

Seongmin Lee

CS PhD student at Georgia Tech

My research bridges machine learning and human-computer interaction to advance **Responsible AI**. I design and develop **novel visual explanations** for complex machine learning models, and **scalable algorithms** that promote accountable use of AI.

I have collaborated with researchers and developers at Cisco Systems, IBM Research, and AVAST Software.

✉ seongmin@gatech.edu

🏠 seongmin.xyz

📄 CV PDF

🐦 @SeongminLeee

🔄 @ligi214

🎓 Google Scholar

Education

Aug. 2021 — Present

Ph.D. in Computational Science & Engineering

Georgia Institute of Technology, Atlanta, GA

Advisor: Duen Horng (Polo) Chau

Mar 2016 — Feb. 2021

B.S. in Electrical and Computer Engineering

Seoul National University, Seoul, South Korea

Graduated with Summa Cum Laude, Overall GPA: 3.91/4.00, Major GPA: 3.94/4.00

Mar 2013 — Feb. 2016

Math and Science Specialized High School for Gifted

Korea Science Academy of KAIST, Busan, South Korea

One year early entrance, Graduated with distinction in GPA

Research Experience

May 2024 — Aug. 2024

JP Morgan Chase & Co., New York, NY

Summer Associate, Research Technologies Program

Mentor: Hsiang Hsu, Chun-Fu (Richard) Chen

May 2022 — Jul. 2022

Cisco Systems, Inc., San Jose, CA

Ph.D. Intern

Mentor: Ali Payani

Led model interpretation and visualization development for an open-source project for Responsible AI

Aug. 2021 — Present

Georgia Institute of Technology, Atlanta, GA

Graduate Research Assistant, School of Computational Science and Engineering

Advisor: Duen Horng (Polo) Chau

Jan. 2020 — Feb. 2021

Seoul National University, Seoul, South Korea

Undergraduate Research Intern, Data Mining Lab

Advisor: U Kang

Sep. 2019 — Apr. 2020

Seoul National University, Seoul, South Korea

Undergraduate Research Intern, Communication and Machine Learning Laboratory

Advisor: Jungwoo Lee

Jul. 2018 — Aug. 2018

The University of Tokyo, Tokyo, Japan

Undergraduate Research Intern, Biomedical Precision Laboratory

Advisor: Keiichi Nakagawa, Ayumu Ishijima

Constructed a microscopic motion-picture laser camera with sub-nano spatial/temporal resolution, Investigated interaction between human cells and acoustic waves in collaboration with students majoring in biology and physics

Honors and Awards

2023	Next-generation Science and Technology Leader NET Research grant of \$1,500 funded by KOFST. Conducted interdisciplinary research on 'Wearable Devices and AI to Enhance Sustainability and Reliability of Korean Healthcare Data' with 5 other students.
2016 - 2019	The Presidential Science Scholarship Full tuition and stipend of \$5,000 per year. Around 150 students are selected nationally.
2018 - 2019	SNU Engineering Honor Society (STEM) Used to be vice president, currently honorary member of STEM.
2017, 2018	Seoul National University ECE Voluntary Service Award Selected based on the evaluation of the students, staffs, and faculty members of department of ECE.
2014 - 2015	Hansung Sonjaehan Scholarship Stipend of \$5,000 per year. Around 150 high school students studying math and science are selected nationally.

Publications

Diffusion Explainer: Visual Explanation for Text-to-image Stable Diffusion

Seongmin Lee, Benjamin Hoover, Hendrik Strobelt, Zijie J. Wang, ShengYun Peng, Austin P. Wright, Kevin Li, Haekyu Park, Haoyang Yang, Duen Horng (Polo) Chau

Short Paper, IEEE Visualization Conference (VIS). Tampa, USA, 2024.

[Project](#) [Demo](#) [PDF](#) [Recording](#) [Poster](#) [Code \(★139\)](#) [BibTeX](#)

LLM Attributor: Interactive Visual Attribution for LLM Generation

Seongmin Lee, Zijie J. Wang, Aishwarya Chakravarthy, Alec Helbling, ShengYun Peng, Mansi Phute, Duen Horng (Polo) Chau, Minsuk Kahng

ArXiv. 2024.

[Project](#) [PDF](#) [Recording](#) [Code](#) [BibTeX](#)

SuperNOVA: Design Strategies and Opportunities for Interactive Visualization in Computational Notebooks

Zijie J. Wang, David Munechika, Seongmin Lee, Duen Horng (Polo) Chau

Extended Abstracts on ACM Human Factors in Computing Systems (CHI). 2024.

