Aalok Thakkar

3330 Walnut Street, Levine 613, Philadelphia, PA 19104

+1 (215) 252 6770 ⋄ athakkar@seas.upenn.edu

Education

University of Pennsylvania (Penn)   *Fall 2018 - Present*
Doctor of Philosophy
Computer and Information Science

Chennai Mathematical Institute (CMI)   *Fall 2015 - Fall 2017*
Bachelors of Science (Honours)
Mathematics and Computer Science

Research Internships

Nokia Bell Labs   *Summer 2019*
Advisor: Kedar Namjoshi
Formulated a modular method for synthesizing a multi-process reactive program from a temporal specification of its desired long-term behavior, which when combined with symmetry arguments and small-model properties allow extending synthesis to arbitrarily large instances.

Adobe Systems   *Spring 2018*
Advisors: Krishnamurthy Balaji, Piyush Gupta
Formulation of correctness specification for query optimizers, and automated reasoning of termination of rewriting based query optimizers using the Tyrolean Termination Tool 2.

Laboratoire Spécification et Vérification & Inria   *Summer 2017*
Advisor: Stefan Haar
Understanding gene regulatory networks as finite concurrent systems, and using their bisumulation equivalence to safe-Petri nets to derive decidability and complexity results.

Publications

Concurrency in Boolean networks.
Natural Computing 19, 91-109 (2020).
with Thomas Chatain, Stefan Haar, Juraj Kolck, and Loic Pauleve

Infinitude of Primes Using Formal Languages.
The American Mathematical Monthly, 125:8, 745-749 (2018).

Verification of Rewriting-based Query Optimizers.
16th International Workshop on Termination (WST 2018).
with Krishnamurthy Balaji and Piyush Gupta.

Teaching Experience

Ross Mathematics Program Asia   *Summer 2018*
Senior Counselor
Assisted a summer program in algebra and elementary number theory for high school students. Graded student assignments on a daily basis and tests on bi-weekly basis. Headed scheduling of student talks, and gave multiple student talks during the program.

Chennai Mathematical Institute   *Fall 2016 - Fall 2017*
Teaching Assistant
Assisted teaching of a total of 7 undergraduate and graduate courses over 3 semesters including Programming in Haskell (twice), Programming in Python (thrice), Design and Analysis of Algorithms (twice) and Theory of Computation (once). Conducted bi-weekly or monthly tutorial sessions; drafted assignment problems and corrected them.

National Program on Technology Enhanced Learning   *Spring 2016 - Spring 2018*
Teaching Assistant
Assisted teaching of online courses Programming in Python (once) and Design and Analysis of Algorithms (twice). Regulated, and answered questions through, online forum. Designed problem sets and provided live support during the final examinations.

Technical Strengths

Programming Languages	Haskell, Coq, Python, Java, JavaScript
Software & Tools	MATLAB, HTML, LaTeX, Microsoft Office
Languages	Gujarati, English, Hindi, Urdu

Miscellaneous

Held multiple leadership positions at *Graduate Student Engineering Group*, *Graduate and Professional Student Assembly*, *Rangoli - The Indian Association*, and other student groups at the University of Pennsylvania. Held leadership positions during undergraduate studies at CMI.

Speaker and organizer at Student Symposium on Verification, Automata, and Games, Chennai (October 2017).

Recipient of the prestigious Kishor Vaigyanik Protsahana Yojana Fellowship and the Aruna Lal Memorial Scholarship during undergraduate studies

Active public speaker, with two TEDx talks and multiple debate trophies in bag.