Liu, Yazhuo (刘亚卓)

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EDUCATION

Southern University of Science and Technology (SUSTech) Shenzhen, China
B.S. in Theoretical and Applied Mechanics Sep. 2017 - Jun. 2021

- GPA: 3.89 / 4.00 (Sep. 2017 – Jun. 2021)

Georgia Institute of Technology (Georgia Tech) Atlanta, USA
Ph.D. in Mechanical Engineering Jan. 2022 – Dec. 2026 (expected)

- GPA: 4.00 / 4.00 (Jan. 2022 – Jun. 2022)

RESEARCH & PROJECT EXPERIENCES

Project I. Effect of Friction in Cutting Soft Solids **Jun. 2020 – Feb. 2021**
Cornell University (Cornell) **Online intern** (*online due to COVID-19*) **Advisor: Wei Hong, Chung-Yuen Hui**

- By simulating orthogonal cutting processes with different friction coefficients, we proved that the in-plane friction component perpendicular to the axis of the wire indenter changes the stretch field near the indenter tip significantly.
- From the energy point of view, it is qualitatively explained that the existence of in-plane friction makes it more difficult for crack nucleation or flaw propagation.
- Finally, we show that slicing motion reduces the in-plane friction component. So, soft materials can be cut more easily by combining squeezing and slicing than just pressing.

Project II. Phase Field Modeling of Topology Optimization on a Wing Control Surface **Sep. 2018 – Nov. 2018**
3D Printing Structure Optimization Competition (held by COMAC) **Advisor: Wei Hong**

- The phase field evolution is controlled by a double-well function with two equilibrium and stable points, which indicates whether space is occupied by materials.
- The direction of phase field evolution is defined as maximizing the strain energy density of the material.
- The retention ratio of material is constrained by the Lagrange multiplier method.

Project III. Analysis and Prediction of Effective Radius of FRP concrete **Oct. 2019 – Dec. 2019**
Finite Element Modeling Competition (held by CSTAM, Guangdong Province)

- Proved that the column FRP concrete under compression load will produce arch-like failure on the axial section.
- Simulated the failure process and calculated the remaining radius after failure

PUBLICATIONS

- Liu, Y., Hui, C.-Y. & Hong, W. A clean cut. *Extreme Mechanics Letters* **46**, 101343 (2021).
- Liu, Y., Feng, X. & Hong, W. Non-affine dissipation in polymer fracture (2022 Pending)

PATENTS

- CN Patent No. CN202020206173.X: “Logistics Unmanned Aerial Vehicle”, October 27, 2020

AWARDS & HONORS

- Summa Cum Laude Graduates (Top 10 Graduates), SUSTech, 2021
- CSTAM Guangdong Province, Finite Element Modeling Competition, Third Prize, 2019
- COMAC 3D Printing Structure Optimization Competition, Third Prize, 2018
- SUSTech Excellent Student Scholarship, First Class, 2018, 2019, 2020