[Project](#) [Demo](#) [PDF](#) [Code \(★57\)](#) [BibTeX](#)

UniTable: Towards a Unified Framework for Table Structure Recognition via Self-Supervised Pretraining

ShengYun Peng, Seongmin Lee, Xiaojing Wang, Rajarajeswari Balasubramaniyan, Duen Horng (Polo) Chau

ArXiv. 2024.

[Project](#) [PDF](#) [Code \(★278\)](#) [BibTeX](#)

ClickDiffusion: Harnessing LLMs for Interactive Precise Image Editing

Alec Helbling, Seongmin Lee, Duen Horng (Polo) Chau

CVPR 2024 Workshop on AI for Content Creation Workshop (CVPR). 2024.

[Project](#) [PDF](#) [Code \(★59\)](#) [BibTeX](#)

Mobile Fitting Room: On-device Virtual Try-on via Diffusion Models

Justin Blalock, David Munechika, Harsha Karanth, Alec Helbling, Pratham Mehta, Seongmin Lee, Duen Horng (Polo) Chau

CVPR 24 Workshop on Virtual Try-On (CVPR). 2024.

[Project](#) [PDF](#) [BibTeX](#)

High-Performance Transformers for Table Structure Recognition Need Early Convolutions

ShengYun Peng, Seongmin Lee, Xiaojing Wang, Rajarajeswari Balasubramaniyan, Duen Horng (Polo) Chau

Oral Paper, Neural Information Processing Systems (NeurIPS) TRL Workshop (TRL). New Orleans, LA, USA, 2023.

[Project](#) [PDF](#) [Code](#) [BibTeX](#)

VisGrader: Automatic Grading of D3 Visualizations

Matthew Hull, Vivian Pednekar, Hannah Murray, Nimisha Roy, Emmanuel Tung, Susanta Routray, Connor Guerin, Justin Chen, Zijie J. Wang, Seongmin Lee, Mahdi Roozbahani, Duen Horng (Polo) Chau

Full Paper, *IEEE Visualization and Visual Analytics (VIS)*. Melbourne, Australia, 2023.

[Project](#) [PDF](#) [Code](#) [BibTeX](#)

Concept Evolution in Deep Learning Training: A Unified Interpretation Framework and Discoveries

Haekyu Park, Seongmin Lee, Benjamin Hoover, Austin Wright, Omar Shaikh, Rahul Duggal, Nilaksh Das, Judy Hoffman, Duen Horng (Polo) Chau

Full Paper, *ACM International Conference on Information and Knowledge Management (CIKM)*. Birmingham, United Kingdom, 2023.

[Project](#) [PDF](#) [Code](#) [BibTeX](#) [DOI](#)

Explaining Website Reliability by Visualizing Hyperlink Connectivity

Seongmin Lee, Sadia Afroz, Haekyu Park, Zijie J. Wang, Omar Shaikh, Vibhor Sehgal, Ankit Peshin, Duen Horng (Polo) Chau

Short Paper, *IEEE Visualization and Visual Analytics (VIS)*. Oklahoma City, OK, USA, 2022.

[Project](#) [Demo](#) [PDF](#) [BibTeX](#)

NOVA: A Practical Method for Creating Notebook-Ready Visual Analytics

Zijie J. Wang, David Munechika, Seongmin Lee, Duen Horng (Polo) Chau

Poster Paper, *IEEE Visualization and Visual Analytics (VIS)*. Oklahoma City, OK, USA, 2022.

[Project](#) [Demo](#) [PDF](#) [Poster](#) [Code](#) [BibTeX](#)

VisCUIT: Visual Auditor for Bias in CNN Image Classifier

Seongmin Lee, Zijie J. Wang, Judy Hoffman, Duen Horng (Polo) Chau

Demo Paper, *Conference on Computer Vision and Pattern Recognition (CVPR)*. New Orleans, LA, USA, 2022.

[Project](#) [Demo](#) [PDF](#) [Recording](#) [Code](#) [BibTeX](#)

MisVis: Explaining Web Misinformation Connections via Visual Summary

Seongmin Lee, Sadia Afroz, Haekyu Park, Zijie J. Wang, Omar Shaikh, Vibhor Sehgal, Ankit Peshin, Duen Horng (Polo) Chau

Extended Abstracts on *ACM Human Factors in Computing Systems (CHI)*. New Orleans, LA, USA, 2022.

[Project](#) [Demo](#) [PDF](#) [BibTeX](#) [DOI](#)

Multi-EPL: Accurate Multi-source Domain Adaptation

Seongmin Lee, Hyunsik Jeon, U Kang

Public Library of Science (PLOS ONE). 2021.

[Project](#) [PDF](#) [Code](#) [BibTeX](#)

Unsupervised multi-source domain adaptation with no observable source data

Hyunsik Jeon, Seongmin Lee, U Kang

Public Library of Science (PLOS ONE). 2021.

