Grace Hu

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Education

8/21-Present **University of California, Berkeley & San Francisco**, California
PhD Candidate in the Joint UCB-UCSF Bioengineering Graduate Program (4th Year)
NDSEG Graduate Research Fellow & Bakar BioEnginuity Fellow, GPA: 4.0/4.0

9/17-6/21 **Stanford University**, Stanford, California
M.S. in Computer Science ('21), GPA: 3.93/4.0
B.S. in Materials Science and Engineering ('21), GPA: 3.82/4.0

Research Experience

8/21-Present **Bioengineering Researcher**, advisors Grace Gu & Zev Gartner, UC Berkeley/UCSF.

- Programming 3D-bioprinted collagen and cellular inks with tunable mechanical behaviors; designing a closed-loop droplet printing system with computer vision

10/20-6/21 **Computer Science Research Assistant**, advisor Chris Piech, Stanford University.

- Trained an AI model on results from the Code in Place course offering to evaluate qualities of good teaching and provide adaptive generative feedback
- Employed Natural Language Processing (NLP) and Computer Vision (CV) methods to analyze linguistic patterns and perform facial expression recognition

6/18-6/20 **Bioengineering Research Assistant**, advisor Manu Prakash, Stanford University.

- Conducted research to promote frugal science globally and expand beyond the $1.75 low-cost paper microscope (Foldscope)
- Investigated ultralight, printable Zn/MnO_2 batteries to power a $150 Scanning Electron Microscope (AweSEM)
- Founding member of N95Decon, a COVID-19 mask decontamination organization

Employment

6/21-9/21 **Materials Product Design Intern (Metals/Alloys)**, Apple, Sunnyvale, California.

- Computational modeling with AI/ML techniques to evaluate metal/alloy products

6/20-9/20 **Materials Avionics Engineering Intern**, SpaceX, Hawthorne, California.

- Formulated custom epoxies and silicones to save >$830K across SpaceX vehicles
- Improved efficiency of solar array technology and investigated electrically conductive adhesives for satellite avionics

6/19-8/19 **Materials Validation, Integration, and Commercialization Intern**, Carbon, Redwood City, California.

- Evaluated new resins and performed mechanical testing of elastomers
- Created Python scripts for data analysis to advance Carbon's 3D-printing hardware

4/19-6/19 **Code for Cape Town Volunteer Intern**, CodeSpace, Cape Town, South Africa.

- Developed course curriculum and worked with students to help build essential coding skills, visited six local schools to present an Arduino-based drawing robot

Service and Activities

8/23-Present **STEM*FYI Ambassador**, STEM First-Year Initiative (FYI)

- Build a strong and diverse community for STEM scholars of color, women, LGBTQIA+, low-income, first-generation, disabled, and undocumented students

12/21-12/23 **DEI Officer**, BEAST Diversity, Equity, and Inclusion Enhancement Committee (DEC)

- Improve the overall climate of diversity and belonging within the UC Berkeley – UCSF Bioengineering Association of Students (BEAST) through outreach events

12/21-12/23 **Head Peer Advisor**, Bioengineering Association of Students (BEAST)

- Coordinate mentorship connections between first year and upper-class students; help graduate students adjust to the academic requirements of the PhD program

9/19-6/21 **President**, Stanford Undergraduate Materials Society (SUMS)

- Manage a professional organization of 30+ students by directing research collaborations, community outreach, and professional events

6/17-3/20 **Team Lead/Senior Project Advisor**, Stanford Space Initiative (SSI) – Balloons Team

- Led team of 80+ students to launch high-altitude research balloons carrying advanced scientific payloads into near-space, managed a six-figure financial budget
- Designed 3D-printed mechanical structures for the Valve-Blast (ValBal) system, in which SSI-63 broke a world record with a 5-day endurance flight to Morocco

4/19-6/19 **Foldscope Volunteer Outreach,** Cape Town, South Africa.

- Organized a series of hands-on STEM workshops across Cape Town for students to learn about and assemble their own Foldscope ($1.75 origami microscope)
- Independently led workshops in partnership with students at the University of Cape Town, Stellenbosch University, IkamvaYouth, and the Cape Town Science Centre

Teaching Experience

1/21-3/21 **Teaching Assistant**, CS 109: Probability for Computer Scientists, Stanford University.

6/20-10/20 **Course Assistant**, MATSCI 163: Mechanical Behavior Laboratory, Stanford University.

4/20-6/20 **Section Leader**, Code in Place (Intro to Python Programming), Stanford University.

Honors & Awards

- **Bakar BioEnginuity Impact Grant Awardee**, *$80,000 research grant awarded to 4 graduate students per year,* University of California, Berkeley, 2024-Present.
- **Soroptimist Founder Region Fellow,** *$10,000 grant awarded to 10 graduate women*, 2025.
- **2025 California Council on Science and Technology (CCST) Science Translator**, *selected as one of 12 graduate/postdoctoral researchers across California for showcase*, Sacramento, 2025.
- **Silicon Valley Engineering Council (SVEC) Graduate Scholarship** – Honorable Mention, 2025.
- **4D Molecular Therapeutics Scholarship**, Association for Women in Science (AWIS), 2024.
- **Merck Innovation Cup 2024,** Finalist, *top 1% graduate student chosen internationally*, Darmstadt, Germany, 2024.
- **Bioengineering Department Scholar,** University of California, Berkeley, 2024 & 2023.
- **AAAS Catalyzing Advocacy in Science and Engineering (CASE) Workshop,** UCSF-Sponsored Advocate, Washington D.C., 2024.

