

# Seongmin Lee

CS PhD student at Georgia Tech

My research bridges machine learning and human-computer interaction, with the pursuit of realizing **Responsible AI** through the development of **visual explanations** that empower people to gain a clear understanding of machine learning and **scalable algorithms** that enable reliable and active use of machine learning.

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 2022 — Jul. 2022

### Cisco Systems, Inc., San Jose, CA (Remote)

*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

- 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.

# Publications

- P12 **Diffusion Explainer: Visual Explanation for Text-to-image Stable Diffusion**  
**Seongmin Lee**, Benjamin Hoover, Hendrik Strobel, Zijie J. Wang, ShengYun Peng, Austin P. Wright, Kevin Li, Haekyu Park, Haoyang Yang, Duen Horng (Polo) Chau  
*Poster, IEEE Visualization Conference (VIS). Melbourne, Australia, 2023.*  
*VISxAI Workshop at IEEE Visualization Conference (VISxAI). Remote, 2023.*  
*Demo, Conference on Computer Vision and Pattern Recognition (CVPR). Vancouver, Canada, 2023.*  
[Project](#) [Demo](#) [PDF](#) [Recording](#) [Poster](#) [Code](#) (★74) [BibTeX](#)
- C11 **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  
*IEEE Visualization and Visual Analytics (VIS). Melbourne, Australia, 2023.*  
[Project](#) [PDF](#)
- C10 **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  
*ACM International Conference on Information and Knowledge Management (CIKM). Birmingham, United Kingdom, 2023.*  
*Artificial Intelligence & Human-Computer Interaction Workshop at ICML (AI&HCI). Honolulu, HI, USA, 2023.*  
[Project](#) [PDF](#) [Code](#) [BibTeX](#) [DOI](#)
- W9 **Towards Mitigating Spurious Correlations in Image Classifiers with Simple Yes-no Feedback**  
**Seongmin Lee**, Ali Payani, Duen Horng (Polo) Chau  
*Artificial Intelligence & Human-Computer Interaction Workshop at ICML (AI&HCI). Honolulu, HI, USA, 2023.*  
[Project](#) [PDF](#) [BibTeX](#)
- P8 **SuperNOVA: Design Strategies and Opportunities for Interactive Visualization in Computational Notebooks**  
Zijie J. Wang, David Munechika, **Seongmin Lee**, Duen Horng (Polo) Chau  
*arXiv:2305.03039 (arXiv). 2023.*  
[Project](#) [Demo](#) [PDF](#) [Code](#) [BibTeX](#)
- C7 **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  
*IEEE Visualization and Visual Analytics (VIS). Oklahoma City, OK, USA, 2022.*  
[Project](#) [Demo](#) [PDF](#) [BibTeX](#)
- P6 **NOVA: A Practical Method for Creating Notebook-Ready Visual Analytics**  
Zijie J. Wang, David Munechika, **Seongmin Lee**, Duen Horng (Polo) Chau  
*Poster, IEEE Visualization and Visual Analytics (VIS). Oklahoma City, OK, USA, 2022.*  
[Project](#) [Demo](#) [PDF](#) [Poster](#) [Code](#) [BibTeX](#)

- D5 **VisCUIT: Visual Auditor for Bias in CNN Image Classifier**  
**Seongmin Lee**, Zijie J. Wang, Judy Hoffman, Duen Horng (Polo) Chau  
*Demo, Conference on Computer Vision and Pattern Recognition (CVPR). New Orleans, LA, USA, 2022.*  
[Project](#) [Demo](#) [PDF](#) [Recording](#) [Code](#) [BibTeX](#)
- C4 **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](#)
- J3 **Multi-EPL: Accurate Multi-source Domain Adaptation**  
**Seongmin Lee**, Hyunsik Jeon, U Kang  
*Public Library of Science (PLOS ONE). 2021.*  
[Project](#) [PDF](#) [Code](#) [BibTeX](#)
- J2 **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](#)
- J1 **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

- May 2023 **STEM Global Engineer Seminar**  
Seoul National University, SNU Engineering Honor Society (STEM)
- Nov. 2022 **MisVis: Explaining Website Reliability by Visualizing Hyperlink Connectivity**  
Georgia Tech, School of CSE Recruiting Event
- Mar. 2022 **MisVis: Explaining Website Reliability by Visualizing Hyperlink Connectivity**  
AVAST Software, Fake News Monthly Sync Up
- Jun. 2020 **Multi-Source Domain Adaptation with Pseudo-labels**  
Seoul National University, AIIS Retreat
- Jul. 2019 **STEM Vision Mentoring**  
Seoul National University, STEM Vision Mentoring  
Organized and gave lectures on engineering for high school students. More than 700 students attended.

# Teaching

- Fall 2022 **Graduate Teaching Assistant**  
*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.
- Jan. 2021 **Lab Session Lecturer**  
*LG Chem, Seoul, South Korea (Remote)*  
Deep Learning Course
- Nov. 2020 **Lab Session Lecturer**  
*SK Hynix, Seoul, South Korea (Remote)*  
Deep Learning Course
- Fall 2020, Fall 2019 **Undergraduate Student Tutor**  
*Seoul National University, Seoul, South Korea*  
Introduction to Algorithm  
Selected as tutor for two consecutive years based on interviews and academic performance
- Spring 2017 **Undergraduate Student Tutor**  
*Seoul National University, Seoul, South Korea*  
Introduction to Physics I  
Selected as tutor based on academic performance

# Mentoring

- Fall 2021 — Present **David Munechika**  
*B.S. in Computer Science, Georgia Institute of Technology*
- Fall 2021 — Spr. 2023 **Kevin Li**  
*B.S. in Computer Science and Biomedical Engineering, Georgia Institute of Technology*  
Now: ML Ph.D at Carnegie Mellon University
- Fall 2021 — Spr. 2023 **Alex Yang**  
*M.S. in Computer Science, Georgia Institute of Technology*  
Now: Software Engineer at Goldman Sachs
- Fall 2021 — Spr. 2022 **Omar Shaikh**  
*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 research funding from Google.
- 2022 **Cisco Research Funding**  
Co-PIs: Duen Horng (Polo) Chau  
Co-authored a proposal resulting in \$200k research 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/](http://cc.gatech.edu/~dchau/)