

Sina Aghli

+1 (202) 688-5868 ♦ sina.aghli@colorado.edu ♦ sinaaghli.com

EDUCATION

PhD. Computer Science University of Colorado Boulder, Boulder, CO <i>Thesis Title:</i> Model Identification and Control of Autonomous Ground Vehicles	2014 - 2018
PhD. Mechanical and Aerospace Engineering (Transferred) The George Washington University, Washington, Dc	2012 - 2014
M.S. Mechatronic Engineering University of Tabriz, Tabriz, Iran <i>Thesis Title:</i> Design, fabrication and control of a Parallel Cable Robot	2012
B.S. Computer Hardware Engineering Azad University, Khoy, Iran <i>Thesis Title:</i> Design of Data-Path, ALU, BPU and Control Unit for an 8-bit CPU in VHDL	2009

Interests:

Non-Linear Control	Model Identification
Optimal Control	SLAM on chip
Non-Linear Dynamics	Sensor Fusion for State Estimation
Robot Dynamic Modeling	Mobile Robotics
Mobile Robot	Real-time Methods

THEORETICAL KNOWLEDGE:

Optimal/Nonlinear Control	Geometric Vision
Sparse/Dense Visual Localization	Probabilistic Robotics
Dynamic/Kinematic Modeling	Sensor Fusion for State Estimation
Sensor Fusion	Nonlinear Optimization
Robot Localization and Mapping	Linear Programming

JOB EXPERIENCE:

Post-Doctoral Researcher at ARPG Lab (CU Boulder)	2018 - Present
Lecturer at CU Boulder	2018 - Present
Research advisor at Magnelab Co	2015 - Present
Level 3 Autonomous vehicle engineer at ZOOX	2015
R&D engineer at Imatak-Sanat Co	2008

Selected Freelanced Projects

Design and fabrication of 4-wheeled pipe inspection robot for East Azerbaijan State Waste Water company	2012
Design of a vocal carpet pattern player system	2011
Design of a vision based pistachio nut sorting algorithm	2011
Design of an automatic sliding door controller	2011
Design of a vocal carpet pattern player system	2011
Design of an automatic sliding door controller	2010
Design of a 700 watt DC motor driver and controller for treadmill	2010
Design of an industrial vibrator for Machine Industrial Manufactory CO	2010
Design of a high voltage wire shield defect tester	2009
Design of an Electronic Control Unit for salt spreader of snow removal trucks at Imatak-Sanat company	2009

HANDS ON EXPERIENCE:

Programming:

Software: C, C++, Python, Matlab, Delphi

Firmware: Assembly, C, VHDL

Electronics:

Advanced PCB design with AltiumDesigner

Familiar with high speed PCB design concepts

Familiar with ARM and Xilinx FPGA architectures

Familiar with real-time system design concepts

Mechanical:

Pneumatic and Hydraulic circuit design

Mechanical CAD design with SolidWorks

Mechanical FEA analysis with SolidWorks

HONORS:

Ranked top second among graduates of Mechatronics engineering 2012 class, Tabriz University	2012
Member of Iran's National Elites Foundation	2011
Gold medalist in 11 th Iran Skills National Contest	2011
Granted with exceptional talented student scholarship to enter graduate school program of Tabriz University without taking national entrance exam	2010
Silver medalist in Khwarizmi national science festival (Iran)	2010
Referee committee member of Intelligent Automobiles national contest	2010
Third place in Robot Rally national contest	2009
Second place in IRANOPEN international Robocup contest	2008
Exceptional Talented member of Young Researchers Club, Iran	2007

TEACHING BACKGROUND:

Instructor of Discrete Mathematics class at University of Colorado Boulder	2016
Teacher Assistant for Discrete Mathematics Class at University of Colorado Boulder	2015
Teacher Assistant for Computer Programming Class at University of Colorado Boulder	2015
Instructor of Robotic class in Schools of Exceptional Talented students Tabriz, Iran	2010

RESEARCH EXPERIENCE:

Graduate Research Assistant
University of Colorado Boulder

Design of a Map 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 swing arms capable of jumping over rough terrain

RESEARCH EXPERIENCE (continued):

Graduate Research Assistant

George Washington University

Design of electronic control units for a full size self-driving car

Design of electronics and communication system for a Hybrid Mobile Robot

Graduate Research Assistant

Tabriz University

Design of a cable driven robot manipulator

Resolution multiplier system for Optical Encoders

Design and implementation of an inchworm crawling robot

PAPERS AND CONFERENCES:

Sina Aghli and Christoffer Heckman, "**Online System Identification and Calibration of Dynamic Models for Autonomous Ground Vehicles**" *IEEE International Conference On Robotics and Automation 2018*

G Ding, S Aghli, C Heckman, L Chen, "**Game-Theoretic Cooperative Lane Changing Using Data-Driven Models**" *International Conference on Intelligent Robots 2018*

H Ravanbakhsh, S Aghli, C Heckman, S Sankaranarayanan, "**Path-Following through Control Lyapunov Functions**" *International Conference on Intelligent Robots 2018*

Sina Aghli and Christoffer Heckman, "**Terrain Aware Model Predictive Controller for Autonomous Ground Vehicles**" *BGSR workshop at Robotics: Science and Systems Conference 2017*

Noorani, Mohammad-Reza Sayyed, Ahmad Ghanbari, and Sina Aghli. "**Design and fabrication of a worm robot prototype.**" *Robotics and Mechatronics (ICROM), 2015 3rd RSI International Conference on. IEEE, 2015.*