

Eshwar Ram Arunachaleswaran

Curriculum Vitae

Education

- Aug 2019– **Ph.D. in Computer Science**, *University of Pennsylvania*, GPA - 4.0/4.0.
current
- Aug 2014– **B.E(HONS) Computer Science**, *Birla Institute of Science and Technology (BITS)*
Dec 2017 *Pilani*, Pilani Campus.

Research Interests

Algorithms and Complexity, Algorithmic Game Theory, Learning Theory, Algorithmic Fairness.

Publications

Reconstructing Ultrametric Trees from Noisy Experiments ,
With Anindya De, Sampath Kannan ,
ALT 23.

[Link to arXiv version \(arXiv Identifier - 2206.07672\)](#)

Wealth Dynamics Over Generations: Analysis and Interventions ,
With Krishna Acharya, Sampath Kannan, Aaron Roth, Juba Ziani ,
SATML 23.

[Link to arXiv version \(arXiv Identifier - 2209.07375\)](#)

Pipeline Interventions,
With Sampath Kannan, Aaron Roth, Juba Ziani,
ITCS 2021.

[Link to arXiv version \(arXiv Identifier - 2002.06592\)](#)

Fully Polynomial Time Approximation Schemes for Fair Rent Division,
With Siddharth Barman and Nidhi Rathi,
SODA 2019.

[Link to arXiv version \(arXiv Identifier - 1807.04163\)](#)

Fair Division with a Secretive Agent,
With Siddharth Barman and Nidhi Rathi,
AAAI 2019.

[Link to arXiv version \(arXiv Identifier - 1811.10859\)](#)

Fair and Efficient Cake Cutting with Connected Pieces,
With Siddharth Barman, Rachitesh Kumar and Nidhi Rathi,
WINE 2019.

[Link to arXiv version \(arXiv Identifier - 1907.11019\)](#)

Working Papers

Efficient Stackelberg Strategies for Finitely Repeated Games ,
With Natalie Collina, Michael Kearns .

[Link to arXiv version \(arXiv Identifier - 2207.04192\)](#)

Relevant Graduate Level Coursework

Randomized Algorithms, Analysis of Boolean Functions, Elements of Probability Theory, Computational Learning Theory, Advanced Complexity Theory, Advanced Analysis .

Research Experience

- Jan 2018–June 2019 **Research Associate**, CSA, Indian Institute of Science, Bangalore.
TOPICS: Algorithmic Game Theory, Computational Fair Division, Cake Cutting, Rent Division, Sperner's Lemma, Brouwer's Fixed Point Theorem
Worked with Prof. Siddharth Barman on problems from Computational Fair Division
- June 2017–August 2017 **Research Intern**, *Conduent Labs (formerly Xerox Research)*.
TOPICS: Algorithmic Game Theory, Fair Division, Cake Cutting
Worked with Dr. Raga Gopalakrishnan on Cake Cutting Algorithms.
[Link to arXiv Draft Containing our Findings \(arXiv Identifier - 1801.08341\)](#)
- May 2016–July 2016 **Research Intern- Matchings using Graphs**, *Chennai Mathematical Institute*.
TOPICS: Matchings, Graph Algorithms, Game Theory
Worked with Dr. Prajakta Nimborkar of CMI.
 - Studied the Characterization of Rank Maximal and Popular Matchings using graphs.
 - Developed a reduction of Rank Maximal and Popular matching problems in the capacitated instance to the standard problems using dummy applicants and cheating strategies.
- June 2015–July 2015 **Research Intern-Traffic Routing using Multi-Commodity Flows**, *TCS Innovation Labs*, IIT-Madras Research Park.
TOPICS: Routing, Network Flows, Self-Interesed Users, Fairness, Price of Anarchy
Worked with Dr.Venkatesh Sarangan of TCS Innovation Labs
 - Reviewed literature and implemented approximation algorithms for optimal traffic routing through network flows.
 - Modified the routing scheme to ensure fairness among self interested users while maintaining bounds on loss of optimality.

- Aug **Undergraduate Thesis**, *Chennai Mathematical Institute*, Advisor - Dr. Prajakta
2017–Dec Nimborkar.
- 2017 TOPIC : Dynamic Graph Algorithms for Matching Problems
- January **Design Project - Space Constrained Verification of Streaming Problems in
2017–May Graphs with Prof. Sundar Balasubramaniam** , *Computer Science Department*,
2017 BITS Pilani.
TOPICS: Streaming Algorithms, Graph Algorithms, Polylog Space Verification
- January **Study Project- Heuristics for Computational Protein Structure Prediction** ,
2016–May *Biology Department*, BITS Pilani.
2016

Service

- Sub-Reviewer for ITCS 2022
- Reviewer for Discrete Applied Mathematics
- Sub-reviewer for SAGT 2019
- Sub-reviewer for WINE 2018
- Sub-reviewer for EC 2018

Others

- Jan 2017- Coordinator, Debating Society,BITS Pilani
May 2017