am studying the generating functional and n-point correlation functions arising from $0+1$ quantum field theory on the lattice line (joint with Shahn Majid). More details on my academic research can be found here.

2017 Dec – 2018 Oct **Pure Research Associate**, *Imperial College*, London.

I described manifold structures on quantum groups associated with a fixed Dirac-like operator. I provided necessary and sufficient conditions for algebraic differential calculi on Hopf subalgebras of compact quantum groups to extend to our proposed smooth subalgebra. This opens up whole wealth of K-theoretic results and further exciting investigations.
Akylzhanov, R. & Arnaudon, A. Lett Math Phys (2019).
Akylzhanov, R., Majid, S. & Ruzhansky, M. Commun. Math. Phys. (2018) 362: 761

Education

2014–2018 **PhD in Pure Mathematics**, *Imperial College*, London.
harmonic analysis and operator algebras

2012 Sep - 2014 July **Faculty Teaching Assistant**, *Moscow State University*, Kazakh branch, Nur-Sultan(Astana).
algorithmic complexity theory, elements of Unix/Linux, C, gcc, gdb, make, mathematical analysis,

2007–2012 **Specialist in Mathematics and Computer Science**, *Lomonosov Moscow State University* , Moscow.
algorithm complexity, data structures, coding theory, parallel programming, operating systems, computer architecture, optimisation theory, statistics (hypothesis testing, linear regression, PCA), probability, SQL

programming assignment, multi client server (Berkeley sockets via TCP/IP) written in C and C++, programmable bots with strategy written in a simple programming language specified by a Markov algorithm.

Societies

2017-present **Imperial College Data Science Society**.
training in essential Data Science topics, platform for interaction between Imperial College and industry

2018-present **Imperial College Machine Learning Society**.
tutorials, projects, hackathons, talks from experts in industry and researchers