MOUHYEMEN AHMED KHAN

Looking for full-time positions in core robotic areas intersecting control theory, machine learning, and perception.

1220 Mecaslin St NW Apt 1309
30318, Atlanta, GA
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EDUCATION

Georgia Institute of Technology 2017 - Present
Ph.D. in Electrical & Computer Engr.
GPA: 3.75

Texas A&M University 2010 - 2014
B.Sc. in Electrical & Computer Engr.
Graduated with Magna Cum Laude
CGPA: 3.744 Major GPA: 3.89

TECH SKILLS

Frameworks

MATLAB
Python
C/C++
ROS/Gazebo
LaTeX

Software

Microsoft Office
SolidWorks

Hardware

Intel Edison
Raspberry Pi
Arduino

Operating System

Linux
Windows

STRENGTHS

Personal competencies:
Leadership
Communication
Teaching
Resiliency
Creativity

Technical competencies:
Robotics
Machine Learning
Computer Vision

PROJECTS

Quadcopter Controller with Control Barrier Functions 2018
- 3D Cascaded Controller simulated in MATLAB
- Control Barrier Functions with QP-formulation
- Barriers imposed on position & velocity states

3D Motion Planning for Quadcopter 2018
- Voronoi Graph based on random sampling of waypoints
- Implemented A* algorithm for shortest path

Online Control of 7-DOF Manipulator Arm 2018
- Simulated 7-DOF Manipulator Arm on DART (C/C++)
- Inverse Dynamics implemented using QP-formulation
- Gaussian Process Regression compensated non-linear effects

Localization of ground robot using Particle Filter 2018
- State estimation using LIDAR data
- Particles weighted based on importance random sampling

Supervised Machine Learning Classifiers 2018
- Dataset based on 3D point-clouds of Oakland, Pittsburgh
- Classified 5 classes – Vegetation, Wire, Pole, Ground, Façade
- Implemented Bayesian Linear Regression, Linear Support

Unknown Maze Navigation with TurtleBot 3.0 (ROS/Gazebo) 2017
- Image processing for road sign detection via robot's camera
- SIFT features extracted and trained with k-means clustering
- ROS Nav Stack used for navigation
- Implemented algorithmic pipeline on Gazebo and hardware

Object detection and classification using Point Cloud Data 2017
- Voxel down-sampled, filtered, and differentiated inliers and outliers using RANSAC plane fitting
- HSV Color Histogram used for feature extraction
- Support Vector Machines used for object classification

Amazon Pick & Place Challenge simulation (ROS/Gazebo) 2017
- Implemented inverse kinematics control of KUKA 210 Arm
- Grasped and placed 6 objects in Gazebo environment

Autonomous Navigation of NASA Mars Rover on Unity 2017
- Perception pipeline mapped 98% of unknown map
- Navigation based on state machines
- Located and picked up 6 rock samples

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WORK EXPERIENCE

Qatar Robotics Institute for Development (QRID) Aug 2013 – Present
Co-Founder & CEO (www.qrid-robotics.com)
Established first not-for-profit robotics institute in Qatar along with curriculum for hands-on robotics training. Developed and delivered first of its kind computer vision course for youth (8-18) in Qatar.

Carnegie Mellon University, Qatar (CMUQ) Nov 2014 – May 2016
Research Assistant (Co-affiliation: Qatar University)
Developed a low-cost, agile and generic Cyber-Physical Testbed for Unmanned Aerial Vehicles. The project is funded by Qatar National Research Fund (QNRF). Advisor(s): Dr. Khaled Harras & Dr. Amr Mohamed

World Innovation Summit for Education (WISE) Nov 2013-Dec 2014
WISE Learner (Affiliation: Qatar Foundation)
Developed technical content and business model for hands-on learning modules targeting younger audiences in Middle-East. Pedagogical, leadership, and entrepreneurial training under Yale World Fellows and Babson College.

PUBLICATIONS

Journal Paper
M Khan, Karel H., Amr M., Khaled H., "*Mobile Target Coverage & Tracking on Drone-Be-Gone UAV Cyber Phys-ical Testbed*" in IEEE Systems Journal, 2017
Ahmed S., Ahmed A., **M Khan**, Amr M., Khaled H., "On Realistic Target Coverage by Autonomous Drones" in Com-puting Research Repository, 2017

Conference Paper
Ahmed S., Ahmed A., **M Khan**, Amr M., Khaled H., "*Not Just a Blip on the Radar: Covering Wire Oriented Targets via Mobile Cameras*" in International Conference on Information Processing in Sensor Networks, 2017

Workshop Paper
M Khan, Sidra A., Karel H., Amr M., Khaled H., "*Drone-Be-Gone: An Agile Low-Cost Vision-based UAV Cyber-Physical Testbed*" in Autonomous Robots and Multirobot Systems, 2016

Demo Paper
M Khan, Sidra A., Amr M., Khaled H., "*Simulating Drone-be-Gone: Agile Low-Cost Cyber-Physical UAV Testbed*" in Autonomous Agents and Multiagent Systems, 2016

ACHIEVEMENTS AND HONORS

ECE Doctorate & Coulter Fellowship 2016 - 2017
Georgia-Tech

Best QNRF Project for UAV Testbed 2016
Meeting of the Minds, CMUQ

Qatar Foundation Fellowship 2013 - 2014
Hamad Bin Khalifa University, Qatar

Dean's List of Honors 2010 - 2014
Texas A&M University, Qatar
Fall: 2010, 2012, 2013
Spring: 2012, 2013, 2014

LANGUAGES (ILR SCALE)

English	Native proficiency
Bengali	Native proficiency
Hindi	Full proficiency
Arabic	Limited proficiency
French	Limited proficiency