

DANISH RAHMAN

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EDUCATION

COLUMBIA UNIVERSITY

M.S. in Mechanical Engineering, Concentration in Robotics and Control

New York, NY

Expected Dec. 2023

TEXAS A&M UNIVERSITY AT QATAR (TAMU-Q)

B.S. in Mechanical Engineering

Doha, Qatar

May 2018

Pi Tau Sigma, Mechanical Engineering Honors Society

WORK EXPERIENCE

RHEINMETALL BARZAN ADVANCED TECHNOLOGIES (RBAT)

Doha, Qatar

May 2021 – Jul. 2022

Systems Engineer

- Facilitated the system design, architecture, and operation of state-of-the-art 8x8 electrified unmanned ground vehicles (UGVs)
- Defined system and software requirements for the development of a UGV Command and Control (C2) Software, focusing on autonomous features such as collision avoidance, waypoint navigation, target tracking, motion planning and mission execution
- Headed the Sensor Suite Project with a cross-functional team; developed and 3-D prototyped a physical sensor system of IMUs, thermocouples, voltage, current and rotational sensors; integrated with LabVIEW for data acquisition, collection and analysis of performance parameters such as slippage ratio and power consumption for scenario-based operational limits
- Developed and executed an extensive set of V&V test plans and procedures for vehicle performance for a fleet of UGVs in a desert environment, focused on power consumption and vehicle maneuverability aligned with MIL-STD 810G standards

Mechanical Engineer

Sep. 2018 – Apr. 2021

- Conducted detailed data analysis and performance evaluation of lithium phosphate batteries, to simulate and determine battery characteristics such as charging and discharging curves in varying operational environments
- Developed and fabricated a miniature UGV prototype, using a customized motion controller fused with off-the-shelf sensors such as LiDAR, cameras and IMUs
- Performed electro-mechanical troubleshooting activities for critical failures of vehicle prototypes, including GPS systems, LiDAR, navigation systems, dead reckoning, lithium-ion battery system failure and vehicle drivetrain malfunctions

RESEARCH EXPERIENCE AND PROJECTS

COLUMBIA UNIVERSITY

New York, NY

Aug. 2022 – Present

Robotics and Rehabilitation Lab (ROAR Lab)

- Working on the Mobile Tethered Pelvic Assist Device (mTPAD) Project, developing a novel solution to augment motion stability in elderly people, and patients of Parkinson's and Cerebellar ataxia
- Collecting and analyzing locomotive data using EMGs, LabVIEW and data acquisition systems to identify trends in gait position and weight distribution for different patients

Actuated Upper Limb Orthosis for ALS and Parkinson's Patients with Independent Torque Control

Jan. 2023 – Present

- Designing and simulating a 5 DOF arm orthosis to enhance and facilitate reaching and grasping functionality for patients of neurodegenerative diseases such as ALS and Parkinsons
- Implementing a robust control scheme to account for spinal muscular atrophy and hand tremors to ensure optimal arm trajectory

Quadrupedal Walking Robot

Aug. 2022 – Dec. 2022

- Designed, 3D-prototyped and fabricated a quadrupedal walking robot as part of an engineering team aimed at replicating the engineering lifecycle of a stand-alone engineering product
- Utilized inverse kinematics and parametric mapping to plan gait and motion trajectories for the quadrupedal, while optimizing its performance through physics simulation on PyBullet

TEXAS A&M UNIVERSITY AT QATAR (TAMU-Q)

Doha, Qatar

Aug. 2017 – Jun. 2018

Founding Team Member, SAE Supermileage

- Designed and developed a fuel-efficient three-wheel prototype vehicle for the Society of Automotive Engineers (SAE) Supermileage Competition 2018

RELEVANT ACTIVITIES AND AWARDS

TEXAS A&M UNIVERSITY AT QATAR (TAMU-Q)

Doha, Qatar

Sep. 2016 – Jun. 2018

Vice-President Internal, Student Engineers' Council

- Led a student-run organization focused on liaising between the student body and the TAMU-Q administration and faculty
- Awarded the Troy Marschang Award for Leadership Excellence, and the Buck Weirus Spirit Award

Aggie Service-Learning Experience Leader

May 2016

- Guided a group of students to work with a UNRWA school for Palestinian refugees in Amman, Jordan

TECHNICAL SKILLS

- Technical Skills: Simulink, LabVIEW, SolidWorks, 3-D Prototyping, PyBullet, Git, JIRA, and Confluence
- Programming: Python, PyTorch, MATLAB, C
- Languages: English (native, full proficiency), Urdu (native, full proficiency)