

# HANFENG ZHAI

Bachelor student at Shanghai University

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## EDUCATION

- **M.S., Mechanical Engineering**  
Cornell University 09/2021 - 06/2023  
ITHACA, NY
- **B.S., Theoretical & Applied Mechanics**  
Shanghai University 09/2017 - 06/2021  
SHANGHAI, CHINA Supervisor: Guohui Hu  
THESIS: *Physics-Informed Deep Learning on Multiscale Fluid Dynamics*

## AWARDS & RECOGNITION

- Second Class Award 01/2021  
*The 3rd Undergraduate Academic Forum, Shanghai University*
- Outstanding Student Nomination 12/2020  
*School of Mechanics and Engineering Science, SHU*
- Top Class Academic Scholarship 11/2020  
*School of Mechanics and Engineering Science, SHU*
- Arts and Sports Scholarship 11/2020  
*School of Mechanics and Engineering Science, SHU*
- Athletic Scholarship 11/2018  
*Shanghai University Bombers American Football Team*
- Outstanding Student Nomination 07/2018  
*Residential College, Shanghai University*

## SKILLS

- **Coding & Programming**  
Python, Matlab & Octave, C++, Mathematica, HTML,  $\LaTeX$ , Bash, MPI, TensorFlow, PyTorch.
- **Computer Systems**  
Ubuntu, MacOS, Windows 7 & 10.
- **Simulation Softwares**  
Lammps, OpenFOAM, ANSYS workbench & APDL, Abaqus, DeepXDE..

## RESEARCH INTERESTS

- Data-driven deep learning and computational methods applied to multiscale fluidic problems, i.e. biophysics, complex fluids, soft matter, etc.

## PUBLICATIONS

- S. Liu, H. Zhai, Y. Xu, B. An\*, & D. Zhang\*. (2021) *The Role of Rod Decussation on Crack Deflection in Enamel*. Submitted to *Biomechanics and Modeling in Mechanobiology*. (Under Review)

## PROJECTS (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. [PDF]  
*CAD Application in Structural Mechanics, 2020*
  2. Formulation and application of rate-independent stress update algorithm of hydrostatic pressure: elastoplastic yielding in composite. [PDF]  
*Plasticity Theory, 2020*
  3. An investigation of the elastoplastic nature of ITD on the toughness of the dentin microstructure. [PDF]  
*SHU Summer Research Program, 2020*
- **Machine Learning of Fluid Dynamics**
  1. Investigation of the mechanics of the airfoil: application of machine learning in the noise prediction of NACA 0012. [PDF]  
*Fluid Physics on Flight, 2020*
  2. An optimized algorithm for the prediction of the water emptying time on BPNN. [PDF]  
*Online Research Program, 2020*

## PRESENTATIONS

- **Computation Methods for Applied Mechanics Problem.**  
*The 3rd Undergraduate Academic Forum, Shanghai University.* Dec. 30th, 2020. [Poster] [Paper] [News]

## OTHER ACTIVITIES

- Won 1st Place (05/2018) and 3rd place (05/2019) in *Shanghai University Bodybuilding Contest*.
- Played Defensive End & Linebacker at Shanghai University Bombers American football team; joined *Russell Wilson football training camp* (07/2018). [News]
- Served as scientific editor during winter break (01/2021-03/2021) at QbitAI. ([1], [2], [3], [4], [5])

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