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| CONTACT                                      | <b>Webpage:</b> <a href="http://karthikabinavs.xyz">http://karthikabinavs.xyz</a> <b>Email:</b> <a href="mailto:karthikabinavs@gmail.com">karthikabinavs@gmail.com</a>  |   |
| INTERESTS                                    | Foundations and Applications of Artificial Intelligence: Robust Decision Making, Sequential Decision Problems (Online Matching, Multi-armed Bandits, SGD), Discrete and Continuous Optimization, Causality, Matching-based market design, Rideshare, Online Advertising.  |   |
| EDUCATION                                    | <b>University of Maryland, College Park</b>   |   |
|  | PhD. in Computer Science<br>M.S. in Computer Science  | September 2014 - July 2019<br>December 2016 |
|  | <b>Indian Institute of Technology, Madras</b>   | August 2010 - July 2014                     |
|  | B.Tech Honours in Computer Science and Engineering<br><b>Minor:</b> Operations Research   |   |
| AWARDS                                       | <ul style="list-style-type: none"> <li>• Best reviewer, NeurIPS 2019</li> <li>• <i>Future Faculty Fellow</i>, University of Maryland, 2018</li> <li>• <i>Dean's Fellowship</i>, University of Maryland, 2014, 2015</li> <li>• <i>S.N. Bose Scholarship</i>, India, 2013</li> <li>• <i>National Talent Search (NTSE) Scholarship</i>, India, 2010</li> </ul> |   |
| RECENT<br>WORK AND<br>RESEARCH<br>EXPERIENCE | <b>Facebook, Menlo Park, USA</b>  | September 2019 -                            |
|  | <i>Machine Learning Research Scientist</i>  |   |
|  | <b>Microsoft Research New York City, USA</b>  | June - September 2018                       |
|  | <i>Intern with Nicole Immorlica, Rob Schapire, Alex Slivkins</i>  |   |
|  | <b>Indian Institute of Science, Bengaluru, India</b>  | May - July 2017                             |
|  | <i>Research visit with Anand Louis, Navin Goyal</i>   |   |
|  | <b>IBM Almaden Research Center, San Jose, USA</b>   | May - August 2016                           |
|  | <i>Intern with Shivakumar Vaithyanathan, Prithviraj Sen</i>   |   |
|  | <b>Adobe Inc., San Jose, USA</b>  | May - August 2015                           |
|  | <i>Intern with Anil Kamath</i>  |   |
|  | <b>Research/Teaching Assistant at UMD, College Park, USA</b>  | August 2014 - July 2019                     |
|  | <i>Research Assistant with Aravind Srinivasan</i>   |   |
| TEACHING<br>EXPERIENCE                       | <b>Instructor, University of Maryland</b>   | July 2019                                   |
|  | <i>Online Lectures on Introduction to Mathematics of Online Learning</i>  |   |
|  | <i>Responsibilities:</i> Several hours of <a href="#">video</a> lectures on introduction to the theory of online learning.  |   |
|  | <b>Instructor, University of Maryland</b>   | January - May 2019                          |
|  | <i>CMSC250H - Discrete Structures (Honors) along with Prof. Bill Gasarch</i>  |   |
|  | <i>Responsibilities:</i> Designing the syllabus, homework, exams and grading policy. Weekly lecturing.  |   |
|  | <b>Teaching Assistant, University of Maryland</b>   | August 2014 - December 2018                 |
|  | <i>CMSC250 - Discrete Structures (2 sems.), CMSC131- Intro to Programming (2 sems.), CMSC451/651- Advanced Algorithms (5 sems.)</i>   |   |
|  | <i>Responsibilities:</i> Guest Lectures, Conducting Discussion Sessions, Office Hours, Grading  |   |
|  | <b>Teaching Assistant, Indian Institute of Technology, Madras</b>   | January - April 2014                        |
|  | <i>Paradigms of Programming</i>   |   |
|  | <i>Responsibilities:</i> Grading Programming Assignments  |   |

( $\alpha$ ) indicates co-first author. (\*) represents the other first author.

( $\alpha\beta$ ) indicates (author) alphabetical ordering by last name.

