

# Simon Liu

Postbaccalaureate Fellow, National Human Genome Research Institute.

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## Summary

I am a postbaccalaureate IRTA fellow at the National Institutes of Health interested in deep learning algorithms that improve patient outcomes. My recent work involves applying natural language processing to public and private datasets to build models for extracting patient and language annotators. I am a member of the Medical Genomics Unit at the National Human Genome Research Institute.

## Education

**B.S., Biomedical Engineering**, Johns Hopkins University, Baltimore, MD.

08/2017 - 05/2021

Also completed B.S. major requirements for Computer Science

Honors: Upsilon Pi Epsilon, general honors, Dean's list

GPA: 3.69

## Research Experience

**Postbaccalaureate Fellow**, National Human Genome Research Institute, Bethesda, MD.

07/2021 - present

With Benjamin Solomon

**Software Engineer**, Neuroplastic Surgery Research Laboratory, Johns Hopkins University, Baltimore, MD, USA.

02/2020 - 05/2021

With Chad Gordon.

Received Provost's Undergraduate Research Award 2020-21 [award] [news]

**Laboratory Assistant**, STAR-ORC, University of Maryland School of Medicine, Baltimore, MD, USA.

07/2018 - 03/2020

With Junfang Wu

**Research Analyst**, School of Medicine, Johns Hopkins University, Baltimore, MD, USA.

12/2018 - 03/2020

With Susan Hutfless

## Volunteer Experience

**Care Coordinator**, Pan Asian Volunteer Health Clinic, Chinese Culture and Community Service Center, Gaithersburg, MD.

10/2021 - present

With Kate Lu and Yaoyao Zhu

## Publications

A list is also available on Google Scholar and Publons.

### Journal Articles

Ledgister Hanchard, S. E.\*, Dwyer, M. C.\*, **Liu, S.\***, Hu, P., Tekendo-Ngongang, C., Waikel, R. L., Duong, D., & Solomon, B. D. (2022). Scoping review and classification of Deep Learning in Medical Genetics. *Genetics in Medicine*. <https://doi.org/10.1016/j.gim.2022.04.025> \*Equal contributions. [pdf]

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Duong, D., Hu, P., Tekendo-Ngongang, C., Hanchard, S. E., **Liu, S.**, Solomon, B. D., & Waikel, R. L. (2022). Neural networks for classification and image generation of aging in genetic syndromes. *Frontiers in Genetics*, 13. <https://doi.org/10.3389/fgene.2022.864092> [pdf]

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Li, Y., Ritzel, R. M., He, J., Cao, T., Sabirzhanov, B., Li, H., **Liu, S.**, Wu, L. J., & Wu, J. (2021). The voltage-gated proton channel Hv1 plays a detrimental role in contusion spinal cord injury via extracellular acidosis-mediated neuroinflammation. *Brain, behavior, and immunity*, 91, 267–283. <https://doi.org/10.1016/j.bbi.2020.10.005> [pdf]

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Li, Y., Ritzel, R. M., Khan, N., Cao, T., He, J., Lei, Z., Matyas, J. J., Sabirzhanov, B., **Liu, S.**, Li, H., Stoica, B. A., Loane, D. J., Faden, A. I., & Wu, J. (2020). Delayed microglial depletion after spinal cord injury reduces chronic inflammation and neurodegeneration in the brain and improves neurological recovery in male mice. *Theranostics*, 10(25), 11376–11403. <https://doi.org/10.7150/thno.49199> [pdf]

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### Conference Papers

Kenet, A., Mahadevan, E., Elangovan, S., Yan, J., Siddiq, K., **Liu, S.**, Ladwa, A., Narayanan, R., Dakkak, J., Benassi, T., Ng, K., & Manbachi, A. (2020). Flexible piezoelectric sensor for real-time image-guided

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colonoscopies: a solution to endoscopic looping challenges in clinic. Proc. SPIE 11315, Medical Imaging 2020: Image-Guided Procedures, Robotic Interventions, and Modeling, 1131520 (16 March 2020). <https://doi.org/10.1117/12.2548873> [pdf]

