Alexander E. Bendeck
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Education

Georgia Institute of Technology (Georgia Tech), Atlanta, GA **Fall 2021 – Spring 2026 (Planned)**
Ph.D. in Computer Science
- Advisor: Prof. John Stasko
- Thesis topic: Large Language Models as Virtual Assistants for Visual Data Analysis

M.S. in Computer Science
- Concentration: Machine Learning | GPA: 4.0/4.0
- Courses: Graduate Machine Learning, Data Visualization, Data & Visual Analytics

Duke University, Durham, NC **Fall 2017 – Spring 2021**
B.S. in Computer Science and Statistical Science, *Summa Cum Laude*
- Concentration: Data Science | GPA: 4.0/4.0
- Courses: Machine Learning, Data Mining, Statistical Computing, Database Systems

Research Interests

Large language models for visualization, AI & visualization for education, maps & geographic data

Research Experience

Georgia Tech Visualization Lab, Graduate research assistant **Spring 2022 – Present**
Advised by Prof. John Stasko
- Currently studying how to integrate large language models with visual data visualization systems to scaffold and enhance the process of interactive visual data analysis
- Built geographic visualizations to help educators teach about migration flows in the U.S.
- Helped collaborators design experimental stimuli to represent electric grids

Chu Data Lab, Graduate research assistant **Fall 2021**
Advised by Prof. Xu Chu
- Developed and implemented algorithms for a weakly supervised entity matching system

Duke Database Research Group, Research assistant **Fall 2019 – Fall 2020**
Advised by Prof. Jun Yang and Prof. Sudeepa Roy
- Created and revised interface designs for an interactive SQL debugger; reviewed literature to investigate the scope of similar prior work and inform design decisions
- 2020 CS+ Summer Research Program: Implemented front-end designs (HTML, JavaScript) and query parsing algorithms (Java); designed a plan to test debugger's efficacy in Fall 2020

Duke Motivated Cognition & Aging Brain Lab, Research assistant **Summer 2018 – Spring 2021**
Advised by Prof. Gregory Samanez-Larkin
- Conducted statistical analyses to investigate the effects of text message-based health interventions on physical activity
- Wrote Python code to collect and analyze participant data for neuroscience studies

Journal Articles

How Visually Literate are Large Language Models? Reflections on Recent Advances and Future Directions.
- Alexander Bendeck and John Stasko. *IEEE Computer Graphics and Applications,* vol. 45, no. 6, pp. 120-129, November/December 2025.

An Empirical Evaluation of the GPT-4 Multimodal Language Model on Visualization Literacy Tasks.

- Alexander Bendeck and John Stasko. *IEEE Transactions on Visualization and Computer Graphics* (Paper presented at IEEE VIS 2024), vol. 31, no. 1, pp. 1105-1115, January 2025.

Ground Truth Inference for Weakly Supervised Entity Matching.

- Renzhi Wu, Alexander Bendeck, Xu Chu, and Yeye He. *Proceedings of the ACM on Management of Data* (Paper presented at ACM SIGMOD 2023), vol. 1, no. 1, article no. 32, 28 pages, May 2023.

Conference & Workshop Papers

An Emergent Design Study Methodology for Education: Reflections on the Robin System for Visualizing U.S. Migration Data.

- Alexander Bendeck, Clio Andris, and John Stasko. *Proceedings of the Workshop on Visualization Education, Literacy, and Activities at IEEE VIS,* pp. 1-10, November 2025.

Robin: An Interactive Visualization System and Instructional Tool to Democratize United States Domestic Migration Data.

- Alexander Bendeck, Clio Andris, and John Stasko. *Proceedings of the Hawaii International Conference on System Sciences (HICSS),* pp. 5216-5225, January 2025.

Effects of Forecast Order, Cost, and Risk on Decision Making with Multiple Forecast Visualizations.

- Laura Matzen, Mallory Stites, Kristin Divis, Alexander Bendeck, John Stasko, and Lace Padilla. *Proceedings of the Workshop on Uncertainty Visualization at IEEE VIS,* pp. 28-37, October 2024.

SlopeSeeker: A Search Tool for Exploring a Dataset of Quantifiable Trends.

- Alexander Bendeck, Dennis Bromley, and Vidya Setlur. *Proceedings of the ACM Conference on Intelligent User Interfaces (IUI),* pp. 817-836, April 2024.

