# Simon Liu

*Postbaccalaureate Fellow, National Human Genome Research Institute.*
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**Summary**

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

**Education**

**B.S., Biomedical Engineering**, Johns Hopkins University, Baltimore, MD.      08/2017 - 05/2021
Also completed B.S. major requirements for Computer Science
Linda Trinh Memorial Award, Joseph F. Strohecker Scholarship
Honors: Upsilon Pi Epsilon, Dean's list, general & BME+CS departmental honors
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,      02/2020 - 05/2021
Baltimore, MD, USA.
With Chad Gordon.
Received Provost's Undergraduate Research Award 2020-21 [award] [news]

**Research Analyst**, School of Medicine, Johns Hopkins University, Baltimore, MD, USA.      12/2018 - 03/2020
With Susan Hutfless

**Laboratory Assistant**, STAR-ORC, University of Maryland School of Medicine, Baltimore, MD,      07/2018 - 03/2020
USA.
With Junfang Wu

**Volunteer Experience**

**Care Coordinator**, Pan Asian Volunteer Health Clinic, Chinese Culture and Community Service      10/2021 - present
Center, Gaithersburg, MD.
With Mo-Ping Chow and Yaoyao Zhu

**Teaching Experience**

**Course Assistant**, Department of Computer Science, Johns Hopkins University, Baltimore, MD,      08/2020 - 05/2021
USA.
With Kwame Kutten

**Publications**

A list is also available on Google Scholar and Publons.

*Journal Articles*

Jiang, C., Guo, H., Zhang, Z., Wang, Y., **Liu, S.**, Lai, J., Wang, T. J., Li, S., Zhang, J., Zhu, L., Fu, P.,      J-8
Zhang, J., & Wang, J. (2022). Molecular, pathological, clinical, and therapeutic aspects of perihematomal edema in different stages of intracerebral hemorrhage. Oxidative Medicine and Cellular Longevity, 2022, 1–38. https://doi.org/10.1155/2022/3948921 [pdf]

Hutfless, S., Shiratori, Y., Chu, D., **Liu, S.**, & Kalloo, A. (2022). Risk factors for infections after      J-7
endoscopic retrograde cholangiopancreatography (ERCP): A retrospective cohort analysis of US Medicare Fee-for-Service claims, 2015–2021. BMJ Open, 12(9). https://doi.org/10.1136/bmjopen-2022-065077 [pdf]

Sun, C., Han, Y., Zhang, R., **Liu, S.**, Wang, J., Zhang, Y., Chen, X., Jiang, C., Wang, J., Fan, X., &      J-6
Wang, J. (2022). Regulated necrosis in COVID-19: A double-edged sword. Frontiers in Immunology, 13. https://doi.org/10.3389/fimmu.2022.917141 [pdf]

Hutfless, S., Jasper, R. A., Tilak, A., Ghosh, T., Kedia, S., **Liu, S.**, Urrunaga, N. H., Josephson, M., Narang, A., Miller, S., Chen, P.-H., Joseph, S., & Brant, S. R. (2022). A systematic review of Crohn's disease case definitions in administrative or claims databases. Inflammatory Bowel Diseases. https://doi.org/10.1093/ibd/izac131 [pdf]

J–5

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 *Co-first authors. [pdf]

J–4

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]

J–3

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]

J–2

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 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]

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**Meeting Abstracts**

Patel, R., Palamuttam, N., Choi, Y., Diamreyan, 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 [pdf]

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**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]

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**Selected Honors**

**Linda Trinh Memorial Award**, Johns Hopkins University, Baltimore, MD, USA
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

05/2021

**Intuitive Surgical Best Project Award Runner Up**, Deep Learning course, Johns Hopkins University, Baltimore, MD, USA.
Project: Detection and Segmentation of Pneumothoraces in Chest X-ray. [report] [ppt] [award]
With F. Shao, Y. Huang, and A. Harmalkar.

12/2020

**Provost's Undergraduate Research Award**, Johns Hopkins University, Baltimore, MD, USA.
Project: Implementing Electronic Beam Steering in an Implantable Ultrasound Device [award] [news]
With Chad Gordon.

11/2020

**Upsilon Pi Epsilon**, Johns Hopkins University, Baltimore, MD, USA.
International Honor Society for the Computing and Information Disciplines

10/2020

**Joseph F. Strohecker Scholarship**, Johns Hopkins University, Baltimore, MD, USA.

11/2017

**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

**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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