

Pouria Mehrabi

RESEARCHER - CONTROL ENGINEER - TECHNOLOGY-BASED ENTREPRENEUR

☎ (+98) 9128467118 | ✉ poumehrabi@gmail.com | 🏠 www.aras.kntu.ac.ir/mehrabi | 📷 [poumehrabi](#) | 📺 [pouriamehrabi](#)

“We’re not meant to save the world, we’re meant to leave it.”

Education

K.N. Toosi University of Technology

Tehran, Iran

M.Sc. IN ELECTRICAL ENGINEERING (CONTROL ENGINEERING)

Sep. 2015 - Sep. 2018

- **GPA:** 17.23/20 (3.72/4 according to WES), Among Top 5 in Class
- **Thesis Title:** A Novel Probabilistic Framework for Dynamic Object Recognition and Tracking in 3D Environments using LIDAR Sensor
- **Supervisor:** [Prof. Hamid D. Taghirad](#)
- **Selected Courses:** Selected Courses: Nonlinear Control (19.5/20 - Top Mark), System Identification(16.5/20 - Top Mark), Stochastic Processes(17.5/20 - Top Mark), Optimal Control(16.75/20), Biomechanics(19/20)

Babol Noushivani Institute of Technology (NIT)

Mazandaran, Iran

B.Sc. IN ELECTRICAL ENGINEERING (CONTROL ENGINEERING)

Sep. 2010 - Sep. 2015

- **GPA:** 14.75/20
- **Thesis Title:** IMU-based Path Estimation of On-Campus Quadrotor
- **Supervisor:** [Prof. Alireza Khosravi](#)
- **Senior Project:** Error Compensation of Strapped-down IMU unit to NIT Driverless-Car using Nonlinear Observer
- **Supervisor:** [Prof. Bijan Zakeri](#)

Industrial Management Institute (IMI)

Tehran, Iran

MBA IN INTELLIGENT BUSINESS & TRANSFORMING MANAGEMENT

Sep. 2017 - Sep. 2019

- **GPA:** 19/20 (4/4 according to WES), Ranked 2nd In Class
- **Selected Courses:** System Thinking, System Dynamics, Value Creation, Business Process Engineering, Organizational Architecture Design, Supply Chain Management, Behavioral Economics (Public Policy)

Research Experience

Student-t Process-based Gaussian Processes for Outlier Rejection in LiDAR Point Clouds

Tehran, Iran

RESEARCHER & FREELANCER

Ongoing

- The Student-t process are used as alternative to Gaussian Process for better outlier detection in Ground Segmentation task for Driver-less cars. The results are simulated using python and a package for Student-t process is developed.

Value Creation of Driver-less Cars as a Disruptive Technology

Tehran, Iran

RESEARCHER

Jun. 2018 - Jan. 2020

- As a project for Technology Management course, a research was conducted on the value creation of the driver-less cars. Value Analysis was conducted using the method proposed by Den Ouden.

DaTMO Software Package (DaTMO)

Tehran, Iran

RESEARCHER & DEVELOPER AT ARAS Hi-Tech Robotics

Sept. 2018 - October. 2019

- The Detection and Tracking of Multiple Moving Objects (DaTMO) Software Package project has been started to develop a software package for detection and tracking of dynamic objects in different road scenes. The idea came to my mind as a necessary tool for my own previous research. DaTMO-SP consists of two different software modules: Detection and Tracking. Until now the package is only designed and developed as a LiDAR based solution for DaTMO problem and the detection module is elaborately applied.

Physically Motivated Method to Estimate Ground Points in LiDAR data

Tehran, Iran

RESEARCHER AT ARAS Hi-Tech Robotics

Sep. 2016 - Exp. Jun. 2018

- An intuition came to my mind about ground segmentation task of driver-less cars. The contemporary available methods were not considering rough and uneven ground condition. Therefore, a physically-motivated method was proposed to take physical realities of the ground into consideration. The method was implemented in C++.

