DR. TARIQ REHMAN

Karachi-Pakistan · +92 330 0283747

tariqrehman@cloud.neduet.edu.pk · linkedin.com/in/dr-tariq-rehman-94bab528

RESEARCH INTERESTS

- Mechatronics
- Soft Robotics
- Soft Actuators

CITATIONS

٠	Citations	174	166
٠	h-index	7	7
•	i10-	6	5

EXPERIENCE

MARCH 2023 – TO PRESENT

DEPUTY DIRECTOR, QUALITY ENHANCEMENT CELL (QEC), NED UNIVERSITY OF ENGG. & TECHNOLOGY, KARACHI, PAKISTAN.

AUG 2020 – TO PRESENT

ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRONIC ENGINEERING, NED UNIVERSITY OF ENGG. & TECHNOLOGY, KARACHI, PAKISTAN.

- Teach Data Acquisition and Microcontroller, Applied Programmable Logic Controller (PLC), Introduction to Mechatronics, Measurement & Calibration of Electronic Systems and Advance Digital Electronic & interfacing techniques to M. Engg. Students.
- Supervised M. Engg. Thesis titled "Analyze the effect of air jet assist turbocharged on 8.7 mw islanded genset with stochastic load profile".
- Supervised M. Engg. Thesis titled "Developing an architecture of SCADA/DCS incorporating industry 4.0 for process industry".
- I have also supervised several undergraduate final year design projects (FYDPs).
- Besides teaching, also serving as Class Advisor second year (B.Engg.) and PLC lab incharge.

DEC 2009 - JULY 2020

LECTURER, DEPARTMENT OF ELECTRONIC ENGINEERING, NED UNIVERSITY OF ENGG. & TECHNOLOGY, KARACHI, PAKISTAN.

- Taught Electronic Engineering courses such as Industrial Electronics, Basic Electronics, Electronics Devices and Circuits, Digital Electronics, Instrumentation and Control to undergraduate (B. Engg.) students along with practical exposure.
- I have also supervised several undergraduate final year design projects (FYDPs).
- Besides teaching, also served as Class Advisor fourth year (B.Engg.), VLSI lab incharge and lab coordinator.

SEPT 2009 - NOV 2009

LAB ENGINEER, BAHRIA UNIVERSITY KARACHI CAMPUS, KARACHI, PAKISTAN.

• Conducted labs of Electronic Engineering courses such as Industrial Electronics, and Instrumentation.

EDUCATION

FEB 2015 - MAY 2020

ELECTRICAL ENGINEERING (PHD), UNIVERSITI TEKNOLOGI MALAYSIA (UTM), MALAYSIA

- Developed a novel biocompatible "PDMS based monolithic self-supportive bidirectional bending pneumatic bellows catheter" using sacrificial molding technique.
- Various pneumatic actuator models were designed and analyzed via finite element modeling software. The initial actuator molds were developed using standard molding technique using CNC milling machine. The final actuator molds were developed using sacrificial molding that involved 3D printing, vacuum desiccation, ultrasonic bath and acetone solution.
- Critically analyzed the research problems and exercised a calculated and methodical approach towards their solutions. I am competent in researching and data analysis with proficiency in writing. I have published research works in various peer reviewed journals and conferences.

MAY 2009 - JAN 2013

ELECTRONIC ENGINEERING (M. ENGG.), NED UNIVERSITY OF ENGG. & TECHNOLOGY, PAKISTAN

• As an Industrial Electronic engineer, learnt, strengthened and expanded the technical and practical skills needed to advance in career.

JAN 2005 - DEC 2008

INDUSTRIAL ELECTRONIC ENGINEERING (B. ENGG.), INSTITUTE OF INDUSTRIAL ELECTRONIC ENGINEERING (IIEE)-NEDUET, PAKISTAN

- The program provides a thorough understanding of digital electronics, electronic circuits and systems, control systems, microprocessors and programmable logic controllers.
- This course also includes theoretical analysis, software simulation and hands-on applications.

SKILLS

RESEARCH

- Data analysis
- Scientific writing
- Teamwork

SOFTWARES

- SolidWorks®
- MARC[®] Mentat
- Layout Editor
- MS Office
- Origin

CLEAN ROOM FACILITIES

- CNC milling (Roland[®] MDX-40A)
- 3D printing (Flashforge[®] Dreamer)
- Vacuum Desiccation (PELCO[®] Mini Hot Vac)
- Ultrasonic Bath (Fisherbrand[™])

- Spin Coating (Laurell[®] WS-650MZ)
- Laser Writing (Heidelberg[®] μPG-101)
- Mask Aligning (MIDAS[®] MDA-400M-6)

