DANISH RAHMAN

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EDUCATION

COLUMBIA UNIVERSITY New York, NY
M.S. in Mechanical Engineering, Concentration in Robotics and Control *Dec. 2023*

TEXAS A&M UNIVERSITY
B.S. in Mechanical Engineering *May 2018*
Pi Tau Sigma, Mechanical Engineering Honors Society

TECHNICAL SKILLS

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

WORK EXPERIENCE

RHEINMETALL BARZAN ADVANCED TECHNOLOGIES (RBAT) Doha, Qatar
Systems Engineer II *May 2021 – Jul. 2022*

- Developed and executed an extensive set of V&V test plans and procedures for vehicle performance for a fleet of electrified unmanned ground vehicles in a desert environment, focused on power consumption, thermal optimization, and vehicle maneuverability in line with MIL-STD 810G standards.
- 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.
- Facilitated the system design, architecture, and integration 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.

Mechanical Engineer I *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 FMEA and root-cause 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
Robotics and Rehabilitation Lab (ROAR Lab) *Aug. 2022 – Sep. 2023*

- Worked 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.
- Collected and conducted statistical analysis (pairwise t-testing and ANOVA) of 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 – Sep. 2023*

- Designed and simulated a 5 DOF arm orthosis to enhance and facilitate reaching and grasping functionality for patients of neurodegenerative diseases such as ALS and Parkinsons
- Implemented 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
Founding Team Member, SAE Supermileage *Aug. 2017 – Jun. 2018*

- 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
Vice-President Internal, Student Engineers' Council *Sep. 2016 – Jun. 2018*

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