Koundinya Vajjha, CQF

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27 years
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Summary

A highly motivated individual with strong background in mathematics and programming with experience in model validation in particular and Quantitative Finance in general, 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

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*

- **Fitch Learning**
  Certificate in Quantitative Finance   *2017*

- **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 Stochastic Approximation Algorithms in Coq* (with Barry Trager, Avi Shinnar and Vasily Pestun) submitted 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.