Ayan Mukhopadhyay

Research Scientist
Vanderbilt University
889 Santa Rita Ave
Los Altos, CA 94022, USA

Email: ayan.mukhopadhyay@vanderbilt.edu
Email: ayanmukg@gmail.com
Website: ayanmukhopadhyay.github.io

Research

Probabilistic modeling, decision-making under uncertainty, multi-agent systems and robust machine learning.

Experience

1. Vanderbilt University, USA (2020-)
Research Scientist,
SCOPE Lab

2. Stanford University, USA (2019-2020)
Post-Doctoral Research Fellow,
Stanford Intelligent Systems Lab
Advisor: Prof. Mykel Kochenderfer
Received "Center of Automotive Research Post-Doctoral Fellowship"

Education

Vanderbilt University, USA (2014-2019)
Ph.D. (Computer Science)
(GPA : 3.98/4)
Advisor: Prof. Yevgeniy Vorobeychik
Thesis: "Robust Incident Prediction, Resource Allocation and Dynamic Dispatch"
Nominated for "Victor Lesser Distinguished Dissertation Award 2020" (1 out 7 nominations worldwide)

West Bengal University of Technology, India (2007-2011)
B.Tech, Computer Science, 2011.
(GPA : 8.91/10)

Publications

Pre-prints

1. Mukhopadhyay, Ayan, et al., "A Review of Emergency Incident Prediction, Resource Allocation and Dispatch Models", *arXiv pre-print* (Under Review).

Peer-reviewed Conferences

1. Mukhopadhyay, Ayan, et al., "Robust Spatio-Temporal Incident Prediction", *Proceedings of the 36th Conference on Uncertainty in Artificial Intelligence (UAI 2020).*

2. Pettet, Geoffrey, et al., "On Algorithmic Decision Procedures in Emergency Response Systems in Smart and Connected Communities", *Proceedings of the 19th Conference on Autonomous Agents and MultiAgent Systems (AAMAS 2020).*

3. Mukhopadhyay, Ayan, et al., "An Online Decision-Theoretic Framework for Responder Dispatch", *Proceedings of the 10th ACM/IEEE Conference on Cyber-Physical Systems (ICCPS 2019).*

4. Mukhopadhyay, Ayan, et al.,"A Decision Theoretic Framework for Emergency Responder Dispatch", *Proceedings of the 17th Conference on Autonomous Agents and MultiAgent Systems. (AAMAS 2018).*

5. Mukhopadhyay, Ayan, et al., "Incident Prediction and Response Optimization", *Proceedings of the 17th Conference on Autonomous Agents and MultiAgent Systems. (AAMAS 2018)* (Doctoral Consortium Paper).

6. Mukhopadhyay, Ayan, et al., "Prioritized Allocation of Emergency Responders based on a Continuous-Time Incident Prediction Model", *Proceedings of the 16th Conference on Autonomous Agents and MultiAgent Systems. (AAMAS 2017).*

7. Mukhopadhyay, Ayan, et. al., "Optimal Allocation of Police Patrol Resources Using a Continuous-Time Crime Model", *7th International Conference on Decision and Game Theory for Security (GameSec 2016).*

8. Zhang, Chao, et al.,"Using abstractions to solve opportunistic crime security games at scale.", *Proceedings of the 2016 International Conference on Autonomous Agents & Multiagent Systems (AAMAS 2016).*

Peer-reviewed Workshops

1. Mukhopadhyay, Ayan; Vorobeychik, Yevgeniy, "A Pipeline for Emergency Response", *The ICLR-19 Workshop on AI for Social Good (AISC at ICLR 2019)* **[Best Paper Award]**.

