Koundinya Vajjha, CQF

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Summary

A highly motivated individual with strong background in mathematics and programming with prior experience in Quantitative Finance, with a relevant certification (CQF). Expected to graduate with a Ph.D. in Mathematics mid-2022, with strong fundamentals in Probability theory, Stochastic Calculus, Control Theory and Formal Verification.

Previous work experience

- **Quantitative Analyst** — CRISIL, an S&P Global Company
  Chennai, India — *2016 - 2017*
  - Model Performance Analysis (VaR Back testing)
  - Independent implementation for VaR and PnL vector.
  - AML scenario replication and validation
  - Model Governance Analysis
  - Model Validation Documentation

Certifications

- **Fitch Learning**
  Certificate in Quantitative Finance (CQF) — *2017*
  - Six modules of coursework, with a final exam/project on algorithmic trading.
  - Fundamentals of derivative pricing, portfolio theory, time series analysis.
  - XVA calculations.
  - Implementing statistical arbitrage strategies with backtesting.
  - Python and R programming.

Education

- **University of Pittsburgh** — Pittsburgh, Pennsylvania
  Ph.D. Mathematics — *2018 - present*
  - **Advisor** : Thomas Hales.
  - **Thesis** : On the Reinhardt Conjecture and Formal Foundations of Optimal Control.
  - Received the **Andrew W. Mellon Predoctoral Fellowship** for 2021-22.
- **University of Western Ontario** — London, Ontario
  MSc. Mathematics — *2017 - 2018*

- **Indian Statistical Institute** — Kolkata
  Master of Mathematics — *2014 - 2016*
- **Indian Statistical Institute** — Bangalore
  Bachelor of Mathematics — *2011 - 2014*

Academic Publications and Preprints

1. *Formal Verification of a Stochastic Approximation Theorem* (with Barry Trager, Avi Shinnar and Vasily Pestun) accepted to **ITP 2022**.
2. *The Reinhardt Conjecture as an Optimal Control Problem II* (with Thomas Hales), work-in-progress.
3. *CertRL: Formalizing Convergence Proofs for Value and Policy Iteration in Coq* (with Avi Shinnar, Barry Trager, Vasily Pestun and Nathan Fulton) presented at **CPP 2021**.
4. *A formal proof of PAC Learnability of Decision Stumps* (with Joseph Tassarotti and John Tristan) presented at **CPP 2021**.
5. *On a Definite Integral of the Fractional Part Function* in Resonance: Journal of Science Education,May 2012, Volume 17, Number 05.
6. *On Pythagorean Triples of the Form* $(i, i+1, k)$ in Resonance: Journal of Science Education,September 2009, Volume 15, Number 09.

Internships

1. Research Internship at the **MIT-IBM Watson AI Lab, IBM Research**, 2020.
2. Research Internship in **Oracle Labs**, 2019.
3. Summer internship in **Essex Lake Group LLC**, 2013
4. Summer internship at the **Indian Institute for Science Education and Research, Mohali**, 2013.
5. Summer internship as a JNCASR Fellow, at the **Indian Institute for Science Education and Research, Kolkata** in 2012.

Technical Skills

SAS, R, Python, Lean, Coq, Haskell, Matlab, Octave.