

# Eshwar Ram Arunachaleswaran

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## *Curriculum Vitae*

### Education

- Aug 2019–  
current **Ph.D. in Computer Science**, *University of Pennsylvania*, GPA - 4.0/4.0.
- Aug 2014–  
Dec 2017 **B.E(HONS) Computer Science**, *Birla Institute of Science and Technology (BITS) 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 **Research Associate**, CSA, Indian Institute of Science, Bangalore.  
2018–June TOPICS: Algorithmic Game Theory, Computational Fair Division, Cake Cutting, Rent  
2019 Division, Sperner's Lemma, Brouwer's Fixed Point Theorem  
Worked with Prof. Siddharth Barman on problems from Computational Fair Division
- June **Research Intern**, *Conduent Labs (formerly Xerox Research)*.  
2017–August TOPICS: Algorithmic Game Theory, Fair Division, Cake Cutting  
2017 Worked with Dr. Raga Gopalakrishnan on Cake Cutting Algorithms.  
[Link to arXiv Draft Containing our Findings \(arXiv Identifier - 1801.08341\)](#)
- May 2016– **Research Intern- Matchings using Graphs**, *Chennai Mathematical Institute*.  
July 2016 TOPICS: Matchings, Graph Algorithms, Game Theory  
Worked with Dr. Prajakta Nimbhorkar of CMI.
  - o Studied the Characterization of Rank Maximal and Popular Matchings using graphs.
  - o 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 **Research Intern-Traffic Routing using Multi-Commodity Flows**, *TCS Innovation Labs*, IIT-Madras Research Park.  
2015–July 2015 TOPICS: Routing, Network Flows, Self-Interested Users, Fairness, Price of Anarchy  
Worked with Dr. Venkatesh Sarangan of TCS Innovation Labs
  - o Reviewed literature and implemented approximation algorithms for optimal traffic routing through network flows.
  - o 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 Nimbhorkar.  
 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