

Sepehr Nesaei

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Skills

Technical Software

Matlab, Labview, Chipkit (Arduino) Programming, Programmable Logic Controller (PLC), ANSYS (scripting in APDL), Solid Works, Relex2011 Carsim, AAA, JMP 10

Programming Language

Matlab, AUTOLEV, C++ in Linux/Windows

Others (Familiar with)

Python, ROS

Education

Aug 2014 –
Dec 2018

PhD Candidate in Mechanical Engineering (Micro Additive Manufacturing), Washington State University, Pullman, WA. (3.83/4)

Advisor: Dr. Arda Gozen

Thesis: Direct-Ink-Writing of Conductive Polymer Composites (CPC)

Aug 2012 –
Aug 2014

MSc in Mechanical Engineering (Experimental Solid Mechanics), South Dakota State University, Brookings, SD (3.625/4)

Advisor: Prof. Fred Delfanian, Dr. Todd Letcher

Thesis: Using Acoustic Emission monitoring for energy-based fatigue life predictions

Sep 2006 –
Feb 2009

MSc in Aerospace Engineering (Flight Dynamics & Control), Amirkabir University of Technology (*PolyTechnic*), Tehran, Iran.

Advisor: Dr. Kamran Raissi, Dr. Mahdi Mortazavibak

Thesis: Prediction of Hinge Moment Coefficients of a reversible flight control system by semi-experimental and System Identification Methods

Sep 2000 –
July 2005

BSc in Mechanical Engineering (Solid Mechanics), Azad University of Science and Technology, Tehran, Iran.

Advisor: Dr. Hossein Sadati

Thesis: Design and Optimization of the suspension system for an Offshore Vehicle (HMMWV Hummer)

Professional Experience

Aug 2014 –
Dec 2018

Graduate Research assistant. Manufacturing Processes and Machining Lab (MPML), School of Material Science and Mechanical Engineering, Washington State University, Pullman, WA.

- Micro Additive Manufacturing of Soft Material Composites-Direct ink writing of Conductive Polymer Composite with application to Bio-sensing, Interdigitated Micro battery, tissue engineering (Scaffold printing), flexible and stretchable
- Graduate Summer Research in RAS (Robotic Activity Support)- Current research is a part of Gerontechnology-Focused Summer Undergraduate Research Experience (GSUR). Our overall mission is to design a collaborative robotic, smart home technology to aid older adults with functional independence. Our proposed system is called RAS (Robotic Activity Support)
- Custom- built 3D axis motion system- Integrated Flow based Direct writing systems with high accurate 3D axis motion platform using Labview interface
- Micro Additive Manufacturing of Biosensors for glucose sensing
- Micro Additive Manufacturing of Microfluidic Membrane device for Cell culture
- Direct-Ink-Writing of Hydrogel scaffolds with application in Tissue engineering