2. Mukhopadhyay, Ayan, et al., "Prioritized allocation of emergency responders based on a continuous-time incident prediction model", *The AAMAS-17 Workshop on Adversarial Reasoning in Multi-agent Systems (ADVERSE 2017).*

3. Mukhopadhyay, Ayan, et al., "Optimal allocation of police patrol resources using a continuous-time crime model", *The AAAI 2017 Spring Symposium on AI for Social Good (AAAI-AISOC 2017).*

Patents

1. Mukhopadhyay Ayan, et al., "A Security Device", Reference: E-2/2217/2013-KOL, Application: 616/KOL/2012. (Publication and Patent Pending)

2. Narsaria, Ankit et al., "Hybrid Car Power Transition Mechanism", *Official Journal Of The Patent Office, Government of India, Issue No. 31/2012.* (Patent Pending)

Software

StatResp: An open-source tool for first-responders consisting of statistical methods for emergency response.

Service

Peer-reviewed Conferences and Workshops

1. AAAI Conference on Artificial Intelligence, 2021 (AAAI) (PC Member)
2. Conference on Autonomous Agents and Multi-Agent Systems, 2021 (AAMAS) (PC Member)
3. AI for Social Good 2020 (PC Member)
4. Bay Area Machine Learning Symposium, 2020 (BayLearn) (Reviewer)
5. Conference on Autonomous Agents and Multi-Agent Systems, 2018 (AAMAS) (OC Member)
6. Opt-Mas at AAMAS-20 (PC Member)
7. Conference on Autonomous Agents and Multi-Agent Systems, 2019 (AAMAS) (Reviewer)
8. Conference on Autonomous Agents and Multi-Agent Systems, 2017 (AAMAS) (Reviewer)
9. International Joint Conference on Artificial Intelligence, 2018 (IJCAI) (Reviewer)
10. AAAI Conference on Artificial Intelligence, 2021 (AAAI) (Reviewer)
11. Conference on Decision and Game Theory, 2018 (GameSec) (Reviewer)
12. Conference on Decision and Game Theory, 2017 (GameSec) (Reviewer)
13. ACM Conference on Economics and Computation, 2018 (EC) (Reviewer)

Peer-reviewed Journals

1. Artificial Intelligence Review (Reviewer)
2. IEEE Access (Reviewer)
3. IEEE Transactions on SMC: Systems (Reviewer)
4. Springer Machine Learning (Reviewer)

Talks and Tutorials

1. "Smart Emergency Response", NSF Doctoral Consortium on Computational Sustainability, 2020 (CompSust-DC) (Tutorial)
2. "Robust Incident Forecasting and Response", University of Utah Data Science Seminar 2020 (Invited Talk)
3. "Robust Incident Forecasting for Conservation", University of Cambridge Environmental Data Science AI4ER Seminar Series 2020 (Invited Talk)
4. "Transition to Research and Doctoral Programs", Stanford University CS+Social Good Impact Lab Panel 2020 (Invited Talk)

Others

1. Member, Stanford Energy Systems Committee 2020
2. Technical Mentor, Stanford CS+Social Good Impact Lab 2020.

Teaching & Mentoring

Teaching (EECS, Vanderbilt University)
Teaching Assistant, Artificial Intelligence (Under-Graduate Level), 2016
TA Evaluation : 4.2/5 (16% above dept. average)

Teaching Assistant, Machine Learning (Graduate Level), 2017
TA Evaluation : 4.6/5 (21% above dept. average)

Students Mentored

1. Graduate Students
a) Tina Diao (PhD student, Stanford University)

2. Undergraduates (as part of research programs at the Computational Economics Research Lab)
a) Zilin Wang

3. High-School Students
a) Chaitu Konjeti (Research Intern, Vanderbilt University)
b) Elom Dumenyo (Research Intern, Vanderbilt University)
c) Sidhart Krishnan (Research Intern, Stanford University)

Languages

English (Native), Hindi (Native), Bengali (Proficient)

References

1. Yevgeniy Vorobeychik (PhD Advisor)
Associate Professor,
School of Engg. and Applied Sciences,
University of Washington at St. Louis
yvorobeychik@wustl.edu

References

2. Abhishek Dubey,
Asst. Professor,
Electrical Engineering and Computer Science,
Vanderbilt University
abhishek.dubey@vanderbilt.edu

3. Mykel Kochenderfer (Post-Doc Advisor),
Asst. Professor,
Aeronautics and Aerospace Engineering/Computer Science,
Stanford University
mykel@stanford.edu