Taimoor Daud Khan

Robotics Engineer

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979.324.0081 • College Station, TX

A talented and dynamic engineer, skillfully trained in robot system design. Exploring geometric and topological models from computer graphics with generative design principles to augment robot vision. ***Areas of Expertise include:***

- System Modelling
- Inverse Kinematics
- Sensor Fusion
- Robot Vison/ Object Tracking
- Control System Design
- CAD modelling
- Visual Odometry
- Path Planning
- Generative Modelling

Professional Experience

TEXAS A&M UNIVERSITY • College Station, TX

GRADUATE ASSISTANT RESEARCH, MIXED-INITIATIVE DESIGN LABORATORY (MIDL) • 2022 to Present

Working on semantic scene understanding using multi-level of detail scene abstraction for autonomous off-road vehicles. My current work is part of the Distributed Autonomous Robotic Experiments and Simulations (DARES) project.

GRADUATE STUDENT RESEARCHER, BIOROBOTICS LABORATORY • 2018 to 2019

Analyzed and designed a tendon actuation mechanism in steering the distal tip of plasma robots for cancer treatment via Minimally Invasive Surgery (MIS).

Key Accomplishment:

- Developed a robust marker-based vision algorithm utilizing different programming languages including C++ with Open CV in determining joint angles of robotic plasma medicine devices.

ALBA TECHNOLOGIES, LLC• Grapevine, TX • 2019 to 2020 • 2021 to 2022

Key member of the data science team developing inertial sensor algorithms for a virtual golf coach.

MACHINE LEARNING SCIENTIST

Experiment with supervised (CNNs, RNNs & LSTMs) and unsupervised (K-means & autoencoders) machine learning algorithms along with sensor fusion algorithms such as the Kalman filters, Madgwick & Mahony filters to provide custom training feedback to golfers.

Key Accomplishment:

- Developed a mission critical proprietary club face angle measurement algorithm to provide real time customized feedback to a golfer in time for a successful product launch (work subjected to an NDA).

MAKERARM, INC. • Cedar Park, TX • 2018

Played a focal role in providing computational motion planning algorithms (Dijkstra's, A, Probabilistic Road Map and Artificial Potential Field) using MATLAB and C++ for products aligned with corporate goals and objectives.*

INTERNEE ENGINEER

Orchestrated self-motivation and initiative taking ability as an intern within the engineering discipline, providing improvement in tool path precision through the introduction of a closed loop control algorithm in Arduino IDE for the Makerarm 3D printing SCARA robot.

Key Accomplishments:

- Added 'Pick and Place' functional capabilities by developing a vision system with Open CV and C++.
- Demonstrated the successful use of Makerarm in work-cells by simulating collaborative manipulation of 2 SCARA robots using MATLAB; constructed collision maps and did path planning using virtual roadmaps.

Additional Career Highlights

Startech Networks Inc, Austin, United States | Data Analyst, 2020 to 2021

Engro Fertilizers Ltd, Ghotki, Pakistan | Graduate Trainee Engineer, 2016 to 2017

Taimoor Daud Khan, M.S.

Education & Training

Doctor of Philosophy, Mechanical Engineering
TEXAS A&M UNIVERSITY | College Station, TX | 2026
3D Scene Reconstruction for Autonomous Off-road Vehicles.

Master of Science, Mechanical Engineering
TEXAS A&M UNIVERSITY | College Station, TX | 2019
Thesis: Vision Based Joint Angle Estimation of Robotic Plasma Medicine Devices

Bachelor of Science, Mechanical Engineering
GHULAM ISHAQ KHAN INSTITUTE OF ENGINEERING SCIENCES & TECHNOLOGY (GIKI) | Topi, Pakistan | 2016
Design Project: Design and Development of an Active Magnetic Bearing System

Technical Proficiency:
Programming Languages: C++, Python; Algorithm Development Environments and Libraries: MATLAB, Open CV, TensorFlow, Keras, CARLA Simulator, ROS: MoveIt, FlexBE; Software Packages: Gazebo, SolidWorks

Pending Patent

(Docket #) 165.001US1 titled INTELLIGENT LIVE USER MOTION FEEDBACK (with Alba Technologies)

Professional Certifications

- Robotics: Aerial Robotics, Coursera: University of Pennsylvania, July 2017
- Machine Learning, Coursera: Stanford University, June 2018
- Robotics: Computational Motion Planning, Coursera: University of Pennsylvania, Aug 2018
- Control of Mobile Robots, Coursera Georgia Institute of Technology, Oct 2019
- Deep Learning Specialization (5 Courses), Coursera: deeplearning.ai, Jan 2020
- Introduction to Self-Driving Cars, Coursera: University of Toronto, April 2020

Fellowship and Achievements

- Emil Buehler Aerodynamic Analog Fellowship (2022)