1. ( $\alpha$ ) “[Analyzing the effect of neural network architecture on training performance](#)” — Joint work with Soham De\*, Zheng Xu, Ronny Huang, Tom Goldstein  
- (C) *The 37th International Conference on Machine Learning (ICML)*, 2020  
- *NeurIPS Workshop on Integration of Deep Learning Theory*, 2018
2. “Matching Algorithms for Blood Donation” — Joint work with Duncan McElfresh, Sergey Pupyrev, Christian Kroer, John Dickerson, Eric Sodomka, Zack Chauvin and Neil Dexter  
- (C) *The 21st ACM Conference on Economics and Computation (EC)* 2020
3. “[Balancing the Tradeoff between Profit and Fairness in Rideshare Platforms during High-Demand Hours](#)” — Joint work with Vedant Nanda, John Dickerson, Aravind Srinivasan, Pan Xu  
- (C) *The 34th AAAI Conference on Artificial Intelligence (AAAI)*, 2020  
- *Extended Abstract in the Third AAAI/ACM Conference on AI, Ethics and Society (AIES)*, 2020 (**Oral Presentation**)
4. ( $\alpha\beta$ ) “[Mix and Match: Markov Chains and Mixing Times for Matching in Rideshare](#)” — Joint work with Mike Curry, John Dickerson, Aravind Srinivasan, Yuhao Wan, Pan Xu  
- (C) *The 15th Conference on Web and Internet Economics (WINE)*, 2019
5. ( $\alpha\beta$ ) “[Adversarial Bandits with Knapsacks](#)” — Joint work with Nicole Immorlica, Robert Schapire, Alex Slivkins  
- (C) *The 60th IEEE Symposium on Foundations of Computer Science (FOCS)*, 2019  
- *INFORMS workshop on Market Design (with EC 2019)*  
(J) [Under review *Journal of the ACM (JACM)*]
6. ( $\alpha$ ) “[Stability of Linear Structural Equation Model of Causal Inference](#)” — Joint work with Navin Goyal, Anand Louis  
- (C) *The 35th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2019  
- *NeurIPS Workshop on Causality*, 2018
7. ( $\alpha\beta$ ) “[Online Resource Allocation with Matching Constraints](#)” — Joint work with John Dickerson, Kanthi Sarpatwar, Aravind Srinivasan, Kun-Lung Wu, Pan Xu  
- (C) *The 18th Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2019
8. “[A Unified Approach to Online Matching with Conflict-Aware Constraints](#)” — Joint work with Hao Cheng, John Dickerson, Yexuan Shi, Aravind Srinivasan, Yongxin Tong, Leonidas Tsepenekas, Pan Xu  
- (C) *The 33rd AAAI Conference on Artificial Intelligence (AAAI)*, 2019
9. ( $\alpha\beta$ ) “[Balancing Relevance and Diversity in Online Matching via Submodularity](#)” — Joint work with John Dickerson, Aravind Srinivasan, Pan Xu  
- (C) *The 33rd AAAI Conference on Artificial Intelligence (AAAI)*, 2019
10. ( $\alpha\beta$ ) “[Assigning Workers to Tasks in Crowdsourcing Platforms: Two-Sided Online Matching](#)” — Joint work with John Dickerson, Aravind Srinivasan, Pan Xu  
- (C) *The 17th Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2018  
(J) [Under review *Operations Research (OR)*]
11. ( $\alpha\beta$ ) “[Combinatorial Semi-Bandits with Knapsacks](#)” — Joint work with Alexandrs Slivkins  
- (C) *The 21st International Conference on Artificial Intelligence and Statistics (AISTats)*, 2018  
— (**Invited for Oral Presentation**)
12. ( $\alpha\beta$ ) “[Allocation Problems in Ride-Sharing Platforms: Online Matching with Offline Reusable Resources](#)” — Joint work with John Dickerson, Aravind Srinivasan, Pan Xu  
- (C) *The 32nd AAAI Conference on Artificial Intelligence (AAAI)*, 2018 — (**Invited for Oral Presentation**)  
(J) [Full version: *Major Revision Transactions on Economics and Computation (TEAC)*]
13. ( $\alpha\beta$ ) “[Algorithms to Approximate Column-Sparse Packing Problems](#)” — Joint work with Brian Brubach, Aravind Srinivasan, Pan Xu  
- (C) *The 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2018  
- (J) *Full version in ACM Transactions of Algorithms (TALG)*, 2019