RESEARCH PUBLICATIONS

- [1] 2023 Rehman, T., Ahmed, A., Siddiqi, M.S., Hayat, A. and Saeed, T., "Slum Terrain Mapping Using Low-Cost 2D Laser Scanners", *Elektronika ir Elektrotechnika*, 29(2), pp.19-27.<u>https://doi.org/10.5755/j02.eie.33884</u> (SSCI, Q3, IF: 1.059)
- [2] 2020 F. A. M. Ghazali, M. N. Hasan, T. Rehman, M. Nafea, M. S. M. Ali, and K. Takahata, "Micro-electromechanical-system actuators for biomedical applications: a review", *Journal of Micromechanics and Microengineering*, vol. 30, no. 7, p. 073001. <u>https://doi.org/10.1088/1361-6439/ab8832</u> (SSCI, Q2, IF: 2.23)
- [3] 2020 M. Razif, G. L. Zhi, I. Nordin, H. Hashim, A.S. Sadun, T. Rehman, "Bellow Soft Gripper for Agriculture", International Journal of Advanced Trends in Computer Science and Engineering, vol. 9, no. 1.4. <u>https://doi.org/10.30534/ijatcse/2020/0191.42020</u>
- [4] 2019 T. Rehman, M. Nafea, A. A. Faudzi, T. Saleh, and M. S. M. Ali, "PDMS-based dual-channel pneumatic micro-actuator", *Smart Materials and Structures*, vol. 28, no. 11, p. 115044. <u>https://doi.org/10.1088/1361-665X/ab4ac1</u> (SSCI, Q1, IF: 3.453)
- [5] 2019 T. Rehman, A. A. Faudzi, M. Nafea, and M. S. M. Ali, "PDMS-based Dual-Channel Pneumatic Microactuator Using Sacrificial Molding Fabrication Technique" in 20th International Conference on Solid-State Sensors, Actuators and Microsystems & Eurosensors XXXIII (TRANSDUCERS & EUROSENSORS XXXIII), pp. 1788-1791: IEEE. <u>https://doi.org/10.1109/TRANSDUCERS.2019.8808254</u>
- [6] 2019 K. V. Selvan, T. Rehman, T. Saleh, and M. S. M. Ali, "Copper–Cobalt Thermoelectric Generators: Power Improvement Through Optimized Thickness and Sandwiched Planar Structure", *IEEE Transactions on Electron Devices*, vol. 66, no. 8, pp. 3459-3465. <u>https://doi.org/10.1109/TED.2019.2920898</u> (SSCI, Q2, IF: 2.704)
- [7] 2019 M. Razif, A. A. Faudzi, I. Nordin, T. Rehman, D. E. O. Dewi, "Two-chambers soft actuator bending and rotational properties for underwater application", *Indonesian Journal of Electrical Engineering and Computer Science*, vol. 16, no. 2, pp. 669-677. <u>https://doi.org/10.11591/ijeecs.v16.i2.pp669-677</u>
- [8] 2019 M. Nafea, M. S. M. Ali, T. Rehman, and K. Mehranzamir, "Geometrical Analysis of Diffuser-Nozzle Elements for Valveless Micropumps" in International Conference on Smart Instrumentation, Measurement and Application (ICSIMA), 2019, pp. 1-5: IEEE. <u>https://doi.org/10.1109/ICSIMA47653.2019.9057345</u>
- [9] 2019 M. Nafea, Z. Mohamed, M. S. M. Ali, K. Mehranzamir, and T. Rehman, "Hybrid PSO-Tuned PID and Hysteresis-Observer Based Control for Piezoelectric Micropositioning Stages" in International Conference on Smart Instrumentation, Measurement and Application (ICSIMA), pp. 1-6: IEEE. https://doi.org/10.1109/ICSIMA47653.2019.9057338
- [10] 2017 T. Rehman, A. A. M. Faudzi, D. E. O. Dewi, and M. S. M. Ali, "Design, characterization, and manufacturing of circular bellows pneumatic soft actuator", *The International Journal of Advanced Manufacturing Technology*, vol. 93, no. 9, pp. 4295-4304. <u>https://doi.org/10.1007/s00170-017-0891-z</u> (SSCI, Q2, IF: 2.496)

- [11] 2017 T. Rehman, D. E. O. Dewi, and M. S. M. Ali, "Finite Element Analysis for PDMS Based Dual Chamber Bellows Structured Pneumatic Actuator" in *Asian Simulation Conference* 2017, pp. 392-402: Springer. <u>https://doi.org/10.1007/978-981-10-6463-0_34</u>
- [12] 2016 T. Rehman, A. M. Faudzi, D. E. O. Dewi, K. Suzumori, M. Razif, and I. Nordin, "Design and analysis of bending motion in single and dual chamber bellows structured soft actuators", *Jurnal Teknologi*, vol. 78, no. 6-13. https://doi.org/10.11113/jt.v78.9267
- [13] 2016 I. Nordin, A. M. Faudzi, M. Kamarudin, D. E. O. Dewi, T. Rehman, and M. Razif, "Grip Force Measurement of Soft-actuated Finger Exoskeleton", Jurnal Teknologi, vol. 78, no. 6-13. <u>https://doi.org/10.11113/jt.v78.9268</u>

REFERENCES

Assoc. Prof. Ir. Dr. Mohamed Sultan Mohamed Ali Control and Mechatronic Engineering Department School of Electrical Engineering Universiti Teknologi Malaysia, Skudai-81310, Johor, Malaysia [®]Office: +607-5557165/+607-5566272 | Mobile: +6019-7550201 Email: <u>sultan_ali@fke.utm.my</u>

Assoc. Prof. Ir. Dr. Ahmad Athif Mohd Faudzi Control and Mechatronic Engineering Department School of Electrical Engineering Universiti Teknologi Malaysia, Skudai-81310, Johor, Malaysia Mobile: +60 10-429 6110 Email: <u>athif@fke.utm.my</u>

3. Dr. Syed Riaz un Nabi Jafri

Electronic Engineering Department Faculty of Electrical and Computer Engineering NED University of Engineering & Technology Karachi-75270, Pakistan Coffice: +92 21-99261261 | Mobile: +923142053562 Email: <u>riazun1036@gmail.com</u>