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PERSONAL INFORMATION

Dr. Hassan Elahi

Listed among the World's Top 2% Scientists by Elsevier and Stanford University

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https://scholar.google.com.pk/citations?user=sxL9yfIAAAAJhl=en

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Gender Male | Date of birth 28 Oct 1991 | Nationality Pakistan

RESEARCH AND TEACHING PHILOSOPHY

Passionate about learner-centered pedagogy and research-integrated instruction. My teaching emphasizes active learning, outcome-based assessment, and project-driven exploration. In research, I pursue interdisciplinary work that bridges robotics, intelligent materials, and biomedical systems, focusing on innovation, impact, and collaboration.

WORK EXPERIENCE

Feb 2025 – Present

Associate Professor

Department of Mechatronics Engineering,
College of Electrical and Mechanical Engineering,
National University of Sciences and Technology (NUST), Islamabad, Pakistan.

- Continued leadership as Head of Post Graduate Program.
- Mentoring of junior faculty in research and academic development.
- Leading high-impact interdisciplinary research projects.
- Represent the department in national and international academic forums.
- Enhanced role in curriculum development and academic policy formulation.

Feb 2022 – Jan 2025

Assistant Professor

Department of Mechatronics Engineering,
College of Electrical and Mechanical Engineering,
National University of Sciences and Technology (NUST), Islamabad, Pakistan.

- Teaching at Undergraduate and Graduate levels.
- Supervising MS and PhD research students.
- Development and commercialization of research projects.
- Implementation of Outcome Based Education (OBE).
- Referee at National Engineering Robotic Contest.

Nov 2019 – Feb 2022

Associate Researcher/ Postdoc

Department of Mechanical and Aerospace Engineering,
Sapienza University of Rome, Rome, Italy.
Supervisor: Prof. Paolo Gaudenzi.
Main Responsibilities and Activities:

- Conducted cutting-edge research in smart structures, focusing on vibrations, MEMS, piezoelectric energy harvesting, and aeroelasticity.
- Collaborated with interdisciplinary teams within and outside the university to address complex engineering challenges.
- Explored funding opportunities for research projects and equipment acquisition.
- Mentored graduate students and guided them in their research projects.
- Assisted in teaching courses and workshops on smart materials and aerospace structures.

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July 2014 – August 2015

Lecturer

Department of Mechanical Engineering,
Institute of Space Technology, Islamabad, Pakistan.
Main Responsibilities and Activities:

- Departmental Quality Assurance Coordinator (DQAC).
- Teaching of courses at Undergraduate level
- Implementation of Courses according to Washington Accord.
- Advisor to ASME IST Chapter and IMechE IST Chapter.

Aug 2012 – Sep 2013

Teacher Assistant

Department of Mechanical Engineering,
University of Engineering & Technology Taxila, Pakistan.
Main Responsibilities and Activities:

- Delivered lecture of Manufacturing Processes-II to undergraduate students.
- Conducted lab of Machine Design.
- Delivered 6 weeks of lectures on "MATLAB" at IMechE Workshop UET Taxila.
- Delivered 6 weeks of lectures on "Abaqus" at ASME workshop UET Taxila.

EDUCATION AND TRAINING

Nov 2016 – Feb 2020

PhD - Thesis Title: "Piezoelectric energy harvesting by aeroelastic means"

Department of Mechanical and Aerospace Engineering,
Sapienza University of Rome, Rome, Italy.

Supervisor: Prof. Paolo Gaudenzi.
Specialization: Aeronautical and Space Engineering

Award: On Scholarship.

2012 – 2014

Master of Science in Mechanical Engineering

Department of Mechanical Engineering,
University of Engineering & Technology Taxila, Pakistan.

Supervisor: Prof. Riffat Asim Pasha.
Specialization: Applied Mechanics and Design

Award: Award of Honors.
Classification: On Scholarship.

2008 – 2012

Bachelor of Science in Mechatronics Engineering

Department of Mechatronics Engineering,
University of Engineering & Technology Taxila, Pakistan.

PHD AND MS THESIS SUPERVISED

In Progress

PhD Thesis

1. **Sajid Ali**, A High Sensitivity, Low Cost and Fully Decoupled Multi-Axis Capacitive Tactile Force Sensor for Robotic Surgical Systems.

2. **Muhammad Qasim**, Design and Development of Flexible Sensor for Biomedical Applications.

