Mukesh Ghimire

Curriculum Vitae

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Education

2021 - Now Ph.D. in Mechanical Engineering at **Arizona State University**

- Advisors: Yi Ren, Zhe Xu
- Research Topics: Incomplete Information Games, Reinforcement Learning, HJI PDEs.

2016 - 2021 B.Sc.(Hons) in Mechanical Engineering at **University of Mississippi**

- GPA: 3.98/4.00
- Minors: Computer Science and Mathematics
- Thesis: A Study of Deep Reinforcement Learning in Autonomous Racing Using DeepRacer Car.

Publications

Journal Publications

1. Zhang, L., M. Ghimire, W. Zhang, Z. Xu, and Y. Ren (2024). Value Approximation for Two-Player General-Sum Differential Games with State Constraints. In: *To Appear in IEEE Transactions on Robotics*.

Conference Proceedings

2. Ghimire, M., L. Zhang, W. Zhang, Y. Ren, and Z. Xu (2024). Solving Two-Player General-Sum Games Between Swarms. In: *2024 American Control Conference (ACC)*. IEEE.
3. Zhang, L., M. Ghimire, Z. Xu, W. Zhang, and Y. Ren (2024). Pontryagin Neural Operator for Solving Parametric General-Sum Differential Games. In: *Accepted to L4DC*.
4. Zhang, L., M. Ghimire, W. Zhang, Z. Xu, and Y. Ren (2023). Approximating discontinuous nash equilibrial values of two-player general-sum differential games. In: *2023 IEEE International Conference on Robotics and Automation (ICRA)*. IEEE, pp.3022–3028.
5. Amatya, S., M. Ghimire, Y. Ren, Z. Xu, and W. Zhang (2022). When Shall I Estimate Your Intent? Costs and Benefits of Intent Inference in Multi-Agent Interactions. In: *2022 American Control Conference (ACC)*. IEEE, pp.586–592.

Submissions and Working Papers

6. Ghimire, M., L. Zhang, Z. Xu, and Y. Ren (2024). "State-Constrained Zero-Sum Differential Games with One-Sided Information".

Teaching

- Teaching Assistant (TA) for the graduate course *MAE 502 Partial Differential Equations* in the Department of Mechanical and Aerospace Engineering at ASU (Spring 2024). Instructor: Huei-Ping Huang.
- Teaching Assistant (TA) for the graduate course *MAE 547 Modeling and Control of Robots* in the Department of Mechanical and Aerospace Engineering at ASU (Spring 2022 & Fall 2023). Instructors: Wanxin Jin and Hyunglae Lee.

Honors and Awards

2023 GPSA Travel Fund Award: $950.00
2023 Experiential Learning Grant: $1015.00
2020 SMBHC Research Fund Award: $1000.00

Invited Talks

(excludes contributed paper presentations at conferences)

- Invited Talk at Sparky's Cup Education (October 2022) on the topic *Game-Changing AI Applications in Sport: Maximizing Potential and Minimizing Risk*

Internships

2019 - 2020 Product Development Intern at **Thyssenkrupp Elevator Manufacturing**

- Successfully reduced manufacturing costs of the elevator cab by 10% through process improvements.
- Developed over 100 Configure-To-Order(CTO) prints using Creo while adhering to the customer and regulatory requirements.
- Reduced data pre-processing time for sheet metal shearing jobs by more than 50% through implementing an automated process using Python.

Relevant Courseworks

Game Theory, Causal Inference, Stochastic Processes, Convex Optimization, Advanced Modern Control, Numerical Methods for PDEs, Reinforcement Learning, Multi-Robot Systems.

References

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