Dr. Talha Shahid

(Ph.D. Mechanical Engineering)

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OBJECTIVE:

I want to integrate into an environment where I can learn, explore, and be part of a creative and innovative team.

EXPERIENCE:

- ***Visiting Lecturer, The Millennium Universal College (Feb 2023-Present)***

  I am a visiting lecturer at The Millennium Universal College (TMUC). The designated course was for undergraduate students at the **Department of Computing & IT at the University of Hertfordshire and Pearson Edexcel**. I have taught several courses, including

  - *Robotics*
  - *Silicone to C*
  - *Programming*
  - *Mobile Computing*
  - *Programming, Algorithm, and Data structure*
  - *Internet of Things*
  - *Introduction to Programming and Discrete Structure*
  - *Computational Problem Solving*
  - *Planning a computational project*
  - *Artificial Intelligence*

- ***Visiting Faculty member, SMME NUST, (Sep 2023-Feb 24)***

  I was a visiting lecturer at SMME NUST H-12 for the **department of mechanical engineering**. I taught two courses: **"Introduction to mechatronics systems"** for final year and "**Fundamentals of programming"** to first year undergraduate students. I scored **81% and 88%** on my student feedback for both courses.

- ***Mechanical Developer, Ignite (Formerly National ICT R&D), (Dec 2016-Jun 17)***

  Designated as Mechanical developer for the ICT R&D has approved the project **Myo Prosthetic Upper Limb and Enabling** amputates to grasp again. The project includes complete mechanical design of the upper limb on CAD and then taking further to test, analyze and fabricate as a complete working product.

- ***Sr Research Executive, Webmarks, (Apr 2016-Dec 2016)***

  Appointed as Sr. Research Executive at Webmarks Design and Marketing Ltd. for various online customer support through different research modules in terms of production and quality assurance

- ***Assistant Analyst, Axproz, (Jan 2015-Apr 2016)***

  Appointed as Sr. Executive in Research Department, for providing various solutions, quality assurance and procure projects of various international clients. Promoted to Assistant Analyst in the Quality Assurance department until my tenure ended. Awarded 9 times with **best employee of the month**.

- ***Visiting Lecturer, APCOMS, (Feb 2013-Jun 2013)***

  Appointed as a visiting faculty member for the Electrical Engineering Department in Army Public College of Management and Sciences for the spring semester 2013. The course designated was "Basic Mechanical Engineering" which was successfully delivered to the students.

EDUCATIONAL QUALIFICATION

Ph.D. Mechanical Engineering (Monash University Malaysia)

2017 - 2022

The title of my Ph.D. thesis is 'A Two-Fingered Wearable Soft Hand Exoskeleton with Electrooculogram Activation for Activities of Daily Living'. The objective is to design a soft wearable glove that can be activated by the user using voluntary blinking. A controller controls the grip force and allows the hand-impaired patient to apply the appropriate force. The mechanical design and mechanism enable the glove to grasp any shape and size object using its pliable nature. The glove is then evaluated using a YCB benchmark to measure its performance in the ADL setting. The thesis has been published in two conferences and two journal papers.

- Shahid, T., Gouwanda, D., Gopalai, A.A. and Teh, K.K., 2024. Design and Evaluation of an Electrooculogram-Activated Three-Dimensional-Printed Soft Hand Exoskeleton for Activities of Daily Living. *Robotics Reports*.
- T. Shahid, D. Gouwanda, T. Shahid, S. G. Nurzaman, A. A. Gopalai and T. K. Kheng, "Joint angle control of a cable-actuated soft hand exoskeleton," 4th International Conference on Robotics and Automation in Industry (ICRAI), 2021
- T. Shahid, D. Gouwanda, S. G. Nurzaman, A. A. Gopalai and T. K. Kheng, "Development of an Electrooculogram-activated Wearable Soft Hand Exoskeleton," 2020 IEEE-EMBS Conference on Biomedical Engineering and Sciences (IECBES), 2021, pp. 433-438, doi: 10.1109/IECBES48179.2021.9398797.
- T. Shahid, D., Gouwanda, S. G. Nurzaman, and A. A. Gopalai 2018. "Moving toward Soft Robotics: A Decade Review of the Design of Hand Exoskeletons" Biomimetics 3, no. 3: 17.

MS Mechatronics Engineering (College of EME, NUST)

CGPA 3.2 / 4.00

2011-2014

The thesis title chosen for my MS is "Design of a Low-Cost Multi Degree of Freedom Hand Exoskeleton". The objectives are to design a low-cost and low-weight hand exoskeleton, considering the needs of patients in Pakistan. The concept is to create a simple yet effective hand exoskeleton that is easy to be tested and manufactured on a CNC machine for batch production.