Completed

MS Thesis

1. **Muhammad Huzaifa**, Design and Development of PVDF hydrophone for Underwater Applications
2. **Bilal Hussain**, Investigation of Structural Health Monitoring in Aerospace Applications.
3. **Rohaan Javed Mirza**, Design, FEM Analysis and Experimental Characterization of Multi-Resonant Piezoelectric Energy Harvester (2023).
4. **Syed Shabab Mehdi Jafry**, Cyber Security of Cyber-Physical Systems using Machine Learning Approach.
5. **Muhammad Siddique Farooq**, Design and Development of Optimized Piezoelectric Energy Harvester based on Machine Learning for Automobile Industry.
6. **Harris Khan**, Piezoelectric-Based Ultrasonic Generation for Bursting of Cancer Cells.
7. **Muhammad Zain Tariq**, Design and Development of Phase Sensitive Demodulator (2023).
8. **Harris Khan**, AI for Sensors and Actuators (2023).

In Progress

MS Thesis

1. **Mohammad Ali Mangi**, Piezoelectric Aeroelastic Energy Harvesting via Galloping.
2. **Uzair Ahmad**, Design and Development of Piezo-Based MEMS for energy harvesting.
3. **Javeria Aijaz**, Piezoelectric Devices for Ear Implant.
4. **Zeeshan Ahmed Awan**, Design and analysis of piezoelectric energy harvester for hydro-pneumatic suspension.

Awards and Achievement

- **Achievement Award from Vice-President of European Union Parliament 2018**
  The award was given by Vice President of EU-Parliament "Fabio Massimo Castaldo".
- **Best Paper Award, MDPI, Switzerland, 2018**
  Elahi, H., Eugeni, M., & Gaudenzi, P. (2018). A review on mechanisms for piezoelectric-based energy harvesters. Energies, 11(7), 1850.
- **Foreign Ministry Honor List 2021**
  The award was given by the Ministry of Foreign Affairs, Government of Pakistan for services towards Science and Technology.
- **Appreciation Letter for Teaching Excellence and Students Feedback 2024**
  The appreciation letter was given by the Dean, College of Electrical and Mechanical Engineering, National University of Sciences and Technology, Islamabad, Pakistan.
- **High Achiever Award 2023**
  This award was given for the Project "Smart Helmet" by the Commandant, College of Electrical and Mechanical Engineering, National University of Sciences and Technology, Islamabad, Pakistan.
- **Young Overseas Leader under 40, 2021**
  The award was given by the Ministry of Foreign Affairs, Government of Pakistan for services towards Science and Technology.
- **Travel Grant by Sapienza University of Rome, Rome, Italy**
  Elahi, H., Eugeni, M. & Gaudenzi, P. (2018). Design and Performance Evaluation of an Aeroelastic Energy Harvester based on the Limit Cycle Oscillation Phenomenon. 69th IAC, Bremen, Germany.
- **Travel Grant by Sapienza University of Rome, Rome, Italy**
  Elahi, H., Gaudenzi, P., Cardini, V., Eugeni, M., Nisi, G. G., Pasquali, M., & Pollice, L. (2016). Analytical, Experimental and Numerical Analysis of Stability and Degradation of Smart Structure for Cubic Reconnaissance Satellites. DeMEASS VIII, Moscow, Russia.
- **Travel Grant by Higher Education Commission, Pakistan**
  Elahi, H., Israr, A., Khan, Z, M. & Ahmad, S., (2014). Robust Vehicle Suspension System by Converting Active & Passive Control of a Vehicle to Semi-Active Control System Analytically. 2nd ICCMA-14, Dubai, UAE.

Google scholar profile

- Citations: 2158
- i10-index: 45
- h-index: 23

Funded projects Completed

- "**Investigation of PZT response in composite structures with variable degradation levels**".
  Clean Sky 2 Joint Undertaking under the European Union's Horizon 2020 research and innovation program (Grant Agreement n° CS2-REG- GAM–2014-2015-01).
- "**Application of an energy harvesting system from mechanical vibrations and integrated structural monitoring for the components of a launcher**". (2020).
  Sapienza University of Rome, Italy (Protocol number: RM120172B9DA4F67).
- "**Development of smart composites by means of additive manufacturing processes**". (2018).
  Sapienza University of Rome, Italy (Protocol number: RG1181643659C4DF).
- "**Advanced composite laminate structures with piezoelectric patches inserted into the lamination sequence for structural monitoring**". (2017).
  Sapienza University of Rome, Italy (Protocol number: RP11715C8196B17B).

EDITORIAL ACTIVITIES

Sep 2020 – Mar 2021

Editorial Board

Journal Microsystem Technologies (Springer).
Impact Factor: 2.012
https://www.springer.com/journal/542

Mar 2021 – Mar 2024 **Associate Editor**

Frontiers in Neurorobotics.
Impact Factor: 3.493
www.frontiersin.org/journals/neurorobotics

Apr 2024 – Present **Associate Editor**

Frontiers in Aerospace Engineering.
https://www.frontiersin.org/journals/aerospace-engineering

Feb 2021 – Oct 2021 **Guest Editor**

Journal Energies (MDPI). Special Issue: Energy harvesting in Aerospace Engineering.
Impact Factor: 3.252
https://www.mdpi.com/journal/energies/special_issues/EH_AE

Dec 2022 – Aug 2023 **Guest Editor**

Journal Energies (MDPI). Special Issue: Numerical Simulation Methods for Analyzing Fatigue and Fracture Behavior in Metallic Materials.
Impact Factor: 3.748
https://www.mdpi.com/journal/materials/special_issues/EIG5DIBW37#info

Conferences Technical Committee

- **Program Chair**
  6th International Conference on Robotics and Automation in Industry (ICRAI) 2024.
- **Technical Committee Member**
  International Conference on Control Mechatronics and Automation (2016-24).
- **Technical Committee Chair** 2nd International Conference on Power, Energy and Electrical Engineering, Copenhagen, Denmark (2020).
- **Technical Committee Member**
  International Conference on Mechanics and Mechatronics Research, Barcelona, Spain (2017).
- **Technical Committee Member**
  International Conference on Robotics Systems and Vehicle Technology, London, UK (2019).
- **Organizing Member**
  1st International Conference on Structural Dynamics and Vibrations, Islamabad, Pakistan (2014).

Reviewer

- Reviewed for Elsevier, Springer, IEEE, MDPI, SAGE, ASME, and Other Publishers
- More information can be found at:
  https://www.webofscience.com/wos/author/record/Y-8183-2018

Memberships

- Pakistan Engineering Council (PEC) MECHATRO/994
- American Society of Mechanical Engineers (ASME) 000100385554
- Institution of Mechanical Engineers UK (IMechE) 80191789
- American Society of Testing and Materials (ASTM) 1771599
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

Extracurricular activities

- President at Pakistan Youth Council of Rome, Italy (2018-19)
- International Student Representative at Northwestern Polytechnical University, Xi'an, China (2015-16)
- Vice President at Institute of Mechanical Engineers UK, UET Taxila Chapter (2012-13)
- President at Campus Cultural and Dramatic Society UET Taxila, Chakwal Campus (2011-12)
- President at Campus Editorial Board UET Taxila, Chakwal Campus (2010-11)

PUBLICATIONS

Books

1. **Elahi, H.**, Eugeni, M. and Gudenzi, P. Piezoelectric aeroelastic energy harvesting. **Elsevier, Nov. 2021**. ISBN: 9780128239681.

   https://www.elsevier.com/books/piezoelectric-aeroelastic-energy-harvesting/elahi/978-0-12-823968-1

2. **Elahi, H.**, Jabbar, H. and Hamza, A. Mechatronics and Data Acquisition Systems. **Elsevier, Nov. 2025.**

Journal Publications

1. Marwat, M.A., Ma, W., Fan, P., **Elahi, H.**, Samart, C., Nan, B., Tan, H., Salamon, D., Ye, B. & Zhang, H. (2020). Ultrahigh energy density and thermal stability in sandwich-structured nanocomposites with Dopamine@ Ag@ BaTiO3. Energy Storage Materials.
2. Ali, A., Shaukat, **Elahi, H.**, H., Taimur, S., Manan, M.Q., Altabey, W.A., Kouritem, S.A. and Noori, M., 2025. Advancements in Energy Harvesting Techniques for Sustainable IoT Devices. Results in Engineering, p.104820.
3. Zamir, F., Sheeraz, M.A., Pasha, R.A., Khalid, H.M., **Elahi, H.** and Malik, M.S., 2025. Multi-patched piezoelectric vibrational energy scavenger for miniaturized electronic applications. Microsystem Technologies, pp.1-17.
4. Khan, M.S., **Elahi, H.**, Saleem, M.M., Rehman, M.U., Tayyab, M.A. and Tiwana, M.I., 2025. Design of a novel tri-axis ZnO nanowires based piezoelectric accelerometer. PloS one, 20(3), p.e0318069.
5. Mangi, M.A., **Elahi, H.**, Ali, A., Jabbar, H., Aqeel, A.B., Farrukh, A., Bibi, S., Altabey, W.A., Kouritem, S.A. and Noori, M., 2025. Applications of Piezoelectric-based Sensors, Actuators, and Energy Harvesters. Sensors and Actuators Reports, p.100302.
6. Amjad, H., Asif, N., **Elahi, H.**, Khan, U.S., Akbar, H., Ansari, A.R. and Nawaz, R., 2024. Precision Segmentation and Binary Masking of Skin Lesions in Automated Dermatological Diagnostics Using Detectron2. IEEE Access.
7. Hussain, S., Saleem, M.M., Rehan, M., **Elahi, H.** and Tiwana, M.I., 2024. A high sensitivity, low cost and fully decoupled multi-axis capacitive tactile force sensor for robotic surgical systems. Plos One, 19(11), p.e0313737.
8. Saeed, S.M., Akbar, H., Nawaz, T., **Elahi, H.** and Khan, U.S., 2023. Body-pose-guided action recognition with convolutional long short-term memory (LSTM) in aerial videos. Applied Sciences, 13(16), p.9384.
9. Mehmood, F., Tariq, H.A., Anwar, M., **Elahi, H.**, Bhutta, M.R., Khan, T.I., Israr, A., Umer, M., Qazi, U.W. and Ghafoor, U., 2023. Heat Transfer Enhancement in Cooling Jacket of Liquid Cooled Spark Ignition Engine. Energies, 16(13), p.5126.
10. Khan, M.U., Rehman, F., Saleem, M., **Elahi, H.**, Sung, T.H. and Jabbar, H., 2023. Optimum driving of ultrasonic cleaner using impedance and FFT analysis with validation of image processing of perforated foils. Applied Sciences, 13(12), p.6991.
11. Zhao, Y., Lin, **Elahi, H.**, H., Miao, F. and Riaz, S., 2023. Clamping force sensor fault analysis and fault-tolerant control of the electromechanical brake system. Arabian Journal for Science and Engineering, 48(5), pp.6011-6023.
12. Eugeni, M., **Elahi, H.**, Fune, F., Lampani, L., Mastroddi, F., Romano, G. P., & Gaudenzi, P. (2019). Numerical and experimental investigation of piezoelectric energy harvester based on flag-flutter. Aerospace Science and Technology, 105634.
13. **Elahi, H.**,Eugeni, M., Fune, F., Lampani, L., Mastroddi, F., Romano, G. P., & Gaudenzi, P. (2020) Performance Evaluation of a Piezoelectric Energy Harvester Based on Flag-Flutter. Micromachines, 11, 933.
14. **Elahi, H.**, Eugeni, M., & Gaudenzi, P. (2019). Design and performance evaluation of a piezoelectric aeroelastic energy harvester based on the limit cycle oscillation phenomenon. Acta Astronautica.
15. **Elahi, H.**, Eugeni, M., & Gaudenzi, P. (2018). A review on mechanisms for piezoelectric-based energy harvesters. Energies, 11(7), 1850.
16. **Elahi, H.** (2020). The investigation on structural health monitoring of aerospace structures via piezoelectric aeroelastic energy harvesting. Microsystem Technologies, 1-9.
17. V. Memmolo, **Elahi, H.**, M. Eugeni, M. Pasquali, E. Monaco, Fabrizio Ricci, & P. Gaudenzi, (2019). Investigation of PZT response in composite structures with variable degradation levels: experimental and numerical investigation. Journal of Materials Engineering and Performance.

18. Sheeraz, M. A., Malik, M. S., Rahman, K., **Elahi, H.**, Khurram, M., Eugeni, M., Gaudenzi, P. (2022). Multimodal piezoelectric wind energy harvester for aerospace applications. International Journal of Energy Research, 46(10), 13698-13710.
19. Maddu, J., Karrolla, B., Shaik, R. U.,**Elahi, H.**, Arkanti, K. (2023). Evaluation of Bronze Electrode in Electrical Discharge Coating Process for Copper Coating. Micromachines, 14(1), 136. Aerospace Science and Technology, 105634.
20. Sohail, M.U., **Elahi, H.**, Islam, A. Swati, RF, (2021). CFD analysis on the effects of distorted inlet flows with variable RPM on the stability of the transonic micro-compressor. Microsystem Technologies.
21. **Elahi, H.**, Eugeni, M., Gaudenzi, P., Gul, M., & Swati, R. F. (2018). Piezoelectric thermo electromechanical energy harvester for reconnaissance satellite structure. Microsystem Technologies, 1-8.
22. Sheeraz, M.A., Malik, M.S., Rehman, K., **Elahi, H.**, Butt, Z., Ahmad, I., Eugeni, M. and Gaudenzi, P., 2021. Numerical Assessment and Parametric Optimization of a Piezoelectric Wind Energy Harvester for IoT-Based Applications. Energies, 14(9), p.2498.
23. Ullah, A., **Elahi, H.**, Sun, Z., Khatoon, A., Ahmad, I. (2021). Comparative Analysis of AlexNet, ResNet18 and SqueezeNet with Diverse Modification and Arduous Implementation. Arabian Journal for Science and Engineering, 1-21.
24. Khorasani, M., **Elahi, H.**, Eugeni, M., Lampani, L., Civalek, O. (2021). Vibration of FG Porous Three-Layered Beams Equipped by Agglomerated Nanocomposite Patches Resting on Vlasov's Foundation. Transport in Porous Media, 1-30.
25. Warsi, S. S., Zahid, T., **Elahi, H.**, Liaqait, R. A., Bibi, S., Gillani, F., Ghafoor, U. (2021). Sustainability-Based Analysis of Conventional to High-Speed Machining of Al 6061-T6 Alloy. Applied Sciences, 11(19), 9032.
26. Ullah, M., Qayyum, F., **Elahi, H.**, Mukhtar, F., Ali, Q., Abbas, C. A. (2020). Influence of microstructural evolution and localized delta ferrite number on high-cycle fatigue crack opening and propagation rate. Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications.
27. **Elahi, H.**, Eugeni, M., Lampani, L., & Gaudenzi, P., (2020) Modeling and Design of a Piezoelectric Nonlinear Aeroelastic Energy Harvester. Integrated Ferroelectrics.
28. **Elahi, H.**, Eugeni, M., Gaudenzi, P., Qayyum, F., Swati, R. F., & Khan, H. M. (2018). Response of piezoelectric materials on thermomechanical shocking and electrical shocking for aerospace applications. Microsystem Technologies, 1-8.
29. **Elahi, H.**, Butt, Z., Eugnei, M., Gaudenzi, P., & Israr, A. (2017). Effects of variable resistance on smart structures of cubic reconnaissance satellites in various thermal and frequency shocking conditions. Journal of Mechanical Science and Technology, 31(9), 4151-4157.
30. Bashir, M. A., Daabo, A. M., Amber, K. P., Khan, M. S., Arshad, A., **Elahi, H.** (2021). Effect of Phase Change Materials on the short-term thermal storage in the solar receiver of dish-micro gas turbine systems: A numerical analysis. Applied Thermal Engineering, 117179.
31. Swati, R. F., AsfandYar Amjad, M., Talha, M., **Elahi, H.**, Hamdani, H. R., Khan, A. A., Qureshi, S. R. (2022). Crashworthiness study of UCAV's main landing gear using explicit dynamics. International Journal of Crashworthiness, 27(6), 1843-1859.
32. Zhao, Y., Lin, **Elahi, H.**, H., Miao, F., Riaz, S. (2022). Clamping Force Sensor Fault Analysis and Fault-Tolerant Control of the Electromechanical Brake System. Arabian Journal for Science and Engineering, 1-13.
33. Zhang, X., Zhao, Y., Lin, H., Riaz, S., **Elahi, H.** (2021). Real-Time Fault Diagnosis and Fault-Tolerant Control Strategy for Hall Sensors in Permanent Magnet Brushless DC Motor Drives. Electronics, 10(11), 1268.
34. **Elahi, H.**, Mughal, M.R., Eugeni, M., Qayyum, F., Israr, A., Ali, A., Praks, J., & Gaudenzi, P., (2020) Characterization and implementation of a piezoelectric energy harvester configuration: analytical, numerical and experimental approach. Integrated Ferroelectrics.
35. Anjum, Z., Shah, M., **Elahi, H.**, Khan, M., Mujahid, M., Khushnood, S., & Qayyum, F. (2020). Fretting fatigue crack initiation and propagation in Ti6Al4V sheets under tribocorrosive conditions of artificial seawater and physiological solutions. Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications, 1464420720946431.
36. Sohail MU, Hamdani HR, Islam A, Parvez K, Khan AM, Allauddin U, Khurram M & **Elahi, H.** Prediction of Non-Uniform Distorted Flows, Effects on Transonic Compressor Using CFD, Regression Analysis and Artificial Neural Networks. Applied Sciences. 2021; 11(8):3706.
37. **Elahi, H.**, Munir, K., Eugeni, M., Abrar, M., Arshad, A., Khan, A., & Gaudenzi, P., (2020) A Review on Applications of Piezoelectric Materials in Aerospace Industry. Integrated Ferroelectrics.
38. **Elahi, H.**, Munir, K., Eugeni, M., & Gaudenzi, P., (2020) Reliability risk analysis for the aeroelastic piezoelectric energy harvesters. Integrated Ferroelectrics.
39. Hafeez, H., Zafar, M. N., Abbas, C. A., **Elahi, H.**, Ali, M. O. (2022). Real-Time Human Authentication System Based on Iris Recognition. Eng, 3(4), 693-708.

