HANFENG ZHAI

Bachelor student at Shanghai University

Department of Mechanics, Shanghai University · *99 Shangda Rd., Shanghai, China*

hz253@cornell.edu · +86 18021027596 · hanfengzhai.net

[GitHub] · [ResearchGate] · [LinkedIn] · [Twitter] · [Biosketch] · [WeChat]

EDUCATION

- **M.S., Mechanical Engineering**
  Cornell University — Sept, 2021 - June, 2023
  ITHACA, NY — Supervisor: Jingjie Yeo
- **B.S., Theoretical & Applied Mechanics**
  Shanghai University — Sept, 2017 - June, 2021
  SHANGHAI, CHINA — Supervisor: Guohui Hu
  THESIS: *Predicting micro-bubble system dynamics with physics-informed deep learning*. [Chinese Preprint]

AWARDS & RECOGNITION

- Excellent Graduate of Shanghai — May, 2021
  Shanghai University [Namelist]
- Second Class Award — Jan, 2021
  The 3rd Undergraduate Academic Forum Shanghai University
- Outstanding Student Nomination — Dec, 2020
  Shanghai University [Namelist]
- Top Class Academic Scholarship — Nov, 2020
  School of Mechanics and Engineering Science [Namelist]
- Arts and Sports Scholarship — Nov, 2020
  School of Mechanics and Engineering Science [Namelist]
- Athletic Scholarship — Nov, 2018
  Shanghai University American Football Team [Namelist]
- Outstanding Student Nomination — July, 2018
  Shanghai University [Namelist]

SKILLS

- **Coding & Programming**
  Python, Matlab & Octave, Mathematica, C++, HTML, LaTeX, Bash, MPI, TensorFlow, PyTorch.
- **Computer Systems**
  Ubuntu, MacOS, Windows 7 & 10.
- **Simulation Softwares**
  COMSOL Multiphysics, OpenFOAM, LAMMPS, ANSYS workbench & APDL, Abaqus CAE.
- **Knowledge & Thoeries**
  Computational Fluid Dynamics, Fluid & Solid Mechanics (Elasticity & Plasticity), Structural Mechanics, Machine Learning & Deep Learning, etc.

PUBLICATION

- **H. Zhai** and G. Hu*. (2021) "Inferring micro-bubble dynamics with physics-informed deep learning". *arXiv preprint*. arXiv:2105.07179.

PROJECT [Full list]

- **Mechanical Properties of Solid Biomaterials**
  1. Structural design of composite materials with superior mechanical behaviors: lesson from the microstructure of nacre and enamel. [Report]
  CAD Application in Structural Mechanics, 2020

  2. Formulation and application of rate-independent stress update algorithm of hydrostatic pressure: elastoplastic yielding in composite. [Report]
  Plasticity Theory, 2020

  3. An investigation of the elastoplastic nature of ITD on the toughness of the dentin microstructure. [Report]
  SHU Summer Research Program, 2020

SOFTWARE

- **BubbleNet**
  A deep learning package for inferring microbubble dynamics with physics-informed neural networks.
  Environment: Python, Matlab, TensorFlow
  [Website] [Code] [Paper] [Video]

PRESENTATION

- **Computation Methods for Applied Mechanics Problem.** *The 3rd Undergraduate Academic Forum, Shanghai University*. Dec. 30th, 2020. [Poster] [Paper] [News]
- **A brief introduction of deep learning algorithms applied to mechanics.** *Prof. Zhansheng Guo's Lab, Shanghai University*. Apr. 20th, 2021. [Slides]

OTHER ACTIVITIES

- Won 1st Place (Apr, 2018) and 3rd place (Apr, 2019) in *Shanghai University Bodybuilding Contest*.
- Played Defensive End & Linebacker at Shanghai University Bombers American football team; joined *Russell Wilson football training camp* (July, 2018). [News]
- Served as scientific editor during winter break (Jan, 2021 - Mar, 2021) at QbitAI. ([1], [2], [3], [4], [5])

Last update: May 18th, 2021