Sina Aghli

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Education

University of Colorado Boulder — Boulder, CO
PhD in Computer Science — 2014 – 2018
Mentors: Professors Christoffer Heckman, John Hauser, Gabe Sibley.

George Washington University — Boulder, CO
PhD in Aerospace Eng (Transferred to CU Boulder) — 2012 – 2014
Mentors: Professor Gabe Sibley.

University of Tabriz — Tabriz, Iran
MA in Mechatronics — 2010 – 2012

Azad University — Khoy, Iran
BA in Computer Hardware Engineering — 2004 – 2008

Interests

Nonlinear/Adaptive/Optimal Controls, Motion Planning, Model Identification, Robot Modeling, SLAM, Sensor Fusion, State Estimation,

Industry experience

Research Consultant at PickNik Robotics R&D
Jan 2021 – Present
Help design non-linear controllers for variety of robotic platforms (PickNik Robotics).

Research Consultant at Scythe Robotics Inc
Aug 2019 – Aug 2020
Help design non-linear adaptive controller for a grass mowing robot (Scythe Robotics).

L3 Autonomous Vehicle Engineer at Zoox Inc
June 2015 – Aug 2015
Design of multiple electronic products (PCB+Firmware) related to Smart Home technology. (Magnelab Inc).

Research Advisor at Magnelab Inc
June 2015 – Aug 2018
Designed multiple ECUs from scratch to communicate with main computer to control steering, Gas and brakes of the vehicle. (Zoox Inc).

Honors

Gold medal in 11th Iran Skills National Contest — 2011
Exceptionally talented student scholarship (Tabriz University, Iran) — 2010

Silver medal in Khwarizmi National Science Festival (Iran) 2010
Second place at IRANOPEN international robotcup contest. (Iran) 2018

Research Experience

Instructor and Researcher at University of Colorado Boulder

Jan 2019 – Present

Research on variety of technologies related to self-driving vehicle motion planning

Graduate Research Assistant at University of Colorado Boulder

2014 – 2018

Design of a adaptive MPC controller for self-driving vehicles
Design of an entropy based parameter calibration pipeline for robotic platforms
Design of an agile four wheeled self-driving robot with stereo visual localization
Design of a wheeled robot with hydraulic actuated suspension to traverse rouph terrain

Graduate Research Assistant at George Washington University

2012 – 2014

Design of a self-driving ECU board for Lexus ISF120
Design of an electronics unit and communication stack for a Hybrid Mobile Robot

Graduate Research Assistant at Tabriz University

2010 – 2012

Design of a cable driven parallel robot manipulator
Resolution multiplier system for optical encoders
Design and implementation of an inchworm crawling robot

Grant Collaborations

Co-PI of NSF-CPS grant, Learning and Verifying Conformant Data-Driven Models for Cyber-Physical Systems ($1.2M) 2020

Research Assistant for DARPA Tactical Technology Office Subterranean Challenge: MARBLE ($4.5M) 2018

Research Assistant for NSF CPS: Synergy: Verified Control of Cooperative Autonomous Vehicles ($777K) 2018

Research Assistant for DARPA Defense Sciences Office: Ninja Car ($1.04M) 2018

Notable Projects

Please Refer to https://sinaaghli.com/projects

Teaching experience

Instructor at Computer Science Department (University of Colorado Boulder) Fall 2018 - Present

CSPB2270: Data Structures and Algorithms
CSPB2400: Computer Systems
CSPB3022: Introduction to Data-Science Algorithms
ECEN2703: Discrete Mathematics for Computer Engineers
CSCI1300: Starting Computing

Publications/Patents

An adaptive method for autonomous control of robotic grass cutting machine
S Aghli, Scythe Robotics Inc.
Patent currently under preparation

Online system identification and calibration of dynamic models for autonomous ground vehicles
S Aghli, C Heckman.
IEEE International Conference On Robotics and Automation, 2018.

Path-Following though Control Funnel Functions
H Ravanbakhsh, S Aghli, C Heckman, S Sankaranarayanan.
IEEE International Conference on Intelligent Robots and Systems, 2018.

Game-Theoretic Cooperative Lane Changing Using Data-Driven Models
G Ding, S Aghli, C Heckman, L Chen.
IEEE/RSJ International Conference on Intelligent Robots and Systems, 2018.

Terrain Aware Model Predictive Controller for Autonomous Ground Vehicles
S Aghli, C Heckman.
BGSR workshop at Robotics: Science and Systems Conference 2017, 2017.

Design and fabrication of a worm robot prototype
M Noorani, A Ghanbari, S Aghli.
RSI International Conference on Robotics and Mechatronics (ICROM), 2015.

Other interests

Motorcycle Racing, Skiing, Hiking.