Shahab Zare Hossein Abadi

Date of Birth: March 22, 1991

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Mechanical Engineer with background in Fracture Mechanics Research

SUMMARY & OBJECTIVE

Currently a Ph.D. candidate in Aerospace Engineering Research, expected to graduate in Sep 2022, seeking an academic research-oriented career at one of the world's leading universities

EDUCATION

Ph.D. : University of Tehran (UT) — now | 2018
- Faculty of New Science and Technology
- Tehran, Iran
- Ranked 1st Universities in Iran
- Awarded Full Tuition-Waiver
- GPA: 18.66/20
- **Thesis**: (Application of artificial intelligence for predicting crack growth direction and fracture investigation of orthotropic materials)

M.Sc. : University of Tehran (UT) — 2016 | 2014
- Faculty of New Science and Technology
- Major in Aerospace Engineering
- Minor in Aerospace structures
- Awarded Full Tuition-Waiver
- GPA: 17.35/20
- **Thesis**: (Development of fracture criteria of composite material under mixed mode I/II)

B.Sc. : Yazd University — 2013 | 2009
- Faculty of Mechanical Engineering
- Yazd, Iran
- Major in Mechanical Engineering
- Minor in Solid Mechanics
- GPA: 14.84/20

RESEARCH INTEREST

- Fracture Mechanic
- Composites
- Materials Science
- Computational Mechanics
- Microstructural Analysis
- Artificial Intelligence (AI)
- Machine Learning
- Biomechanics

SKILLS & EXPERTISE

Soft Skills:
- Time Management, Punctuality, Extremely Coordinated, Project Management, Teamwork, Multi-Tasking, Problem Solving

Programming:
- Python, MATLAB, Mathematica, C++

CAD/CAM/CAE Tools:
- CATIA, SolidWorks, Inventor, AutoCAD, ANSYS Workbench, Abaqus

MS Office:
- Excel, Word, Access, PowerPoint

Other Skills:
- Fuzzy Logic
- Artificial Neural Networks
- Finite Elements Method
- Experimental Stress Analysis
- Playing Music Instruments

Language Skill:
- Persian (Native)
- English (Fluent and Advanced)

RESEARCH PROJECTS

Application of AI for fracture investigation of orthotropic materials (Sep 2018-Now/University of Tehran)
- Introduced a new concept for resisting fracture as the crack began to grow
- Developed a Strength based fracture criteria
- Under developed fuzzy inference system **(FIS)** and also adaptive neuro-fuzzy inference system **(ANFIS)**
- Under developed **machine learning** methods
- University of Tehran

Investigation of the fracture behavior of orthotropic materials under mixed mode loading (Sep 2014_Sep 2017/ University of Tehran)
- Developed a Stress based fracture criteria
- Developed a new material model named reinforcement isotropic solid **(RIS)**
- Developed "**EMTS**" criterion based on extension of well-known criterion, Maximum Tangential Stress **(MTS)** which is basically for isotropic materials
- Utilized **EMTS** criterion to obtain crack propagation direction and the moment of growth
- Considered an experimental procedure for validation by examining the orthotropic and **highly orthotropic** materials such as Glass-Epoxy and Wood specimens

Design, Analysis, and Build RC airplane (Sep 2009_Sep 2012/ Yazd University)
- Design, Simulate and Build a hand lunched RC airplane (**Shahin Kavir**)
- CAD Design: SolidWorks, CATIA, and Inventor
- CAE Analysis: Abaqus

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PUBLICATIONS

- **A new mixed-mode fracture criterion for orthotropic materials based on equivalent reinforcement isotropic model (in Persian)**
  S. Zare Hossein Abadi, M. Fakoor, R. Rafiee, 25th Annual Conference of Mechanical Engineering (ISME 2017), Tehran, Iran.
- **Extension of maximum tensile stress criterion to mixed mode fracture of orthotropic materials considering T-stress**
  S. Zare Hossein Abadi, M. Fakoor, R. Rafiee, Journal of Modares Mechanical Engineering, 17(10), pp.292-300, 2017.
- **Equivalent reinforcement isotropic model for fracture investigation of orthotropic materials**
  M. Fakoor, R. Rafiee, **S. Zare Hossein Abadi,** Journal of Steel and Composite Structures, 30(1), pp.1-12, 2019.
- **Stress Based Criteria for Mixed Mode (I/II) Fracture of Composites: Micro Modeling Assessment**
  S. Zare Hossein Abadi, N. Mehri Khansari, The 7th International Conference on Composites: Characterization, Fabrication and Application (CCFA-7), 2020, Tabriz, Iran.
- **Orthotropic Micro Failure Criteria Based on Matrix Adapting Coefficient**
  S. Zare Hossein Abadi, N. Mehri Khansari, under review of my co-author to be submitted to MFC Journal.

HONORS & AWARDS

- Awarded Excellent Student during high school (GPA: 19.48/20)
- Graduate Full Scholarship from Ministry of Science and Technology of Iran
- Member of Iranian Foundation of Elites
- Undergraduate Full Scholarship from Ministry of Science and Technology of Iran
- Ranked as one top Students with M.Sc. thesis score of 20/20 in Aerospace Engineering

RELEVANT COURSES

- Fracture Mechanics
- Mechanics of Composite Materials
- FEM
- Continuum Mechanics
- Fuzzy Logic
- Structure analysis and design

INTERNSHIPS

Iran Technical and Vocational Training Organization (TVTO)

- Auto mechanic (2012)
- CNC machinists (2013)

Masoud Tile Company

- Mechanical Engineering Intern (2011)

TEACHING EXPERIENCE

University of Tehran

- Fuzzy Logic Toolbox in Matlab (2019-2021)
- Fracture analysis in Abaqus (2018-2021)

Yazd Science and Technology Park

- RC airplane construction education (2013)

Yazd University

- CATIA software (2019-2021)

HOBBIES & INTRESTS

- Mountain
- Soccer
- Volunteer Works
- Reading book
- Watching movies
- Playing music

WORKING EXPERIENCE

Biomechanical Engineer

- BehGene (Oct 2020 - present)

(Designing and manufacturing of automated viral nucleic acid extraction apparatus)

Research Assistant

- Faculty of New Science and Technology in University of Tehran (Oct 2018 - present)

(Senior of the Fuzzy logic lab under the supervision of Prof M. H. Sabour and Prof. M. Fakoor)

Research Assistant

- Faculty of New Science and Technology in University of Tehran (Oct 2018-Sep 2016)

(Senior of the Composites Research Laboratory (COMRESLAB) under the supervision of Prof. M. Fakoor and Prof. R. Rafiee)

Self-Employed Mechanical Design Engineer

- (Jun 2010 - present)

(Designing and analyzing structures under various loading condition for companies and industries by CAD/CAE softwares)

REFERENCES

1. **Mahdi Fakoor**
   (*mfakoor@ut.ac.ir*) – Tel: 0098 0912 207 3004, Associate Professor, University of Tehran
2. **Mohammad Hossein Sabour**
   (*sabourmh@ut.ac.ir*) – Tel: 0098 0912 727 2087, Associate Professor, University of Tehran
3. **Roham Rafiee**
   (*Roham.Rafiee @ut.ac.ir*) – Tel: 0098 0912 107 8754, Associate Professor, University of Tehran