14. ( $\alpha\beta$ ) “[Attenuation-based Frameworks for Online Stochastic Matching with Timeouts](#)” — Joint work with Brian Brubach, Aravind Srinivasan, Pan Xu  
- (C) *The 16th Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2017  
- (J) *Full version in Algorithmica*, 2019

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|                                 | <p>15. (<math>\alpha\beta</math>) “<a href="#">Improved Algorithms for Online Stochastic Matching</a>” — Joint work with Brian Brubach, Aravind Srinivasan, Pan Xu<br/> - (C) <i>The 24th Annual European Symposium on Algorithms (ESA)</i>, 2016<br/> (J) [Full version in <i>Algorithmica</i> 2020]</p> <p>16. “<a href="#">Ensuring Privacy in Location-Based Services: An Approach Based on Opacity Enforcement</a>” — Joint work with Yi-Chin Wu, Stéphane Lafortune<br/> - (C) <i>The 14th International Workshop of Discrete Event Systems (WODES)</i>, 2014</p>   |
| THESIS                          | <p>1. “<a href="#">Sequential Decision Making with Limited Resources</a>”<br/> <i>PhD Thesis, University of Maryland College Park, 2019</i></p>   |
| WORKSHOP PAPERS/<br>MANUSCRIPTS | <p>1. (<math>\alpha</math>) “Robust Identifiability in Linear Structural Equation Models for Causal Inference” — Joint work with Navin Goyal, Anand Louis<br/> - <i>NeurIPS Workshop on Safety and Robustness in Decision Making</i>, 2019</p> <p>2. (<math>\alpha\beta</math>) “<a href="#">Advances in Bandits with Knapsacks</a>” — Joint work with Alex Slivkins</p>  |
| VOLUNTARY SERVICE               | <p><b>Conference (reviewer and program committee).</b> EC ('18, '20), NeurIPS ('18, '19, '20), ICLR ('19, '20), AISTats ('19, '20), ICML ('19, '20), UAI ('19, '20), SODA ('20), AAAI ('20), WWW ('20), IJCAI ('20), COLT ('20), AI for Social Impact @ AAAI-20, AI for social good @ NeurIPS-19, NeurIPS-19 Reproducibility Challenge, AI for Connected Mobility @ IJCAI-20</p> <p><b>Journal (reviewer).</b> Transactions on Algorithms, Networks, Optimization Letters, JAAMAS, Mathematics of Operations Research, Operations Research, Transactions of Signal Processing, Discrete Optimization, Artificial Intelligence</p> <p><b>Mentor in “New in ML” workshop:</b> Mentoring new researchers on writing machine learning papers.</p> <p><b>Membership.</b> ACM SIGACT</p> <p><b>Graduate Admissions Committee (UMD).</b> CS department, UMD, 2016, 2017, 2018</p> <p><b>Graduate Executive Council (UMD).</b> Secretary 2017</p> <p><b>Capital Area Theory Seminar Organizer.</b> 2016, 2017, 2018</p> |
| GRANTS                          | <p>FOCS 2016 Travel Award, UMD CS Travel Award (2017), SODA 2018 Travel Award, Goldhaber Travel Award (2018), ICSSA Travel Award (2018), AISTats 2018 Travel Grant, AAMAS 2019 Student Scholarship</p>  |
| SELECTED TALKS                  | <p>1. Online Matching Problems<br/> - IBM Almaden Center, Theory Group<br/> - IBM Almaden Center, Machine Learning Group</p> <p>2. Algorithms to Approximate Column-Sparse Packing Problems<br/> - Symposium on Discrete Algorithms (SODA), 2018, New Orleans<br/> - Indian Institute of Technology, Madras</p> <p>3. Combinatorial Semi-Bandits with Knapsacks<br/> - International Conference on Artificial Intelligence and Statistics (AISTATS), 2018<br/> - Indian Institute of Science, Bengaluru<br/> - Indian Institute of Technology, Madras</p> <p>4. Adversarial Bandits with Knapsacks<br/> - Johns Hopkins Theory Seminar<br/> - Google Research, NYC<br/> - Indian Institute of Science, Bengaluru<br/> - INFORMS Workshop on Market Design, 2019<br/> - Foundations of Computer Science (FOCS), 2019, Baltimore</p>  |
| PROGRAMMING                     | <p>C++, Python, Java</p>  |
| REFERENCES                      | <p>References available on request.</p>   |