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Education

The Hong Kong University of Science and Technology — Hong Kong
Master of Philosphy in Mechanical Engineering ; CGPA 3.5/4.3 — *2019 - 2021*

- Teaching Assistant of Design and Manufacturing Courses. (2020-2021)
- Graduate Research Assistant in the HKUST Robotics Institute. (2019-2021)
- Recipient of Post Graduate Studentship 28,000 USD a year by HKUST. (2019-2021)
- Relevant coursework: Robot Manipulation, Robot Perception and Learning, Solid Mechanics, Finite Element Methods

Aligarh Muslim University — Aligarh, India
Bachelor of Technology in Mechanical Engineering ; CGPA 9.56/10 — *2015 - 2019*

- Research Intern at the École de Technologie Superieur through Mitacs, Canada. (2018)
- Recipient of University Merit Financial Award by AMU. (2017-2019)
- Recipient of Satyendra Kumar Kashyap Merit Scholarship by Department of Mech Engg, AMU (2017)
- Received Sir Syed Global Scholar Award by Sir Syed Society of North America (2018)
- Selected for S.N Bose Scholars Program, USA. (2018)

Experience and Projetcs

3D Printable Soft Actuators inspired from Origami Architectures — HKUST, Hong Kong
M. Phil Thesis · Supervisor: Prof. Michael Yu Wang, Director of the HKUST Robotics Institute — *Sep 2019 - Aug 2021*

- **Origami Rotary Actuator**: Presented design, modelling and implementation of an Origami-inspired rotary actuator that can act as a generic rotary joint for soft robots. Different applications, including grippers and quadruped, are developed to testify the motion capabilities.
- **Origami Bi-directional Actuator**: Proposed a novel design combininng origami tube structures to generate linear motion in two orthogonal directions. Programming of involved origami frameworks is discussed for better adaptation.

3D printing method to fabricate fibre reinforced foldable structures — HKUST, Hong Kong
Research Project · Supervisor: Prof. Michael Yu Wang, Director of the HKUST Robotics Institute — *Sep 2020-Present*

- **Nozzle and Extruder**: Developing a new nozzle and extruder design compatible for printing fibre materials such as Kevlar combined with other materials.

Design and development of an EEG based exoskeleton for Finger rehabilitation — AMU, India
Bachelor's Thesis · Supervisor: Prof. M. Muzammil, Professor of Mech Engg at AMU — *Sep 2018 - Mar 2019*

- **EEG Exoskeleton**: Developed a linkage based exoskeleton device, controlled through brain EEG signals, for finger rehabilitation. Experiments were conducted to evaluate the performance. Presented this work in HWWE 2017 and got Second prize in Young Reseracher category.

Biomechanical modelling of the human spine for trauma applications — ETS, Canada
Reserach Internship · Supervisor: Prof. Eric Wagnac, Professor of Mech Engg at ETS — *Jun 2018 - Aug 2019*

- **T11-L1 Human Spine**: Conducted literature review regarding finite element analysis of the human spine model. Performed FEM simultions assessing ligament fracture for different mobility conditions such as flexion or extension.

Finite Element Modelling of Human Mandible — AMU, India
Independent Research · Supervisor: Prof. A. A. Khan, Professor of Mech Engg at AMU — *Jul 2017 - Dec 2017*

- **Mandible**: Developed FEM model of human mandible using CT scan gerenrated CAD model. Tested design for different orthodontic loading conditions. Presented this work in HWWE 2017 and got Third prize in Young Reseracher category.

Publications

- S. Liu, **S. Athar** and M. Y. Wang, "Vacuum Driven Auxetic Switching Structure and Its Application on a Gripper and Quadruped," 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020, pp. 8829-8834, doi: 10.1109/IROS45743.2020.9341338.
- B.A. Khan, A.R. Usmani, **S. Athar**, A. Hashmi, O. Farooq, M. Muzammil,"EEG-Based Exoskeleton for Rehabilitation Therapy ," 2017 International Conference on Humanizing Work and Work Environment (HWWE), 2017, pp. 645-653, doi: 10.1007/978-981-15-9054-2-75.
- **S. Athar**, A.R. Usmani, A.A. Khan, P.K. Chaudhari, M. Tariq, "Demonstration of Physical Effects on the assembly of modeled teeth and Mandible through Finite Element Analysis" 2017 International Conference on Humanizing Work and Work Environment (HWWE), 2017, pp. 91-96, doi: 10.1007/978-981-15-9054-2-10.
- B. Shariq, M. Aslam, **S. Athar**, "Proton Exchange Membrane Fuel Cells: Technology, Prospects, and Challenges", International Journal of Novel Research and Development, 2018, Volume 3 issue 1.

Extra-Curricular Activities and Leadership Roles

- Student Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, IEEE Robotics and Automation Society
- Vice-chairperson, American Society of Mechanical Engineers- AMU student chapter
  - Organized one day educational tour to Pragati Maidan (Delhi, India), during international trade fare.
  - Organized various events and seminars on engineering topics and educational prospects
- Member of the Student Co-ordination Committee, ZHCET, AMU, Aligarh.
  - Conveyed students feedback to the administration.
  - Contributed to the development of new curriculum for bachelor level courses
- Member, Organizing Committee of Recrufest. (A university level job expo).
- Student Ambassador, ZHCET North America Alumni Association.
  - Worked as a liaison between the alumni association, students, and college administration
  - Organized talks and workshops on GRE and TOEFL for students
- Cadet, National Cadet Corp.
- Participated in annual camp of National Cadet Corp.
- Volunteer, HWWE-2017.
- Member, Discipline committee, Zarf17. (Annual college fest).
  - Administered the proper functioning of various events taking place as a part of college fest
  - Coordinated between various organizers to facilitate the logistics

Workshops and Confrences

- International Conference on Intelligent Robotic Systems (IROS), October 25-29, 2020, Las Vegas, NV, USA.
- International Ergonomics Conference, Humanizing Work and Work Environment (HWWE) 2017, AMU, India.
- International Workshop of 1 day on Fluid Mechanics its Applications on March 29, 2017, at Dept of Mech Engg, AMU, India.

Skills

Scripting: Python, Mathoworks, C++, Robot Operating System (ROS)
Computing and Simulation Tools: MATLAB, MS Office
Finite Element Analysis: ANSYS, Abaqus, Altair Hyperworks, Siemens NX
Environment: Windows, Linux
Design and Modelling: AutoCAD, Autodesk Inventor, Solidworks, Autodesk Fusion
Text Editing: LaTex, Microsoft word
Languages: English, Urdu, Hindi

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