# Parastou Ahadpour Bakhtiari

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## Education

**M.S. in Biosystems Engineering** — *Starkville, MS, USA*
*Mississippi State University* — *July 2024 – August 2026 (Expected)*
*Thesis: Advancing MAVS for Real-Time SLAM in Agricultural Robotics*
*Advisor: Dr. Xin Zhang*
*GPA: 3.78/4.00*

**M.S. in Industrial Engineering** — *Tehran, Iran*
*Khaje Nasir University of Technology* — *September 2019 – September2022*
*Thesis: Stock Price Prediction Using Artificial Intelligence*
*GPA: 3.77/4.00*

**B.S in Industrial Engineering** — *Semnan, Iran*
*Garmsar University* — *September 2014 – September 2018*
*Dissertation: The Feasibility Study of a Fire Extinguisher Production Using Simulation under Uncertainty*
*GPA: 3.41/4.00*

## Research Interests

•Methods: Machine/Deep Learning For Perception and Modeling**,** 2D/3D Mapping**,** Sensor Fusion**,** Autonomous Navigation**,** Computer Vision**,** Data-Driven Decision-Making

•Applications: Robotics**,** Simulation of Automated Systems**,** Digital Twins **,** Healthcare

## Work Experience

- **Research Assistant — Agricultural Autonomy Simulation** — *2024 – Present*

*Mississippi State University, Starkville, MS, USA*

  - Advanced MAVS simulation software by extending ROS2 integration for real-time autonomy testing using C++, and Python.
  - Integrated SLAM algorithms (RTAB-Map, ORB-SLAM3, NICE-SLAM) with MAVS and the Amiga robot using ROS2 Humble.
  - Designed URDFs, TF trees, and performed synchronized data collection (RGB-D, IMU, GPS) for SLAM benchmarking.
  - Conducted research at the Agricultural Autonomy Institute and Center for Advanced Vehicular Systems (CAVS), under the MS Agricultural and Forestry Experiment Station (MAFES).

- **Expert in Designing and Developing a Trading System** — *2022 – 2024*

*Arman Eghtesad Asset Management, Tehran, Iran*

  - Designed and developed analysis systems to extract information from large scale data using Python, C++, and SQL.
  - Implemented advanced order types, including limit orders, stop-loss orders, and trailing stops, to enhance trading flexibility and risk mitigation.

## Research Work

- **Advancing MAVS Simulation with Real-Time SLAM Integration with Dr. Xin Zhang** — *2024 – Present*

This research enhances the MAVS simulation platform by integrating SLAM algorithms via a ROS2 bridge. It enables real-time localization and mapping for autonomous navigation in agricultural robots.

Developed ROS2-based pipelines to simulate and evaluate SLAM performance on the Amiga Farm-ng robot using ZED2i camera, RTK-GPS.

- **Classification of Weed Species Using Transfer Learning with Dr. Xin Zhang and Dr. Hussein Gharakhani** *Fall 2024*

This project developed a weed classification pipeline using data augmentation techniques and transfer learning.
https://github.com/parastoobakhtiarii/weed-classification

- **Autonomous Tractor Simulation with Dr. Hussein Gharakhani** *Fall 2024*

Contributed to the open-source AAI-Tractor-Project, focused on agricultural autonomy simulation using ROS2. Created and refined URDF models for the tractor platform, including link configuration and TF frame setup. Assisted in developing and debugging Gazebo simulation environments to support autonomous navigation testing.
https://github.com/charlesmraines/AAI-Tractor-Project

- **Stock Price Prediction Using Artificial Intelligence Using Python with Dr. Ebrahimi and Dr. Mirzaee** *Summer 2022*

This study introduces a model that accomplishes two primary objectives: firstly, providing buy or sell recommendations, and secondly, forecasting stock prices through the application of Deep Learning techniques.
https://github.com/parastoobakhtiarii/my-work

- **Studying The Impact of Information Asymmetry And Dividends payable on Stock Price Crash Risk Using Eviews with Dr. Samimi** *Fall 2020*

Recognizing the substantial influence of stock price crash risk on trading decisions, this study investigates the effects of information asymmetry and dividend payments on stock price crash risk.

- **Developing Zarnowitz and Mincer Regression to Estimate the Expected Shortfall with Dr. Mirzaee** *Spring 2020*

This study evaluates various risk assessment criteria by utilizing the predicted expected shortfall as an interval parameter for comparison.

- **The Feasibility Study of a Fire Extinguisher Production Using Simulation under Uncertainty with Dr. Ahmadi** *Spring 2019*

This project equips decision-makers with the information needed to make an informed choice regarding the project's viability and risk mitigation strategies.

- **Timing of a building project using Microsoft Project- a case study with Dr. Ahmadi** *Summer 2019*

This project efficiently and effectively plans, executes, and closes a project, meeting its objectives while managing resources, time, scope, quality, and risks.

## *Skills*

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| **•Programming Languages** | Python, GAMS, MSP, LaTex, Microsoft Office, Rstudio, C++. |
| **•Machine Learning Skills** | TensorFlow, Keras, PyTorch, Transfer Learning, OpenCV, Scikit-learn, Numpy, Pandas |
| **•3D Modeling & Hardware** | SolidWorks, FreeCAD, Sensor Calibration |
| **•Languages** | English (TOEFL=88: W:24, S=21, L=23, R=20), Persian (Native), Arabic (Elementary) |
| **•Personal** | High responsibility, Interested in learning, High teamwork ability, Critical thinking skills |

## Certificates

- Digital Twins by University of Michigan — Coursera 2025
- Advanced Computer Vision with TensorFlow — Coursera 2024
- Image Recognition for Beginners Using CNN in R Studio — Udemy 2023
- Complete Python and Machine Learning in Financial Analysis — Udemy 2022
- 2022 Python Bootcamp for Data Science Numpy Pandas and Seaborn — Udemy 2022
- The Python Programming Comprehensive Bootcamp — Udemy 2021
- Data Science: Python for Data Analysis Full Bootcamp — Udemy 2021

## Conference Presentations

Oral Presenter, AI in Agriculture Conference – "Advancing SLAM in Agriculture by integration of Neural Radiance Field" *2025*

## Publications

Bakhtiari, P. A., Zhang, X., Watanabe, K., Goodin, C., Thomasson, J. A. "Advancing MAVS Simulation Environment for Visual SLAM Benchmarking Purpose in Cotton Field" In Preparation, 2025

## Symposium Presentations

Selected for Oral Presentation, MSU Graduate Student Research Symposium Fall 2025, "Real-Time SLAM / Vision / Sensor Fusion in Autonomous Agriculture." Oct-2025

## Honors and Awards

- Achieved rapid career advancement, promoted to a leadership position *2020*
- Ranked 289th among 7000 Participants in the University's Entrance Exam *2019*
- Author of Garmsar Student's Scientific Association Magazine *2015–2017*
- Winner of Two Inter-School Badminton Competitions *2010–2013*
- Best Actress Award Winner in Tehran Province Theater Competition *2007–2009*

## References

**Dr. Alex Thomasson** — *Mississippi State University*
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**Dr. Xin Zhang** — *University of Georgia*
*Assistant Professor*
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**Dr. Christopher Goodin** — *Mississippi State University*
*Associate Research Professor*
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