A Novel Gaussian Process Regression method for locally dependent data

Tehran, Iran

RESEARCHER AT ARAS HI-TECH

2017 - 2019

A Novel Gaussian Process based method is developed for ground segmentation task in LiDAR data. The local smoothness of the ground is taken into account for the method to be more reliable in rough scenes. A non-stationary covariance kernel is chosen to govern the functional relationship of the height in radial distance while the corresponding length-scales are obtained using another Gaussian Process.

- Autonomous vehicle navigation system design, indoor navigation with SLAM. The project was concerned to establish a IMU-based navigation system for cars. My project was to build an AHRS board and system and simulate the rotation and displacement monitoring and control in MATLAB.

Publications

A Gaussian Process-Based Ground Segmentation for Sloped Terrains

Accepted (Link)

POURIA MEHRABI, HAMID D. TAGHIRAD

2021

- The proposed method tends to obtain a continuous realistic model of the ground. The LiDAR three-dimensional point cloud data is used as the sole source of the input data. The physical realities of the data are taken into account to properly classify sloped ground as well as the flat ones. Furthermore, unlike conventional ground segmentation methods, no height or distance constraints or limitations are required for the data for the lack of access to the physical behavior of the ground. Furthermore, a density-like parameter is defined to handle ground-like obstacle points in the ground candidate set.

A Novel Gaussian Process Based Method for Ground Segmentation in Rough Scenes Considering Local smoothness of the Data

manuscript in progress (Link)

POURIA MEHRABI, HAMID D. TAGHIRAD

2021

- A Gaussian process based ground segmentation method is proposed in this paper, which is fully developed in a probabilistic framework due to implementation of Bayesian inference. Two joint Gaussian processes are introduced to separately model the observation and local characteristics of the data. While, observation process is used to model the ground, the latent process is put on length-scale values to estimate point values of length-scales at each input location. Input locations for this latent process are chosen in a physical motivated procedure to represent an intuition about ground condition. Furthermore, an intuitive guess of length-scale values is represented by assuming of the existence of hypothetical surfaces in the environment that every bunch of data points may be assumed to be resulted from measurements from this surfaces.

DaTMO: A ROS-based Software package for Dynamic Object Detection & Tracking using LiDAR

manuscript in progress (Link)

POURIA MEHRABI, HAMID D. TAGHIRAD

2021

- The DaTMO Package is developed using ROS and C++ to conduct the task of the detection and tracking of dynamic objects using 3D LiDAR data.

Research Interest

ROBOTICS & CONTROL

Driver-less Cars, Space Robotics, Mars Rover, Navigation, Inertial Measurement Units

CONTROL THEORY

Decision Theory, Optimization, Stochastic Processes, Optimal Control, Nonlinear Control, Filtering Theories

ARTIFICIAL INTELLIGENCE

Mathematical Machine Learning, Probabilistic Methods, Bayesian Methods, Deep Learning, Neural Networks

BUSINESS RELATED

Value Analysis, Innovative Business Models, Blockchain, Business Model Transformation

Teaching Experience

Spr. 2018	Teaching Assistant (grad) , Nonlinear Systems & Control (Prof. Hamid D. Taghirad)	KNTU
Fall 2016	Teaching Assistant (grad) , Systems Identification (Prof. Hamid Khaloozadeh)	KNTU
Fall 2016	Teaching Assistant (undergrad) , Signal And Systems (Prof. Mehdi Delrobaei)	KNTU
Spr. 2015	Assistant Lecturer (undergrad) , Advanced Modern Control (Prof. Alireza Khosravi)	NIT
Fall 2015	Teaching Assistant (undergrad) , Advanced Control System Engineering (Prof. Alireza Khosravi)	NIT
Spr. 2014	Teaching Assistant (undergrad) , Advanced Engineering Mathematics (Prof. Jalil Sadati)	NIT
Fall 2014	Teaching Assistant (undergrad) , Advanced Control System Engineering (Prof. Alireza Khosravi)	NIT
Fall 2014	Laboratory Instructor , Linear Control Methods (Prof. Alireza Khosravi)	NIT