[Project](#) [PDF](#) [Code](#) [BibTeX](#)

Auber: Automated BERT Regularization

Hyun Dong Lee*, Seongmin Lee*, U Kang

Public Library of Science (PLOS ONE). 2021.

[Project](#) [PDF](#) [Code](#) [BibTeX](#) *Authors contributed equally

Patent

Pruning Method for Attention Head in Transformer Neural Networks for Regularization and Apparatus Thereof

Seongmin Lee, Hyun Dong Lee, U Kang

10-2020-0162397, 2020.

Book

I Got to Wish to Go Engineering School

SNU Engineering Honor Society (STEM)

Megastudy Books, 2021.

Wrote Part 3 "Life as a Lab Intern"

Talks

STEM Global Engineer Seminar

May 2023 Seoul National University, SNU Engineering Honor Society (STEM)

MisVis: Explaining Website Reliability by Visualizing Hyperlink Connectivity

Nov. 2022 Georgia Tech, School of CSE Recruiting Event

Mar. 2022 AVAST Software, Fake News Monthly Sync Up

Multi-Source Domain Adaptation with Pseudo-labels

Jun. 2020 Seoul National University, AIIS Retreat

STEM Vision Mentoring

Jul. 2019 Seoul National University, STEM Vision Mentoring

Organized and gave lectures on engineering for high school students. More than 700 students attended.

Teaching

Graduate Teaching Assistant

Fall 2022

Georgia Institute of Technology, Atlanta, GA

Data and Visual Analytics (CSE6242), Instructor: Duen Horng (Polo) Chau, Mahdi Roozbahani

Online course with 1146 graduate students enrolled.

Lab Session Lecturer

Jan. 2021

LG Chem, Seoul, South Korea

Deep Learning Course

Lab Session Lecturer

Nov. 2020

SK Hynix, Seoul, South Korea

Deep Learning Course

Undergraduate Student Tutor

Fall 2020, Fall 2019

Seoul National University, Seoul, South Korea

Introduction to Algorithm

Selected as tutor for two consecutive years based on interviews and academic performance

Undergraduate Student Tutor

Spring 2017

Seoul National University, Seoul, South Korea

Introduction to Physics I

Selected as tutor based on academic performance

Mentoring

David Munechika

Fall 2021 — Present

B.S. in Computer Science, Georgia Institute of Technology

Kevin Li

Fall 2021 — Spr. 2023

B.S. in Computer Science and Biomedical Engineering, Georgia Institute of Technology

Now: ML Ph.D at Carnegie Mellon University

Alex Yang

Fall 2021 — Spr. 2023

M.S. in Computer Science, Georgia Institute of Technology

Now: Software Engineer at Goldman Sachs

Omar Shaikh

Fall 2021 — Spr. 2022

B.S. in Computer Science, Georgia Institute of Technology

🏆 Sigma Xi Best Undergraduate Research Award, Georgia Institute of Technology

Now: CS Ph.D at Stanford University

Grants and Funding

- 2023 **Scaling Up Educators' Capacities: Automating Visualization Assessment via Generative AI**
Google Award for Inclusion Research
Co-PIs: Duen Horng (Polo) Chau
Co-authored a proposal resulting in \$60k resesarch funding from Google.
- 2022 **Cisco Research Funding**
Co-PIs: Duen Horng (Polo) Chau
Co-authored a proposal resulting in \$200k resesarch funding on responsible AI from Cisco.

Service

Reviewer

ACM Conference On Computer-Supported Cooperative Work and Social Computing (**CSCW**), 2023

Institutional

- 2022 – Present **Georgia Tech CSE Website Committee**
Improve external and internal communication in collaboration with a communication officer and faculty members
- 2021 – Present **Georgia Tech Korean Student Association**
Serve as a treasury and web administrator
- 2020 **SNU Buddy**
Selected as the best buddy out of over 60 buddy students based on the votes from international exchange students.
- 2017 – 2018 **Seoul National University ECE Student Vice President**
Elected from student vote.
- 2017 – 2021 **Seoul National University ECE Student Reporter**
Published a magazine about research, people, and events of Department of ECE every semester.
- 2018, 2019 **Dream Camp Mentoring**
Conducted mentoring program about "how to materialize one's dream" for high school students in countryside
- 2016, 2017 **KOSAF Talent Sharing Volunteer Camp**
Conducted self-planned mentoring for elementary school students in underprivileged areas in Korea

Member

- 2021 - Present Association for Computing Machinery (**ACM**)
- 2021 - Present Institute of Electrical and Electronics Engineers (**IEEE**)
- 2018 — 2019 SNU Engineering Honor Society (**STEM**)

References

Dr. Polo Chau, Associate Professor
School of Computational Science and Engineering
Georgia Institute of Technology
cc.gatech.edu/~dchau/