- T. Shahid and U. S. Khan, "Design of a low-cost multi-degree of freedom hand exoskeleton," 2014 International Conference on Robotics and Emerging Allied Technologies in Engineering (iCREATE), 2014, pp. 312-316, doi: 10.1109/iCREATE.2014.6828386.

PROJECTS:

- ***Assistant in thesis: (insect-like mini droid)***

  I assisted an MS student in designing and analyzing an insect-like droid that floats and swims on water. The droid worked on a chain and gear principle connected with flappers with two degrees of freedom. The design successfully passed the analysis test with positive results.

- ***Mechanical Design Supervisor of FYP's:***

  I was appointed as supervisor for mechanical design and mechanisms for final-year projects for undergraduate students. This role included examining them in designing their respective projects' mechanical structures and bases. Projects included Segway, an Unmanned Ground Vehicle, a Prosthetic limb, a Finger-like design of a Prosthetic limb, and an Unmanned Aerial Vehicle.

- ***Artificial Prosthetic Limb: (Final Year Project)***

  Designed a low-cost but efficient artificial limb in collaboration with AFIRM. Designed the gripper part on Pro E software and manufactured it on a CNC machine using CAM tools.

- ***National Engineering Robotics Contest (NERC):***

  Participated in the ***All-Pakistan National Engineering Robotics Contest*** and made it to the finals. I designed the robot's base and potting mechanism using Pro-E wildfire software.

REVIEWING:

Journal

- IEEE Robotics and Automation Magazine Submission and Review Management System
- IEEE Robotics and Automation Society

Conference

- 7th IEEE-EMBS Conference on Biomedical Engineering and Sciences (IECBES 2022)
- 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2023 IEEE International Conference on Robotics and Biomimetics (ROBIO)

COURSE PROJECTS:

- Proposed a genetic evolution algorithm for conserving water for the Monash chiller plant
- Designed PID control Feedback system on the Encoder Motor.
- Designed parts and assembly models on PRO-E 5.0 for various projects, including the gun-mounted UGV.
- Operated on the FANUC CNC machine and implemented the design of the workpiece.
- Operated on the Spartan FPGA board and interfaced it with the LCD.
- Designed a GUI on MATLAB for cars in the car parking using the DIP applications.
- Operated on the PIC 16F88 controller and interfaced with the L298 PWM control.
- Designed and tested various parts of the gripper of the prosthetic limb on Pro-E.
- Designed a Uni and Bi-directional H-bridge for NERC circuit design.
- Designed a 5-12V power supply.
- Designed an ADC and DAC channel for the 89C51 controller.

TECHNICAL EXPOSURE:

- PTC Creo 2.0
- Solid works
- Ansys 2011
- Matlab Simulink and Simscape multiphysics
- Matlab Mathworks
- Ultimaker Cura
- Tracker physics
- Arduino board
- CAD/CAM
- Webot Simulator 2.0
- GitLab
- Adobe Photoshop
- Pycharm
- Visual Studio Code
- Eclispe
- Java Netbeans
- React Native
- SnackExpo

EDUCATIONALQUALIFICATIONS:

- Ph.D. Mechanical engineering from Monash University Malaysia, specializing in bio-mechatronics and biomedical devices.
- MSc Mechatronics Engineering from the College of Electrical and Mechanical Engineering (NUST), specialization in robotics and manufacturing with a CGPA of **3.2**
- BE Mechatronics Engineering from the College of Electrical and Mechanical Engineering (NUST) with a CGPA of **2.75**
- FSc Pre-Engineering from Sir Syed College Mall Road Rawalpindi, securing **78%** marks.
- Matriculation from Army Public School and College, securing 8**4%** marks.

CERTIFICATION AND TRAINING:

- I attended a short course on CNC machines held at SMME (NUST).
- Attended a short course on introduction to Linux by IEEE
- Has taught undergrads introduction to microcontrollers.
- Attended a short course on PRO-E 4.0 and PRO-E 5.0
- Attended a short course on 3D Studio Max 2010

ACHIEVEMENTS AND INTERESTS

- Among the most cited and viewed articles in the journal ***'Biomimetics'*** of all time
- Won Best Paper award at ***'IECBES 2020'*** conference.
- Won Best Paper award at ' ***ICRAI 2021'*** conference.
- Worked as an editor and chief of editor in publishing a bi-annual newsletter ('***SYNC***') for the School of Engineering, Monash University, for two years.
- Worked as a School of Engineering Representative for Monash University Postgraduate Association **(MUPA)**
- Worked as a Vice President for Monash University Postgraduate Association **(MUPA)**
- 3 Times consecutive Top Researcher of the Month and Departmental Winner of the Month award
- Design different mechanical models and machines as a freelancer using Pro-E, Tinkercad, and 3D printing software and tools.
- Member of the Sports and Adventure Society in EME (NUST)
- Former Gen Secretary of the E-Gaming club in EME (NUST)
- Member of the gaming society G-Force (NUST)