Skills

Programming	C/C++, MATLAB, Python, OpenCV library, LaTeX, PCL, ROS, Qt
Robotics Software	MATLAB, Simulink, Webots(robot simulator), ROS, AnyLogic
General	Microsoft office (Excel, Word, Access, PowerPoint), Ubuntu
Language	English: <i>TOEFL iBT:</i> 112/120 - (Reading: 30, Listening: 30, Speaking: 24, Writing: 28) <i>GRE:</i> Verbal 147, Quant 159 Persian as Mother Tongue Arabic Few
Other	Entrepreneurship, Motivator & Leader, Eye for Details, Estimation Theory, Machine Learning, Business Administration, Business Model Design, Innovative Business Models

Extracurricular Activity

Music Assistance Technology for Education (MATE)

Tehran, Iran

FOUNDER & CEO

Jun. 2018 - 2021

Starting on 2018, MATE aims to facilitate music education for kids. Focusing on technology-based methods, MATE started to re-engineer kids music education processes by utilizing novel technology-based methods such as block-chain, IOT, Machine Learning etc. MATE was in partnership with [JAM Center](#) to establish first Iranian smart music education institute. MATE's vision is to establish educational methodologies for being an aid for mentally disabled children.

Ti4Ti: Borders, Unchained! (Ti4Ti.io)

Tehran, Iran

CO-FOUNDER, DESIGNER & CTIO

Apr. 2018 - Sep. 2019

- Ti4Ti is an international block-chain-based tourism ecosystem, which aims to introduce itself as the most advanced and reliable enterprise in the field of codification and execution of high-tech-based innovative business models for the tourism industry in the next 5 years. In the development phase, in addition to technology design and being responsible for the examination of multiple innovative business models to reach the final design, I had led the Artificial Intelligence team which was responsible for the core development of three distinguished Recommender Systems for underlying tasks of the Ti4Ti platform.

ARAS Hi-Tech Group Website (ARAS)

Tehran, Iran

CO-FOUNDER, TECHNICAL SUPPORT & EDITOR IN CHIEF

Mid 2017 - On-going

- The [ARAS | Hi-Tech](#) Website was established and different sections were added to facilitate group's inter-connections & knowledge sharing.

ARAS Hi-Tech Group (ARAS)

Tehran, Iran

MEMBER & FREELANCE RESEARCHER

Mid 2017 - On-going

- Using Probabilistic Frameworks & deep learning algorithms for building Different Modules Relating to [ARAS Driver-less Car](#).

INNOCUP 2017 ([Link](#))

Tehran, Iran

CO-FOUNDER, EXECUTIVE MANAGER, SUPPLIER, ALSO HOST & SPEAKER

2016 - 2017

- Innocup was K.N. Toosi's first development and innovation festival including ideas and project competitions and part-time business school during the festival, Also held in summer.ed expertise in business strategy areas and insight for various industry from weekly industry analysis session.

Naghshe-e-Diba Advertising Agency

Tehran, Iran

MARKETING MANAGER

2014 - 2016

- Leader of the branding and design team.

Mashgh-e-Honar magazine

Babol, Mazandaran

CO-FOUNDER & EDITOR-IN-CHIEF

2011 - 2012

- Art & Critics Magazine won best national art magazine's award.

Nassim Magazine

Babol, Mazandaran

CO-FOUNDER & EDITOR-IN-CHIEF

2011 - 2013

- Socio-political Magazine, 1,000 circulations, won best national political magazine's award.

Mehbang Magazine

Babol, Mazandaran

CO-FOUNDER, GRAPHIC DESIGNER & EDITOR-IN-CHIEF

2011 - 2013

- Amateur Astronomy Magazine, 5,000 circulations, won best science promoting national student magazine award.

Babol Noushivani University's Astronomy Club

Babol, Mazandaran

CO-FOUNDER, CEO

2010 - 2015

- Babol Noushivani University's Astronomy Club. First Academic Astronomy NGO of northern part of Iran. Several astronomy workshops, event, meetings and conferences were held every year.

Hariri Scientific Foundation

Babol, Mazandaran

CO-FOUNDER, MANAGER, TEACHER & ACTIVIST

High School

- In Hariri Foundation I got involved with astronomy class. Then I co-founded the Hariri Foundation's Astronomy club where we published an astronomy magazine in which I was the Editor-in-Chief. We also held yearly events and conferences.