## Meeting Abstracts

- Patel, R., Palamuttam, N., Choi, Y., Diamrean, M., **Liu, S.**, Park, S.J., Salazar, S. & Goeddel, L. (2021). Intraoperative hypotension before critical care admission is common but not associated with in hospital mortality in non-cardiac surgery. *Anesthesia & Analgesia*, 132(5S):859-862. <https://doi.org/10.1213/01.ane.0000803544.47940.c7> [pdf] A-3
- Hutfless, S. M., Chu, D., **Liu, S.**, & Kalloo, A. N. (2020). Predictors of ERCP-associated infections in outpatient hospitals. *Gastrointestinal Endoscopy*, 91(6). <https://doi.org/10.1016/j.gie.2020.03.3314> [pdf] A-2
- Hutfless, S. M., Chen, P.-H., Miller, S. D., Josephson, M., Joseph, S., Urrunaga, N., Kedia, S., **Liu, S.**, Arya, N., Hobstetter, L., Persad, P., Yeretssian, G., & Brant, S. R. (2020). Would K50\* by any other name smell so sweet? A systematic review of claims-based Crohn's disease case definitions. *Gastroenterology*, 158(6). [https://doi.org/10.1016/s0016-5085\(20\)31712-1](https://doi.org/10.1016/s0016-5085(20)31712-1) [pdf] A-1

## Presentations

- Liu, S.**, Ledgister Hanchard, S., Dwyer, M.C., , Hu, P., Tekendo-Ngongang, C., Waikel, R.L., Duong, D., & Solomon, B.D. Applications of deep learning in medical genetics. Poster presented at: NIH Virtual Postbac Poster Day 2022; Bethesda, MD. [poster] [pdf] P-1

## Selected Honors

- Linda Trinh Memorial Award**, Johns Hopkins University, Baltimore, MD, USA 05/2021  
Project: COVID-19 PPE Manufacturing Proposal: Consortium for 3D-Printed Headbands for Face Shields [blog] [news]  
With Y. Bai, J. Feitelberg, K. Hu, S. Kumar, K. Leo, J. Li, C. Shallal, and N. Zhang
- Intuitive Surgical Best Project Award Runner Up**, Deep Learning course, Johns Hopkins University, Baltimore, MD, USA. 12/2020  
Project: Detection and Segmentation of Pneumothoraces in Chest X-ray. [report] [ppt] [award]  
With F. Shao, Y. Huang, and A. Harmalkar.
- Provost's Undergraduate Research Award**, Johns Hopkins University, Baltimore, MD, USA. 11/2020  
Project: Implementing Electronic Beam Steering in an Implantable Ultrasound Device [award] [news]  
With Chad Gordon.
- Upsilon Pi Epsilon**, Johns Hopkins University, Baltimore, MD, USA. 10/2020  
International Honor Society for the Computing and Information Disciplines
- Maryland Seal of Biliteracy**, Maryland State Department of Education, Rockville, MD, USA. 06/2017

## Selected Press

- Stokel-Walker, Chris. "Amid war fears, archivists are racing to preserve Ukraine's internet" Input Mag. February 18, 2022. 2022
- Calabresi, Kaitlyn. "Interview with Health 3D" TCO Labs. November 20, 2019. 2019
- Sangana, Neha. "Conference highlights student startups in Md." The Johns Hopkins News-Letter. November 15, 2018. 2018

## Selected Coursework

Computer Integrated Surgery I  
Computer Integrated Surgery II  
Machine Learning  
Machine Learning: Deep Learning  
Biomedical Data Science  
Precision Care Medicine I  
Precision Care Medicine II  
Foundations of Computational Biology and Bioinformatics

## Extracurricular Experience

- Course Assistant**, Department of Computer Science, Johns Hopkins University, Baltimore, MD, USA. 08/2020 - 05/2021
- Vice President of Finance**, Alpha Kappa Psi, Rho Psi Chapter, Baltimore, MD, USA 11/2019 - 12/2020
- Pledge Educator**, Alpha Kappa Psi, Rho Psi Chapter, Baltimore, MD, USA 05/2019 - 11/2019
- Head of Manufacturing**, Health 3D, LLC, Baltimore, MD, USA. 04/2018 - 05/2021

## Metadata

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