- Quantitative Nano Mechanical Property Mapping- Measuring Nano-Mechanical Properties of thin films, biomaterials and conductive viscoelastic polymer composites by applying PeakForce Quantitative Nano-Mechanical Measurement (PQNM) as well as AFM topography
 - Rheology Characterization- Rheology characterization of Conductive Viscoelastic Polymer composites using strain-control based rotational rheometer, ARES-G2 from TA instrument.
- Spring 2015 & Spring 2016 **Graduate Teaching Assistant**, ME 401- Mechatronics (Labview, Arduino & Chipkit programming and PLC) Mechanical Engineering, Washington State University, Pullman, WA
- Aug 2012 – Aug 2014 **Graduate Research Assistant**. Material Evaluation and Testing Lab (METLAB), Department of Mechanical Engineering, South Dakota State University, Brookings, SD.
- **Human Body Vibration Analysis using AUTOLEV & MATLAB**- Multi body Dynamics Model for Analysis of Human Body Response to Vibrations ((Standing on a vertical platform).
 - **Nondestructive Evaluation in Fatigue Life Prediction**- Acoustic Emission monitoring of an Energy- based Fatigue Prediction Method applied to Notched Al 7075-T6 & 6061-T6 specimens
 - **Finding Macro-Mechanical Properties of Materials Using MTS Machines**- Tensile, compression, flexural and peel-tear studies
 - **Calculate Variable spreading area using Image Processing Technique**- (Cheese Melting Process)
 - **Calculate Nano-Mechanical Properties using Micro/Nano & Scratch/Hardness Tester (NANOVEA)** - Hardness, creep information about materials, protective coatings
 - **Calculate Surface Profile Using 3D Scanning Laser Microscope**- measuring surface roughness and capturing 3D image of samples using 3D Scanning Laser Microscope
- Jan 2012 – Aug 2012 **Researcher**, Hamgara Company, Tehran, Iran
- **Technology Maturity Assessment**- Measuring Maturity of Technology using Innovative Product Readiness Level (IPRL)
- Feb 2007 – Aug 2012 **Researcher**, Dynamics and Control Division, Academic Research Center, Tehran, Iran
- **Vision Based Flight Training Device (Flight Simulator)**- Developing Flight Dynamics- Nonlinear equations of motions and navigation- C++ coding in Linux
 - **Flight Vehicle System Identification**- Signal Processing Considerations and Model Validation in Flight Vehicle System Identification
 - **Electronic Systems Reliability**- Reliability assessment of electronic systems using RELEX 2011
- Feb 2010 – Dec 2011 **Instructor**, Engineering Department- Calculus 1, Calculus 2, Differential Equations, Payame Noor University, Tehran, Iran
- Jun 2005 – Sept 2005 **Intern**, R&D, 206 Platform Project, Iran Khodro Industrial Group, Tehran, Iran
- Sept 2004 – May 2005 **Teaching Assistant**, Calculus 1, Calculus 2, Mechanical Engineering Department- Azad University of Science & Research, Tehran, Iran

Publication

- 2017 **Sepehr Nesaei**, et all. "Additive Manufacturing with Conductive, Viscoelastic Polymer Composites: Direct-Ink-Writing of Electrolytic and Anodic Poly(ethylene oxide) Composites", Accepted Manuscript in Journal of Manufacturing Science and Engineering, ASME DC, 2017.
- 2017 **Sepehr Nesaei**, et all. "Direct-Ink-Writing of Room Temperature Ionic Liquid based Conductive Polymer Composites", accepted in World Conference on Micro and Nano Manufacturing (WCMNM), March 27-30, 2017, Kaohsiung, Taiwan
- 2016 James Cassidy, **Sepehr Nesaei**, et all. "Mechanical response of high density polyethylene to gamma radiation from a Cobalt-60 irradiator.", Journal of Polymer testing, Elsevier, 2016.
- 2016 Setareh Ghorban Shiroodi, **Sepehr Nesaei**, et all. "The Characterization of interaction between nisin and biodegradable polymeric films and its efficacy in inactivation of *Listeria monocytogenes*", Food and Bioprocess Technology (2016): 1-12.
- 2014 **S. Nesaei**, et all, "Surface Roughness measurements on coated plates", Technical paper in the Proceedings of the ASNT Conference on Digital Imaging XVII, 28-30 July 2014, Warwick, RI, USA.
- 2013 **S. Nesaei**, et all. "Applying an energy-based fatigue life prediction method to unnotched & notched Al6061-t6 specimen, Technical Paper." In Proceedings of the ASME 2013 International Mechanical Engineering Congress & Exhibition, IMECE2013, November 15-21, 2013, San Diego, CA, USA.
- 2013 T. Letcher, **S. Nesaei**, et all. "Hysteresis Strain Energy Behaviors of Al6061-T6 with Multi-Fatigue Load Levels as Applied to an Energy Based Fatigue Life Prediction Method", Technical Paper in the Proceedings of the ASME 2013 International Mechanical Engineering Congress & Exhibition, IMECE2013, November 15-21, 2013, San Diego, CA, USA.
- 2012 **S. Nesaei**, K. Raissi. "Data Processing Considerations and Model Validation in Flight Vehicle System Identification", Book Chapter in Signal Processing and Information Technology, Springer Berlin Heidelberg, pp 269-274