MUKESH GHIMIRE

mghimire@asu.edu ◇ 662-202-2139 ◇ mukeshghimire.com.np

SUMMARY

PhD Student at Arizona State University with research interests in Artificial Intelligence, and Game Theory with applications in robotics and autonomous driving.

EDUCATION

PhD in Mechanical Engineering Expected Graduation: May 2025
Arizona State University, Tempe, AZ
GPA: 4.0/4.0
Advisors: Yi Ren, Zhe Xu

Bachelor of Science in Mechanical Engineering May 2021
Minors: Computer Science and Mathematics
University of Mississippi, University, MS
GPA: 3.98/4.0

PUBLICATIONS

Lei Zhang, **Mukesh Ghimire**, Wenlong Zhang, Zhe Xu, Yi Ren, Approximating Discontinuous Nash Equilibrial Values of Two-Player General-Sum Differential Games. *Pre-print. Submitted to ICRA 2023.*

Sunny Amatya, **Mukesh Ghimire**, Yi Ren, Zhe Xu, and Wenong Zhang *"When Shall I Estimate Your Intent? Costs and Benefits of Intent Inference in Multi-Agent Interactions"* in American Control Conference (ACC), 2022.

RESEARCH EXPERIENCE

Socially Adept Self-Driving June 2021 - Present
Graduate Research Associate, Design Informatics Lab

- Working on modeling vehicle interactions as general-sum complete-information differential games to generate safe equilibrial policies for autonomous vehicle agents
- Extending the current state-of-the-art methods of approximating continuous values of zero-sum games to discontinuous values of general-sum games via physics informed machine learning.

Advisor: Yi Ren

Reinforcement Learning in Autonomous Racing Sep 2020 - April 2021
Honors Thesis

- Trained Deep Reinforcement Learning (DRL) models to run the Amazon's DeepRacer car autonomously
- Wrote reward functions for different track settings and race settings to get effective result for different types of races
- Deployed models in the 1/18 scale model of the DeepRacer car to test in real-life scenario.

Advisor: Yixin Chen

WORK EXPERIENCE

Engineering Co-op Aug 2019 - Aug 2020
Thyssenkrupp Elevator (now TKE), Middleton, TN

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

Advisor: Derrick Craddock

GRANTS & AWARDS

- SMBHC Research Fund Award ($1,000) 2020
- Co-op Scholarship ($678 per semester) 2019 - 2020
- Academic Excellence Award ($22,000 per semester) 2016 - 2021

LEADERSHIP & SERVICE

Community Assistant Aug 2017 - May 2019
Department of Student Housing - University of MS

· Maintained a positive living atmosphere for 50+ residents, and resolved conflicts whenever necessary
· Planned and organized events promoting mental, physical, and sexual health along with stress-relieving events during finals week
· Assisted in selection and evaluation of incoming Community Assistants.

STEM Camp Counselor May 2018 - July 2018
Office of the Pre-College Programs, University of MS

· Mentored students from middle school and high school on their week-long STEM camps
· Organized camps with wide range of themes: programming, biology and game development
· Performed scientific demonstrations such as: projectile motion, heat transfer, 3-D printing, concrete manufacturing and testing.

VOLUNTEER & COMMUNITY INVOLVEMENT

Poverty Simulation April 2019
University of Mississippi

· Organized Poverty Simulation to raise awareness about poverty in the state of Mississippi
· Helped participants sensitize to the realities of poverty
· Brainstormed the misconceptions that the simulation helped to overcome regarding life in poverty.

Alternative Break March 2017
Department of Student Housing, University of Mississippi

· Helped pack over 1000 meals for children in the Las Vegas area (collaborated with Three Square Food Bank)
· Recycled soaps and other sanitary products discarded from lodging facilities in the Las Vegas area (collaborated with Clean the World)
· Helped clean the Grand Canyon National Park.

SKILLS

Python, MATLAB, Pytorch, Reinforcement Learning, Convex Optimization, Game Theory

RELEVANT COURSES

Game Theory, Reinforcement Learning, Design Optimization, Causal Inference, Numerical Methods for PDEs, Advanced Modern Control.

REFERENCES

Available Upon Request