

Spencer S. Hong

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EXPERIENCE

General Intelligence Company of New York

Nov 2025 – Present

Founding Researcher

- Grew the company to 13 people, raised \$10M+, and created products that reached 15,000+ monthly active users.
- Led evaluation, telemetry, and self-improvement research for long-running agents designed to operate businesses autonomously.
- Built the in-house agent framework spanning model integrations, agent harnesses, and infrastructure for Cofounder 1 and Cofounder 2.
- Trained models to improve unverifiable “taste” in brand design and go-to-market, using reinforcement learning with expert-authored rubrics and continued pretraining on new data streams.
- Led research collaborations with frontier AI labs and academic researchers, including CEO-Bench, on benchmarking and data sourcing; partnered with Ramp, Taste Labs, and BrowserBase.

Capital One

May 2024 – Nov 2025

Principal Data Scientist

- Developed and evaluated retrieval-augmented generation systems to reduce handling time for hundreds of bank support agents.
- Built an uncertainty-based system to detect hallucinations in AI agent outputs at inference time.
- Managed researchers establishing a fault attribution framework to diagnose failures in multicomponent AI agent systems.
- Built an anti-money-laundering agentic system that achieved 97% agreement with human investigators.

Northwestern University

2020 – 2025

Ph.D. Candidate and Ryan Fellow from the International Institute for Nanotechnology

- First Ph.D. student in NIH history to present to the National Advisory Council for Human Genome Research.
- Designed, implemented, and led efforts to uncover fundamental funding mechanisms at the National Institutes of Health through an archive containing more than two million pages of unstructured, privileged documents.
- Trained multimodal deep learning models for PII redaction, entity disambiguation, handwriting separation, scan segmentation, document categorization, and topic mapping.
- Built an AI scientist framework in 2024 using pre-RLHF models, integrating 120+ biomedical data sources to identify understudied genes.
- Led a team of ethicists, archivists, historians, and engineers for the first data-driven investigation of a major scientific funding agency in history.

EDUCATION

Northwestern University

Ph.D., Chemical and Biological Engineering

Advisors: Luís A. Nunes Amaral (Applied Mathematics) and Thomas Stoeger (Medicine)

Thesis: *Born physical, studied digitally: framework for document artificial intelligence*

Cornell University

B.S., Chemical and Biomolecular Engineering

Magna cum laude

Thesis: *Role and optimization of implicit solvation models in density functional theory*

HONORS

2025 Cozzarelli Prize Finalist, PNAS, Class V: Behavioral and Social Sciences.

2024 Presidential Fellowship Finalist, Northwestern University’s highest honor for graduate students.

2019 Editor’s Choice, *Computational Materials Science*, for *How well do implicit solvation models represent intermolecular binding energies in organic-inorganic solutions?*

2016 Rawlings Presidential Research Scholarship (1% award rate, 4 years of research funding)

SKILLS

Programming: Python, Rust, SQL, L^AT_EX, Bash

Tools & Infrastructure: Git, CI/CD, Docker, Kubernetes, AWS, Hugging Face

ML & Observability: PyTorch, vLLM, SGLang, Unsloth, Logfire, Transformers

Computational Chemistry: DFT, nudged elastic band, molecular dynamics

Languages: Korean (native), Japanese (A1)

SELECTED PUBLICATIONS

1. **A digital archive reveals how a funding agency cooperated with academics to support the nascent field of genomics**
S. S. Hong, Z. Utz, M. Hosseini, C. Zanchettin, H. Tejedor Navarro, et al. *Nature Communications* 17, 3621 (2026).
2. **EPSVec: Efficient and Private Synthetic Data Generation via Dataset Vectors**
A. Banayeeanzade, Q. Yang, D. Fu, S. Hong, et al. *ICML* 2026.
3. **CAGE: Coherence-Aware Graph Encoding for Retrieval-Augmented Generation**
T. Qi, J. Wu, Y. Yin, S. Hong, D. Liu, E. Babinsky. *EMNLP* 2026.
4. **RAFFLES: Reasoning-based Attribution of Faults for LLM Systems**
C. Zhu, S. Hong, J. Wu, K. Chawla, Y. Tang, Y. Yin, N. Wolfe, E. Babinsky, D. Liu. *EACL* 2026, 7659–7688.
5. **DF-RAG: Query-Aware Diversity for Retrieval-Augmented Generation**
S. H. Khan, S. Hong, J. Wu, K. Lybarger, Y. Yin, E. Babinsky, D. Liu. *Findings of EACL* 2026, 2873–2894.
6. **SAFARI: Scaling Long Horizon Agentic Fault Attribution via Active Investigation**
C. Zhu, J. Yao, K. Chawla, Y. Yin, N. Wolfe, P. Cai, J. Wu, S. Hong, et al. *ICML 2026 AIWILD Workshop*.
7. **BuyTheBy: A dataset of 18,710 text-based paper mill advertisements with 51,812 timestamped prices**
R. A. K. Richardson, S. S. Hong, A. Abalkina. *arXiv preprint, arXiv:2604.24576* (2026).
8. **The entities enabling scientific fraud at scale are large, resilient, and growing rapidly**
R. A. K. Richardson, S. S. Hong, J. A. Byrne, T. Stoeger, L. A. N. Amaral. *Proceedings of the National Academy of Sciences* 122(32), e2420092122 (2025).
9. **Widespread misidentification of scanning electron microscope instruments in the peer-reviewed materials science and engineering literature**
R. A. K. Richardson, J. Moon, S. S. Hong, L. A. N. Amaral. *PLOS ONE* 20(7), e0326754 (2025).
10. **Exploitation of intellectual property systems for the manipulation of academic reputations**
R. A. K. Richardson, N. H. Wise, S. S. Hong, M. J. Draper, S. Fackrell. *International Journal for Educational Integrity* 21, 15 (2025).
11. **Ethical considerations in utilizing artificial intelligence for analyzing the NHGRI’s History of Genomics and Human Genome Project archives**
M. Hosseini*, S. Hong*, K. Holmes, K. Wetterstrand, C. Donohue, L. A. N. Amaral, T. Stoeger. *Journal of eScience Librarianship* 13(1), e811 (2024).
12. **How well do implicit solvation models represent intermolecular binding energies in organic-inorganic solutions?**
B. A. Sorenson, S. S. Hong, H. C. Herbol, P. Clancy. *Computational Materials Science* 170, 109138 (2019).

*Co-first authors.

SELECTED TALKS

A critical digital archive processed through LLMs

Network Epistemology in Practice, Berlin, Germany; supported by the European Research Council (2025).

Using machine learning and artificial intelligence methods in history of genomics archival research

Special invited talk, 100th meeting of the National Advisory Council for Human Genome Research (2023). Only Ph.D. student in NIH history invited to speak at an advisory council.

The history of genomics told through machine learning

Invited talk, National Human Genome Research Institute, NIH (2022).

PATENT APPLICATIONS

Systems and methods for generating reliable language model outputs using uncertainty quantification

Y. Yin, J. Zhu, N. Wolfe, E. Babinsky, S. Hong.

U.S. published patent application US20260244665A1; Capital One Services, LLC (2026).

Scalable record investigation using language model agents with structured memory

Co-inventor; Capital One Services, LLC (2026).