Text Mining and Spatial Analysis of Yelp Data to Support Socially Vibrant Cities.

- Alexander Bendeck and Clio Andris. *Proceedings of the 11th International Workshop on Urban Computing,* 10 pages, August 2022.

I-Rex: An Interactive Relational Query Explainer for SQL.

- Zhengjie Miao, Tiangang Chen, Alexander Bendeck, Kevin Day, Sudeepa Roy, and Jun Yang. *Proceedings of the VLDB Endowment (PVLDB), Vol 13, Demonstration Track,* pp. 2997-3000, August 2020.

Teaching Experience

Georgia Tech CSE 6242 (Data & Visual Analytics), Teaching assistant (TA) **Fall 2024 – Present**

- Grade homework assignments and course project deliverables, revise homework assignments, and hold Q&A sessions

Georgia Tech CS 6730 (Data Visualization Principles), TA **Fall 2023**

- Graded assignments, advised students on course projects, and held regular office hours

Duke COMPSCI 230 (Discrete Math), Undergraduate TA **Fall 2020**

- Graded assignments and held regular office hours

Duke COMPSCI 101 (Intro to CS)

Head undergraduate TA **Spring 2019 – Fall 2019**

- Revised course assignments and improved assignment auto-grading system based on student feedback; oversaw grading of assignments by other TAs
- Co-programmed and deployed a web app for exam prep used by over 120 students

Undergraduate TA **Fall 2018**

- Graded assignments and held regular office hours

Duke Mathematics Department, Office hours staff member **Spring 2018**

- Tutored Duke students enrolled in MATH 212 (Multivariable Calculus)

Research Mentorship

- **Hanxuan Zhang**, Master's student at Georgia Tech **Spring 2025 – Present**
- **Wenxi Hu**, Master's student at Georgia Tech **Spring 2025 – Present**
- **Wilson Chen**, Undergraduate student at Georgia Tech **Fall 2024**

Honors & Awards

Georgia Tech Goizueta Foundation Fellow **Fall 2023**

- Received a financial award for exceptional Georgia Tech Ph.D. students of Hispanic and Latino origin

Georgia Tech President's Fellow **Fall 2021**

- Received a 4-year financial award for highly qualified Georgia Tech Ph.D. applicants in the top 10% of their application pool

Phi Beta Kappa Honor Society inductee **Spring 2021**

- Selected based on record of high academic achievement

Duke University Dean's List with Distinction **Fall '17, '18, '19; Spring '18, '19**

- Awarded in every eligible semester for placement in the top 10% of Arts & Sciences undergraduates by GPA

Duke Undergraduate Research Support Small Grant recipient **2018-19 Academic Year**

- Received funding for my work as part of a neuroscience research study team

Florida Engineering Society Scholarship recipient **Spring 2017**

- Received a $1000 merit scholarship based on high school record and STEM interest

2017 National Merit Scholarship Finalist **Spring 2017**

- Named as a finalist for the 2017 National Merit Scholarship

Patents

Systems and Methods for Exploring Quantifiable Trends in Line Charts **Filed in 2024, Granted**

- Inventors: Alexander Bendeck, Dennis Bromley, and Vidya Setlur
- U.S. Patent #12,511,307

Search Tool for Exploring Quantifiable Trends in Line Charts **Filed in 2024, Granted**

- Inventors: Alexander Bendeck, Dennis Bromley, and Vidya Setlur
- U.S. Patent #12,216,678

Professional Experience

MIT Lincoln Laboratory, Summer Research Program intern **Summer 2025**

Mentored by Ashley Suh and Harry Li in Group 52 (AI Technology & Systems)

- Implemented a prototype system which utilizes a large language model to automatically integrate data from local and Web sources into a single dataset

Tableau Research, Research intern **Summer 2023**

Mentored by Dennis Bromley and Vidya Setlur

- Developed novel algorithms for semantic labeling and search of trends in line charts, as well as a prototype system to demonstrate the approach's efficacy

Activities & Mentoring

Georgia Tech Latino Organization of Graduate Students

Vice President **Fall 2024 – Summer 2025**

- Assisted the President with administrative duties, helped run executive board meetings, and represented the organization at networking and social events

Internal Outreach Committee chair **Fall 2023 – Summer 2024**

- Organized graduate student mentorship program, faculty panels, and networking opportunities for new and prospective graduate students

Member **Fall 2021 – Present**

- