PIYUSH GAUR, Ph.D.

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Research & Development Engineer | Research Associate

EXPERTISE

- Design & Fabrication of experimental Setups.
- Biomechanical testing
- Testing Automotive Parts
- Finite Element Simulations
- Constitutive Modelling
- Data Collection
- Biomaterials
- Bio-Equipment Maintenance
- Fracture & Fatigue
- Guest Lectures
- Project Coordination
- Analysis & Evaluation
- Statistical Analysis

PROFILE

- Dedicated, resourceful and innovative Assistant Professor and research professional with over 7 years of skills in teaching, researching and developing robust, and economic methods, analyzing the properties of biomechanical testing of tissues, biomaterials, and emerging new experimental setups.
- An accomplished trainer and a mentor with sound track record of creative scholastic achievements.
- Skilled in counseling, Technical curriculum design, channelizing all the working conditions of teachers creating the daily educational program and creating projects.
- Strong & excellent academic standing with knowledge of teaching practice and nurturing as well as fostering student's development to their utmost potential.
- Exceptional ability to summarize research findings, analyze/evaluate data & results and perceive patterns/ structures; Well versed in carrying out complex analytical work, gather data through observation, analysis and experiments.
- Creative and innovative individual with perseverance to cultivate the thirst for knowledge, possess demonstrated skills in all areas of education.
- Skilled in sophisticated research techniques and technologies: Uniaxial and biaxial tensile testing of soft tissues, Compression testing of soft tissues, fatigue and fracture mechanics-based testing, finite element modelling using CAD/CAE.
- Proven knowledge in experimental and computational research and data collection/analysis.
- Acknowledged for being resourceful, adaptable & self-directed with the ability to meet even the most challenging goals due to outstanding troubleshooting, analytical, and problem solving skills.

EDUCATION & CERTIFICATIONS

- **Doctor of Philosophy** (*Thesis Submitted*) in Mechanical Engineering, Indian Institute of Technology New Delhi, India, Jan 2019
- **Master of Science by Research** (M. Res) in Mechanical Engineering, Coventry University, UK, July 2012
- **Master of Science** (MSc) in Automotive Engineering, Coventry University, UK, Jul 2010
- **Bachelor of Technology** (B. Tech) in Mechanical Engineering, UP Technical University, Lucknow, India, Jul 2008

PROFESSIONAL EXPERIENCE

Jan 2019 – Present: Institute of Engineering & Technology, J. K Lakshmipat University, Jaipur as Assistant Professor

Sep 2017 – Aug 2018: Work Integrated Learning Programme (WILP), BITS Pilani as Guest Faculty

Nov 2017 – Dec 2018: IRD, Mechanical Engineering Department, IIT Delhi, PI: Dr. Anoop Chawla as Research Assistant

Jan 2016 – Oct 2017: FITT, Mechanical Engineering Department, IIT Delhi, PI: Dr. Anoop Chawla as Research Assistant

Jan 2015 – Dec 2015: IRD, Mechanical Engineering Department, IIT Delhi as Research and Teaching Assistant

Sep 2011 – Dec 2014: Mercedes Benz Funded Research Project, Mechanical Engineering Department, IIT Delhi as Project Scientist

Mar 2010 – Aug 2011: TSB Bonded Car Project, Coventry University, UK, PI: Dr. Paul Briskham & Mr. Andrew Blows as Research Assistant

DOMAIN EXPERIENCE

Key Areas of Responsibilities:

Teaching Experience

- Administering classes on Finite Element Methods and Fracture Mechanics to PG students with the intention of imparting competitive edge for the post graduate students.
- Providing well outlined & methodical theory classes along with practical sessions that provide hands on training to the students, planning and organizing in such a way that theory and practical classes go hand in hand.
- Planning practical sessions in such a way that students get opportunity to use and practice their lessons adequately and individually whenever possible.
- Devising & updating course content and managing classroom coverage of assigned subjects as per academic curriculum to students while preparing academic reports.
- Preparing and administering examinations, grading them, providing feedback to the students and managing class & carrying out supervisory tasks in accordance with the institute policies, procedures and applicable laws.
- Creating the daily educational program, developed projects and writing statements of assessment within the framework of present institute policies.
- Assessing students and conducting staff meetings for their development and infusing new ideas, activities and resources to make concepts more vivid and interesting.
- Formulating modules & made it available to students along with learning objectives, reviewing earlier modules and devised & updated course content.
- Building a strong rapport with the subordinates & colleagues and worked with them to plan and coordinate work.

Research Experience:

- Responsible for managing, developing and executing clinical R&D and trial protocol studies and integrating specific area considerations into strategic & operational decisions.
- Accountable for accidental data collection on Delhi-Jaipur Highway and conduct tensile and compression tests on soft tissues.
- Conducting clinical studies consistent with applicable regulations, guidelines & policies and managing site initiation (e.g. start-up document preparation, distribution, receipt, and review).
- Setting-up and maintaining accurate study status and implant logs; streamlining operations & administration by scrutinizing flaws and devised strategic measures for improvement.
- Performing dynamic tests and simulation of soft tissues like skin, aorta, diaphragm, the heart and the lungs.
- Acting as a key player in assisting Dr. Anoop Chawla in laboratory and tutorial sessions in CAD/FEM subjects and perform uniaxial & Biaxial tensile tests on diaphragm and aorta tissues.
- Handling clinical sites as applicable by providing study training, study materials, facilitating enrollments, ensuring high quality data collection identifying & resolving issues, directly to the investigational sites or through Clinical Research Organizations (CRO).
- Driving initiatives pertaining to perform literature review on soft tissue injuries, assist in FE simulations of soft tissues and study the variations of soft tissues properties with strain rate under impact loading conditions along with design of experiments.
- Participating in the fatigue testing of adhesively bonded joints for different joints configurations of aluminum and their computational modelling.
- Successfully designing & conducting customized training programs and ensuring that training & development initiatives are aligned with the organizational goals/culture by utilizing contemporary pedagogy, learning tools & methodology.

HONORS/AWARDS/SEMINARS/INVITED LECTURES

- Bestowed MOUD fellowship by IIT Delhi to present papers in international conferences, 2017 – 2018.
- Presented a talk on “Experimental characterization of diaphragm and aorta at high strain rate loading” at International Course in Transportation Planning and Safety held at TRIPP New Delhi, Dec 2015.
- Offered a seminar on “Fracture Mechanics based testing of adhesively bonded joints” held at International Conference on Smart Technologies for Mechanical Engineering, Delhi Technological University, New Delhi, India, Oct 2013.
- Requested as guest speaker to convey a talk on, “Advances in FEM with emphasis on Bio- mechanics and Fracture Biomechanics” to Graduate and Post Graduate students at DIT University, Dehradun, India, Mar 2013.
- Presented Volvo foundation research fellowship by IIT Delhi to present research papers in International Conferences, 2012 – 2014.
- Granted M. Sc(R) research scholarship by Coventry University, UK to follow research in the field of adhesive bonding under Dr. Paul Briskham in conjunction with Jaguar Land Rover, UK. 2010 – 2011.

- Gained International merit scholarship from Coventry University, UK to pursue MSc in Automotive Engineering, 2009 – 2010.
- Contributed and attained accolades in paper presentations, debates and elocution's, 2004 – 2008.

PUBLICATIONS

JOURNALS (ACCEPTED/IN REVIEW)

- Piyush Gaur, Anoop Chawla, Khyati Verma, Sudipto Mukherjee, Sanjeev Lalvani, Rajesh Malhotra, Christian Mayer, "Characterization of human diaphragm at high strain rate loading", Journal of the Mechanical Behaviour of Biomedical Materials, Volume 60, July 2016, Pages 603-616, ISSN 1751-6161, http://dx.doi.org/10.1016/j.jmbbm.2016.02.031.
- Piyush Gaur, Anoop Chawla, Khyati Verma, Sudipto Mukherjee, Sanjeev Lalvani, Rajesh Malhotra, "High rate failure properties of human aortic tissue under longitudinal extension", International Journal of Experimental and Computational Biomechanics, Vol 4, Nos. 2/3, pp 125-151. DOI: 10.1504/IJECB.2018.10013568.
- Khyati Verma, Sudipto Mukherjee, Piyush Gaur, Anoop Chawla, Rajesh Malhotra, Sanjeev Lalwani, "High strain rate compressive behaviour of human heart", International Journal of Experimental and Computational Biomechanics, Inderscience Publishers, Vol 4, Nos. 2/3, pp 152-174. DOI: 10.1504/IJECB.2018.10013572.
- Piyush Gaur, Khyati Verma, Anoop Chawla, Sudipto Mukherjee, Mohit Jain, Christian Mayer, Ravi Kiran Chitteti, Pronoy Ghosh, Sanjeev Lalwani, Rajesh Malhotra, "A Bilinear Structural Constitutive Model for Strain Rate Dependent Behaviour of Human Diaphragm Tissue", International Journal of Crashworthiness, Taylor & Francis. DOI: 10.1080/13588265.2019.1583423.
- Murari Prasad, Ravi Shankar Prasad, Deepika Mishra, Piyush Gaur, Technical Letters (Capital) Writing: A New Concept, Journal of Graphic Engineering and Design, Vol 9(1), June 2018, pp 45-47, DOI:10.24867/JGED-2018-1-045.
- Piyush Gaur, Sanyam Sharma, Anoop Chawla, Sudipto Mukherjee, Mohit Jain, Christian Mayer, Ravi Kiran Chitteti, Pronoy Ghosh, Sanjeev Lalwani, Rajesh Malhotra, "Inverse Material Characterization of Human Aortic Tissue for Traumatic Injury in Motor Vehicle Crashes", Submitted to the Inverse Problems in Science and Engineering, Taylor & Francis, Rebuttals Submitted.
- Piyush Gaur, Sanyam Sharma, Devendra Kumar, Anoop Chawla, Sudipto Mukherjee, Richa Sharma, Christian Mayer, Ravi Kiran Chitteti, Pronoy Ghosh, Sanjeev Lalwani, "High Rate Failure Properties of Porcine Aortic Tissue under Uniaxial Tension", Submitted to the International Journal of Crashworthiness, Taylor & Francis, In Review.
- Piyush Gaur, Devendra Kumar, Sanyam Sharma, Anoop Chawla, Sudipto Mukherjee, Christian Mayer, Ravi Kiran Chitteti, Pronoy Ghosh, Sanjeev Lalwani, "Anisotropic Formulation of Porcine Aorta using In Vitro Constrained Biaxial Tensile Testing", Submitted to the International Journal of Crashworthiness, Taylor & Francis, In Review.
- Piyush Gaur, Devendra Kumar, Sanyam Sharma, Raj Lakshmi Nayak, Anoop Chawla, Sudipto Mukherjee, "Investigation and Evaluation of Dynamic Poisson's Ratio of Human Diaphragm Using Digital Image Correlation and Correction Factor to Address the Experimental Challenges in Equi-biaxial Tensile Tests", Submitted to the International Journal of Mechanical Engineering Sciences, SAGE Publications, In Review.

CONFERENCES PROCEEDINGS(INTERNATIONAL/NATIONAL)

- Khyati Verma, Piyush Gaur, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani, Rajesh Malhotra, "Inverse Material characterization of Heart under Dynamic Impact", SIMBIO-M International Conference, Stratford-Upon-Avon, United Kingdom, June 2018.
- Piyush Gaur, Khyati Verma, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani, Rajesh Malhotra, Christian Mayer, Pronoy Ghosh, Ravi Kiran Chitteti, "In Vitro Characterization of Human Aortic Tissue under Uniaxial Tension", Proceedings of International Conference on Biomedical Technology (ICBT), Hannover, Germany, Nov – 2017.
- Khyati Verma, Piyush Gaur, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani, Rajesh Malhotra, "A Bilinear Structural Constitutive Model for Strain Rate Dependent Behaviour of Human Heart", Proceedings of International Conference on Biomedical Technology (ICBT), Hannover, Germany, Nov – 2017.
- Piyush Gaur, Paul Briskham, Ravi Shankar Prasad, "A New Method to Predict Fatigue Crack Propagation Rates in Adhesively Bonded Joints subjected to Model I loading", Proceedings of the International Conference on Smart Technologies in Mechanical Engineering, Delhi Technological University, 2013, ISBN: 978-93-83083-35-0, DOI: 10:13140/RG.2.1.3434.7682.
- Piyush Gaur and Bhargav Prajwal Pathri, "Behaviour and Simulation of a car model under different design conditions using low speed wind tunnel", Proceedings of International Conference on Smart Technologies for Mechanical Engineering, Delhi Technological University (STME – 2013), 2013, Page – 11-13, ISBN: 978-93-83083-35.

TEACHING & RESEARCH INTERESTS

Research Interests:	Computational and Experimental Biomechanics, Human Body Modelling, Fracture and Fatigue, High Strain Rate Behavior of Materials, Digital Image Correlation (DIC) in Structure Property Correlation.
Teaching Interests:	Strength of Materials, Finite Element methods, Measurement and Meteorology, Machine Design, Soft Tissue Biomechanics, Cardiovascular Biomechanics, and Fracture Mechanics.

SKILLS

Theoretical Skills:	Soft tissue biomechanics, Automotive design, Inverse finite element analysis, Occupant safety, Constitutive modelling of engineering materials, Characterization of engineering materials.
Software Skills:	LS Dyna, Abaqus, working knowledge of user-material subroutines in LS dyna and Abaqus, Materialize Mimics, MS Excel, MATLAB, Hyperfit and Hyperstudy.
Experimental Skills:	Designing, validating and conducting impact experiments for human body tolerance analysis and characterization, hands on experience on high speed biaxial testing rig with DAQ controller, Force, Laser transducers, High speed data acquisition systems(Dewesoft), strain gauges, high speed cameras, high intensity lighting.

Date of Birth: 17/01/1986 | **Nationality:** Indian | **Languages known:** English & Hindi

REFERENCES AVAILABLE ON REQUEST