- **National Defense Science and Engineering Graduate (NDSEG) Fellowship,** 2021-2023.
- **NIH Rally for Medical Research,** UCSF-Sponsored Advocate, Washington D.C., 2023.
- **Hearts to Humanity Eternal (H2H8) Graduate Research Grant Awardee,** Berkeley, 2023.
- **Exceptional Service & Diversity, Equity, Inclusion, Belonging Award,** University of California, Berkeley & San Francisco, 2023.
- **Bakar Innovation Fellow,** University of California, Berkeley, 2022.
- **STEM*FYI & PPG Foundation Professional Development Grant Awardee**, 2022.
- **ThinkSwiss Research Scholarship Winner**, Switzerland, 2021. *(turned down due to COVID)*
- **Fulbright Scholar Semi-Finalist**, Host Country: Switzerland, 2021.
- **Leader Award**, Stanford Cap & Gown *honoree for academic excellence and service*, 2020.
- **1st Place Best Overall Winning Team**, MakeHarvard Hackathon, Boston, 2019.
- **Edison Innovation Award Winner**, National Gallery for America's Young Inventors, 2018.
- **U.S. Presidential Scholar**, highest academic and service achievement recognized by the White House for the state of New York, *top 0.005% in the nation of all high school seniors*, 2017.

Interests & Skills

- **Computer Programming:** Python, C++/C, AI/ML, MATLAB, Linux, Java, Microsoft Office
- **Research:** Product Design, Mechanical Testing, Data Science, CAD/3D-Printing, Statistics
- **Extracurriculars:** UCSF Vocal Chords, Graduate Women Engineers, Running, Wingspan
- **Languages:** Native in English and Chinese, advanced speaker of Spanish, proficient in German

Publications

[1] **Hu G**, Kim H, Chang B, Gu GX, Gartner ZJ. Closed Loop Bioprinting for Spatiotemporal Control of Tissue Interfaces in 3D. *[in preparation]*

[2] **Hu, G**, Cebrero, KG, Venkataraman, N, Ravichandran, D, Jin Z, Gartner ZJ, Gu GX. Tuning Collagen and Collagen-Alginate Mechanics through 3D-Bioprinting Process Parameters. *Biomaterials Science Emerging Investigators. [submitted]*

[3] Kim, H, **Hu G**, Graham AJ, Gu GX, Gartner ZJ. Four-Dimensional Bioprinting: Harnessing Active Mechanics to Build with Living Inks. *Cold Spring Harbor Perspectives in Biology.* 2024 doi:10.1101/cshperspect.a041557

[4] Jin Z, **Hu G**, Zhang Z, Yu SY, Gu GX. Modeling and analysis of post-processing conditions on 4D-bioprinting of deformable hydrogel-based biomaterial inks. *Bioprinting*. 2023;33(e00286):1-9. doi:10.1016/j.bprint. 2023.e00286

[5] Zheng B, Jin Z, **Hu G**, Gu J, Yu S, Lee J, Gu G. Machine learning and experiments: A synergy for the development of functional materials. *MRS Bulletin*. 2023:1-11 doi:10.1557/s43577-023-00492-w

[6] Anderegg L, Doyle J, Gardel M, ..., **Hu G**,...N95DECON Consortium. Heat and humidity for bioburden reduction of N95 filtering facepiece respirators. *Applied Biosafety*. 2021:1-10. doi:10.1089/apb.20.0053

[7] Grist S, Geldert A, Gopal A, …, **Hu G**, …N95DECON Consortium et al. Current understanding of Ultraviolet-C decontamination of N95 filtering facepiece respirators. *Applied Biosafety*. 2021:1-13. doi:10.1089/apb.20.0051

[8] Smullin S, Tarlow B, …, **Hu G**, …N95DECON Consortium. Room temperature wait and reuse for bioburden reduction of SARS-CoV-2 on N95 filtering facepiece respirators. *Applied Biosafety*. 2020:1-9. doi:10.1089/apb.20.0055

[9] Rempel D, Henneman J, Agalloco J, Crittenden J, …, **Hu G**, …N95DECON Consortium. Hydrogen peroxide methods for decontaminating N95 filtering facepiece respirators. *Applied Biosafety*. 2020:1-9. doi:10.1089/apb.20.0042

Conference Presentations

1. "Optimizing Collagen Bioprinting for Mechanically Strong and Resilient Tissues," *Materials Research Society (MRS) Spring 2024 Conference*. Seattle, WA, April 2024.
2. "Programming 4D-Bioprinted Tissue via Cellular Self-Organization," *NDSEG 2021 Fellows Conference*. San Antonio, TX, August 2023. – **Exemplary Poster Presentation Award**
3. "Programming 4D-Bioprinted Tissue via Cellular Self-Organization," *Bioengineering Institute of California (BIC) 2023 UC Systemwide Bioengineering Symposium*. Berkeley, CA, June 2023.
4. "Tuning the Mechanical Behavior of Extracellular Matrix Composite Scaffolds for 3D-Bioprinting," *Materials Research Society (MRS) Spring 2023 Conference*. San Francisco, CA, April 2023.
5. "Tuning the Mechanical Behavior of Gelatin Methacrylate & Collagen for 3D-Bioprinting," *SELECTBIO Conference on Bioprinting and Bioink Innovations for 3D-Tissues*. Boston, MA, November 2022.
6. "Powering AweSEM*: Towards a 40,000V Printable Battery," *Stanford University Bioengineering Research Symposia*. Stanford, CA, August 2018.