


# Eklavya Sharma

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## Curriculum Vitae

✉ Email: eklavya2@illinois.edu  
🌐 Personal website: <https://sharmaeklavya2.github.io>  
in sharmaeklavya2 [↗](#)  sharmaeklavya2 [↗](#)

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## Education

August 2021 – Present **PhD**, *Department of Industrial & Enterprise Systems Engineering (ISE), University of Illinois at Urbana-Champaign (UIUC), IL, USA*  
Doing research on fair division algorithms. Advised by Prof. Jugal Garg [↗](#).  
July 2019 – July 2021 **M.Tech. (Research)**, *Computer Science and Automation (CSA), Indian Institute of Science (IISc), Bangalore, GPA: 9.7 / 10.0*  
Did research on approximation algorithms for variants of bin packing and knapsack. Advised by Prof. Arindam Khan [↗](#).  
Aug 2014 – June 2018 **B.E. (Hons) Computer Science**, *Birla Institute of Technology and Science (BITS), Pilani, India, GPA: 9.14 / 10.00*

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## Research Interests

**Algorithms, Fair division, Graph theory, Packing and scheduling**

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## Publications

- Existence and computation of epistemic EFX allocations, with Jugal Garg, [arXiv:2206.01710](#) [↗](#)
- Geometry meets vectors: approximation algorithms for multidimensional packing [↗](#), with Arindam Khan and K.V.N. Sreenivas, in FSTTCS 2022.
- Tight approximation algorithms for geometric bin packing with skewed items [↗](#) [↗](#), with Arindam Khan, in APPROX 2021.
- Harmonic algorithms for packing  $d$ -dimensional cuboids into bins [↗](#) [↗](#), in FSTTCS 2021.
- An approximation algorithm for covering linear programs and its application to bin-packing, [arXiv:2011.11268](#) [↗](#)
- Mitigating DNS amplification attacks using a set of geographically distributed SDN routers [↗](#), with Vishal Gupta, in International Conference on Advances in Computing, Communications, and Informatics (ICACCI) 2018.

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## Achievements

- August 2021 – July 2022 **Received the Samuel Brainin Engineering Fellowship**
- March 2018 **Graduate Aptitude Test in Engineering (GATE)**  
Secured all-India rank 86 (out of approximately 100,000 candidates) in the ‘Computer Science and IT’ test.
- BITS-Pilani Merit Scholarship**  
Scored GPA within top 2% in three semesters.
- ACM-ICPC** [↗](#)  
ACM-ICPC is an international annual multi-tiered programming contest for college students. Around 3000 teams (of 3 students each) participate in the Indian online qualifying round each year. Top few teams qualify for on-site regional contests in India.
- Dec 2017 Ranked 29 out of 250 teams in Amritapuri regional contest.
- Dec 2016 Ranked 66 out of 450 teams in Amritapuri regional contest.
- Dec 2016 Ranked 30 out of 70 teams in Kharagpur regional contest.
- Dec 2015 Ranked 88 out of 250 teams in Amritapuri regional contest.

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## Projects

- June 2022 – **Algorithms for Fair Division of Indivisible Items**  
Present *Topics:* fair division.  
*Supervisor:* Prof. Jugal Garg [↗](#), ISE, UIUC.
- Jan 2020 – **Approximation Algorithms for Geometric Packing Problems** [↗](#)  
July 2021 *Topics:* approximation algorithms, bin packing.  
*Supervisor:* Prof. Arindam Khan [↗](#), CSA, IISc Bangalore.
- Sept 2017 – **Mitigating DNS-related DoS attacks using SDN** [↗](#)  
Dec 2017 *Topics:* computer networks, network security, SDN.  
*Supervisor:* Prof. Vishal Gupta, BITS Pilani.  
Devised a new mechanism for mitigating DNS Amplification attacks, which uses a set of geographically-distributed SDN routers. Presented this work at ICACCI [↗](#) in September 2018.

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## Professional Service

Subreviewer for STOC 2022, SAGT 2022.

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## Work Experience

- Fall 2022 **Teaching Assistant, IE 300: Analysis of Data**, UIUC
- Fall 2020 **Teaching Assistant, Design and Analysis of Algorithms**, IISc Bangalore
- Aug 2018 – **Software Engineer, media.net**, Bangalore, India  
July 2019 *Topics:* machine learning, large-scale systems.  
media.net is an advertisement-technology company. I worked on improving their real-time bidder.

- Jan 2018 – **Intern** ↗, *American Express*, Gurgaon, India
- June 2018 *Topics*: neural networks, machine learning, big data.  
Trained a neural network to predict credit-card defaulting. The input format was unconventional, so a custom architecture was devised. Its performance was at par with the production model, which was tuned over many years.
- May 2017 – **Intern**, *Directi*, Mumbai, India
- July 2017 *Topics*: machine learning.  
Made Directi's news article classification algorithm recognize more categories.
- May 2016 – **Google Summer of Code (GSoC) Student** ↗, *Zulip*
- Aug 2016 *Topics*: software development.  
Zulip is an open-source group chat application. 3 students were selected from over 100 applicants to work on Zulip as part of the GSoC program.
- Annotated python code ( $\sim 50,000$  lines) for use with a static type-checker.
  - Migrated code to Python 3 by switching to newer dependencies, using automated code conversion, standardizing string types, and fixing bugs.

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## Selected Coursework

### UIUC:

- (CS 473) Algorithms: ongoing
- (IE 511) Integer Programming: grade A
- (IE 519) Combinatorial Optimization: grade A
- (IE 410) Advanced Stochastic Processes and Applications: grade A+
- (IE 411) Optimization of Large Systems: grade A+

### IISc Bangalore:

- Approximation Algorithms: grade A+, rank 1
- Design and Analysis of Algorithms: grade A+, rank 1
- Computational Methods of Optimization: grade A+, rank 1
- Cryptography: grade A

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## Computer Skills

$\LaTeX$ , Python, C/C++, Java, HTML, CSS, JavaScript, SQL, Bash.

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## Student Societies

### **BITS-ACM**, *BITS Pilani ACM Student Chapter*

- Problem setter for 6 programming contests organized by BITS-ACM.
- Created backends for web applications used in online quizzing events.
- Conducted intra-BITS-ACM workshops on 'Competitive Programming' and 'Linux and CLI'.