40. Riaz, S., Lin, H., & **Elahi, H.** (2020). A novel fast error convergence approach for an optimal iterative learning controller. Integrated Ferroelectrics, 213(1), 103-115.

41. Ali, A., Pasha, R.A., **Elahi, H.**, Sheeraz, M.A., Bibi, S., Hassan, Z.U., Eugeni, M., & Gaudenzi, P., (2019) Investigation of Deformation in Bimorph Piezoelectric Actuator: Analytical, Numerical and Experimental Approach. Integrated Ferroelectrics.

42. Swati, R. F., **Elahi, H.**, Wen, L. H., Khan, A. A., & Shad, S. (2019). Experimental and Numerical Investigation of Transversal Damage in Carbon Fiber Reinforced Composites using X-FEM Analysis. Journal of Mechanical Science and Technology, 33(1), 205-211.

43. Swati, R. F., **Elahi, H.**, Wen, L. H., Khan, A. A., Shad, S., & Mughal, M. R. (2018). Investigation of tensile and in-plane shear properties of carbon fiber reinforced composites with and without piezoelectric patches for micro-crack propagation using extended finite element method. Microsystem Technologies, 1-10.

44. Khan, M. U., Butt, Z., **Elahi, H.**, Asghar, W., Abbas, Z., Shoaib, M., & Bashir, M. A. (2018). Deflection of coupled elasticity–electrostatic bimorph PVDF material: theoretical, FEM and experimental verification. Microsystem Technologies, 1-8.

45. Mukhtar, F., Qayyum, F., **Elahi, H.**, & Shah, M. (2019). Studying the Effect of Thermal Fatigue on Multiple Cracks Propagating in an SS316L Thin Flange on a Shaft Specimen Using a Multi-Physics Numerical Simulation Model. STROJNISKI VESTNIK-JOURNAL OF MECHANICAL ENGINEERING, 65(10), 565-573.

46. Swati, R. F., Wen, L. H., **Elahi, H.**, Khan, A. A., & Shad, S. (2018). Extended finite element method (XFEM) analysis of fiber reinforced composites for prediction of micro-crack propagation and delaminations in progressive damage: a review. Microsystem Technologies, 1-17.

47. **Elahi, H.**, Taimoor, A., Basit, A., Israr, A., Swati, R. F., Ahmad, S., Ghafoor, U. & Shaban, M. (2018). Design and performance analysis of hybrid solar powered geyser in Islamabad, Pakistan. Therm Sci.

48. Munir, K., **Elahi, H.**, Ayub, A., Frezza, F., & Rizzi, A. (2019). Cancer Diagnosis Using Deep Learning: A Bibliographic Review. Cancers, 11(9), 1235.

49. Abrar, M., **Elahi, H.**, Ahmad, B. A., Ghayasudin, M., & Mughal, M. R. (2019). An area-optimized Nbit multiplication technique using N/2-bit multiplication algorithm. SN Applied Sciences, 1(11), 1348.

