

# ARMAN POURGHORBAN

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www.researchgate.net/profile/Arman-Pourghorban    scholar.google.com/citations?user=KdlPy4wAAAAJ&hl=en&oi=ao

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## EXPERIENCE

### Controls Engineer

Tesla

Sept 2025 – Current    Brooklyn Park, MN

- Path planning and Motion Controls; Model predictive control and dynamics-based trajectory optimization.

### Controls Engineer Intern

Tesla

Jan 2025 – Aug 2025    Brooklyn Park, MN

- Developing and implementing control algorithms for 6-DOF robotic systems.
- Testing and verifying electrical wiring (safety circuits, IO, communications, etc.)
- Collaborating on PLC programming and HMI/SCADA system development.

### Research Assistant in Controls & Robotics

University of North Carolina at Charlotte

Sept 2021 – Dec 2024    Charlotte, NC

- Target Defense with an Obstacle Distributed Environment: A Reinforcement Learning approach (PPO)
- Consensus Multi-agent Pursuit-Evasion Games with Communication Constraint
- Pursuit-Evasion Games with Limited Agent Observation using Discrete-time Extended Kalman Filter
- Information-Theoretic Abstractions for Environment Planning in Pursuit Evasion Games
- Multi-Robot Path Planning with Convex Optimization Approaches
- Competitive Perimeter Defense with Sensing Capabilities
- Human Follower Robot.
- Stability and Bounds of a State Feedback Control for Trajectory Tracking
- Obstacle avoidance with Feedback-based approach using Opti-Track system
- Reinforcement Learning-based Switching Controller For UAV Wind and Airflow Precision

### Teaching Assistant

University of North Carolina at Charlotte

Sept 2021 – Dec 2024    Charlotte, NC

- Convex Optimization (ECGR 4115-5115)
- Network Theory II (ECGR 2112)

### Teaching Lab Assistant

University of North Carolina at Charlotte

Sept 2021 – Dec 2024    Charlotte, NC

## EDUCATION

Ph.D. in Electrical Engineering, Minor in Control Systems & Robotics (Ph.D. Candidate)

University of North Carolina at Charlotte  
Dec 2025

MSEE in Electrical Engineering, Minor in Control Systems & Robotics

University of North Carolina at Charlotte  
May 2023

BSc in Electrical Engineering

Isfahan University of Technology  
Dec 2020

## SKILLS

Control Theory

Robotics

Game Theory

Multi-Agent Systems

Decision-Making

Reinforcement Learning

Deep Learning

Optimization

Path Planning

Automation

Autonomous Systems

Multi-Robot Systems

Electronic Instrumentation

Electrical Vehicles

System Modeling & Estimation

EMS Systems

SCADA

Python(Pandas, PyTorch, NumPy, Scikit-learn. etc.)

MATLAB

R (ggplot2)

C/C++

ROS

Gazebo

Linux

LaTeX(Overleaf/R Markdown)

Microsoft Office

Git

WinCC

LabVIEW

STEP7

Simulink

Altium Designer

AutoCAD Electrical

PSpice

Slurm

ROBOGUIDE

TIA Portal

Arduino

Raspberry Pi 4

ATMeag16

PLC SIMATIC S7-300/400/1500

Data Logger

HRA933 (Robot Arm)

TurtleBot

Agilex FPGA

FANUC

KUKA

- Systems & Electronics Lab (ECGR 3155)

## Internship Instrumentation Researcher and Developer Isfahan innovation Tech- Esfahan's Mobarakeh Steel Company

📅 May 2020 – Aug 2020      📍 Isfahan, Iran

- Designed and manufactured a sensor to detect the proportion of the slag in melted steel
- Developed the HMI for the sensor

## Researcher and Programmer

### Isfahan Science and Technology Town

📅 May 2018 – May 2020      📍 Isfahan, Iran

- Designed and manufactured Signal conditioner known as Pre-Amplifier
- Designed a controller for the Linear Machine

## PLC Programmer

### Technical and Vocational Training Organization

📅 Aug 2016 – May 2018      📍 Isfahan, Iran

- Automation for a brick company in Dolat Abad industrial region
- Level control of 16 reservoirs in Isfahan Science and Technology Town

# HONORS AND AWARDS

- Rank 157 Among 162k, Iran National Entrance Exam for Universities
- Scholarship, Tuition Fee waiver Bachelors
- Rank 1, Control Group Students in Bachelors
- Scholarship, Tuition Fee waiver + Stipend Coverage Doctorate Program
- Funded Research, 2-Year Research Assistant supported by the ARL grant (Army Research Lab)
- Best Student Research Award DTS 2023
- Conference Chair ACC 2025 session "Control Applications II"
- Recognized Intern, Tesla – Spring 2025

# PAPER REVIEW

- Springer Nature Journal: Autonomous Agents and Multi-Agent Systems
- 2023 62nd IEEE Conference on Decision and Control (CDC)
- 2024 American Control Conference (ACC)
- 2024 63rd IEEE Conference on Decision and Control (CDC)
- 2025 64th IEEE Conference on Decision and Control (CDC)

# SELECTED COURSES

- Reinforcement Learning and Optimal Control (4/4)
- Real Analysis I - Linear Algebra - Applied Probability I (4/4)
- Machine Learning (4/4)
- Convex Optimization (4/4)
- Information Theory (4/4)
- Artificial Neural Network (4/4)
- Intelligent (Fuzzy) Control (4/4)
- Dynamic System Estimation (4/4)
- Robotics (4/4)
- Modern & Non-linear Control (4/4)
- Instrumentation (4/4)
- Mechatronics (4/4)

# PUBLICATIONS

## 📖 Journal Articles

- A. Pourghorban and D. Maity, "Target defense against multiple arriving intruders," *IEEE Transactions on Robotics*, Submitted 2024.
- A. Pourghorban and D. Maity, "Target defense in conical environments with sensing limitations," *IEEE Robotics and Automation Letters*, Submitted 2024.
- A. Pourghorban and D. Maity, "Consensus-based target defense with simultaneous attacker capture," *IEEE Control Systems Letters*, 2024.

## 📖 Conference Proceedings

- A. Pourghorban and D. Maity, "Two attacker one defender target defense with deception," in *2025 American Control Conference (ACC)*, IEEE, Submitted 2024.
- A. Pourghorban, P. Smith, and D. Maity, "Target defense against sequentially arriving intruders: algorithm for agents with dubins dynamics," in *2025 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, Submitted 2024.
- A. Pourghorban and D. Maity, "Target defense against a sequentially arriving co-operative intruder team," in *Open Architecture/Open Business Model Net-Centric Systems and Defense Transformation 2023*, SPIE, vol. 12544, 2023, pp. 65–77.
- A. Pourghorban and D. Maity, "Target defense against periodically arriving intruders," in *2023 American Control Conference (ACC)*, 2023, pp. 1673–1679. DOI: 10.23919/ACC55779.2023.10156423.
- A. Pourghorban, M. Dorothy, D. Shishika, A. Von Moll, and D. Maity, "Target defense against sequentially arriving intruders," in *2022 IEEE 61st Conference on Decision and Control (CDC)*, IEEE, 2022, pp. 6594–6601.

# PRESENTATION

**2nd annual Defense Technology Summit (DTS) hosted by the Office of US Senator Thom Tillis, Office of US Senator Ted Budd**

Resilient Autonomy for Tactical Behaviors

**Fayetteville Technical Community College**

📅 July 2023      📍 Fayetteville, NC