50. Ijaz, M., Qayyum, F., **Elahi, H.**, Ullah, M., Eugeni, M., Badshah, S., & Gaudenzi, P. (2019). Effect of Natural Aging and Fatigue Crack Propagation Rate on Welded and Non-Welded Aluminum Alloy (AA2219-T87). Advances in Science and Technology Research Journal, 13, 3.

51. Ali, A., Asim Pasha, R., Abdullah Sheeraz, M., Butt, Z., **Elahi, H.**, & Ahmed Khan, A. (2019). Investigation of Electrical Properties for Cantilever-Based Piezoelectric Energy Harvester. Advances in Science and Technology Research Journal, 76-85.

52. Butt, Z., Pasha, R. A., Qayyum, F., Anjum, Z., Ahmad, N., & **Elahi, H.**, (2016). Generation of electrical energy using lead zirconate titanate (PZT-5A) piezoelectric material: Analytical, numerical and experimental verifications. Journal of Mechanical Science and Technology, 30(8), 3553-3558.

53. Rehman, W. U., Jiang, G., Wang, Y., Iqbal, N., Rehman, S. U., Bibi, S., & **Elahi, H.**, (2019). A New Type of Aerostatic Thrust Bearing Controlled by High-speed Pneumatic Valve and a Novel Pressure Transducer. International Journal of Automotive and Mechanical Engineering, 16(4), 7430-7446.

54. Abbas, I., Wang, Y., **Elahi, H.**, Siddiqui, M. A., Ullah, M., & Qayyum, F. (2020). Effect of MoSi2-Si3N4/SiC Multi-Layer Coating on the Oxidation Resistance of Carbon/Carbon Composites above 1770 K. Journal of Composites Science, 4(3), 86.

55. **Elahi, H.**, Pasha, R. A., & Khan, M. Z. (2014). Experimental determination of mechanical quality factor of lead zirconate titanate (PZT-5A4E) by equivalent circuit method under various thermal and resistance conditions. University of Engineering and Technology Taxila. Technical Journal, 19(2), 1.

56. Butt, Z., Rahman, S. U., Pasha, R. A., Mehmood, S., Abbas, S., & **Elahi, H.**, (2017). Characterizing barium titanate piezoelectric material using the finite element method. Trans Electr Electron Mater, 18(3), 163-168.

57. **Elahi, H.**, Israr, A., Zubair Khan, M., & Ahmad, S. (2016). Robust vehicle suspension system by converting active & passive control of a vehicle to semi-active control system analytically. Journal of Automation and Control Engineering, 4(4).

58. Riaz, S., **Elahi, H.**, Javaid, K., & Shahzad, T. (2017). Vibration feature extraction and analysis for fault diagnosis of rotating machinery-A literature survey. Asia Pacific Journal of Multidisciplinary Research, 5(1), 103-110.

59. Swati, R. F., Hua, W. L., **Elahi, H.**, & Khan, A. A. (2018). XFEM damage analysis of carbon fiber reinforced composites and crack propagation in mixed-mode and implementation of the method using ABAQUS. Int J Mater Mech Manuf, 6(4), 286-290.

60. **Elahi, H.**, Pasha, R., Israr, A., & Khan, M. Z. (2014). Experimental Determination of Effect of Variable Resistance on Lead Zirconate Titanate (PZT-5A4E) under various Thermal and Frequency Conditions. Asia Pacific Journal of Multidisciplinary Research, 2(6), 22-27.

61. Khan, A., Khushnood, S., Saqib, N. U., Shahid, I. S., Khalid, R., & **Elahi, H.**, (2014). Numerical simulation of vortex induced vibration and related parameters in cross flow shell and tubes heat exchanger. Tech J Univ Eng Technol Taxila.

Book chapters

1. **Elahi, H.**, Eugeni M., & Gaudenzi P. (2018) Electromechanical Degradation of Piezoelectric Patches. In: Altenbach H., Carrera E., Kulikov G. (eds) Analysis and Modelling of Advanced Structures and Smart Systems. Advanced Structured Materials, vol 81. Springer, Singapore.
2. Eugeni, M., **Elahi, H.**, Fune, F., Lampani, L., Mastroddi, F., Romano, G. P., & Gaudenzi, P. (2019, September). Experimental Evaluation of Piezoelectric Energy Harvester Based on Flag-Flutter. In: Carcaterra A., Paolone A., Graziani G. (eds). Lecture Notes in Mechanical Engineering. Springer, Switzerland.
3. Munir, K., **Elahi, H.**, Farooq, M. U., Ahmed, S., Frezza, F., Rizzi, A. (2021). Detection and screening of COVID-19 through chest computed tomography radiographs using deep neural networks. In Data Science for COVID-19 (pp. 63-73). Academic Press Elsevier.
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Conference publications

1. Eugeni, M., **Elahi, H.**, Fune, F., Lampani, L., Mastroddi, F., Romano, G., & Gaudenzi, P. Flutter Investigation for Piezoelectric Aeroelastic Energy Harvester. 70th IAC 2019, Washington DC, US.
2. Eugeni, M., **Elahi, H.**, Fune, F., Lampani, L., Mastroddi, F., Romano, G., & Gaudenzi, P. Experimental evaluation of piezoelectric energy harvester based on flag-flutter. XXIV AIMETA 2019, Rome, Italy.
3. Eugeni, M., **Elahi, H.**, Fune, F., Lampani, L., Mastroddi, F., Romano, G., & Gaudenzi, P. Experimental study of a flag-flutter energy harvester. XXV AIDAA 2019, Rome, Italy.
4. **Elahi, H.**, Eugeni, M., & Gaudenzi, P. Design and Performance Evaluation of an Aeroelastic Energy Harvester based on the Limit Cycle Oscillation Phenomenon. 69th IAC 2018, Bremen, Germany.
5. Eugeni, M., **Elahi, H.**, Lampani, L., & Gaudenzi, P. Piezoelectric Nonlinear Aeroelastic Energy Harvester. ICAST2017: 28th International Conference on Adaptive Structures and Technologies, October 8-11th, 2017, Cracow, Poland.
6. Eugeni, M., **Elahi, H.**, Lampani, L., & Gaudenzi, P. Modeling and Design of a Nonlinear Aeroelastic Energy Harvester. 68th IAC 2017, Adelaide, Australia.
7. **Elahi, H.**, Gaudenzi, P., Cardini, V., Eugeni, M., Nisi, G. G., Pasquali, M., & Pollice, L. (2016). Analytical, Experimental and Numerical Analysis of Stability and Degradation of Smart Structure for Cubic Reconnaissance Satellites. DeMEASS VIII, Moscow, Russia.
8. **Elahi, H.**, Israr, A., Swati, R. F., Khan, H. M., & Tamoor, A. (2017, November). Stability of piezoelectric material for suspension applications. In Aerospace Science Engineering (ICASE), 2017 Fifth International Conference on (pp. 1-5). IEEE.
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12. Gull, M. A., **Elahi, H.**, Marwat, M., & Waqar, S. (2017, February). A new approach to classification of upper limb and wrist movements using EEG signals. In Biomedical Engineering (BioMed), 2017 13th IASTED International Conference on (pp. 181-194). IEEE, Innsbruck, Austria.
13. Ahmad, S., Wong, K. Y., & **Elahi, H.** (2017). Sustainability Assessment and Analysis of Malaysian Food Manufacturing Sector—A Move Towards Sustainable Development. Advanced Science Letters, 23(9), 8942-8946.

14. Swati, R. F., Shad, S., Khan, A. A., & **Elahi, H.** (2017). Offshore wind energy challenges, design improvements, anti-typhoon strategies for offshore wind turbine and structural health monitoring. In International conference on environment and human health engineering, Xian. Northwestern Polytechnical University, Xian.

15. Rehman, W.U., Yuanxin, L., Guiyun, J., Yongqin, W., Yun, X., Iqbal, M.N., Zaheer, M.A., Azhar, I., **Elahi, H.**, & Xiaogao, Y., 2017, May. Control of an oil film thickness in a hydrostatic journal bearing under different dynamic conditions. In Control and Decision Conference (CCDC), 2017 29th Chinese (pp. 5072-5076). IEEE.

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17. Waqar, S., Asad, S., Ahmad, S., Abbas, C. A., & **Elahi, H.**, (2017). Effect of drilling parameters on hole quality of Ti-6Al-4V titanium alloy in dry drilling. In Materials science forum (Vol. 880, pp. 33- 36). Trans Tech Publications.

Design Patents (Filed)

1. Landing Gear for Unmanned Combat Aerial Vehicle
2. Commercial Surveillance Unmanned Guided Vehicle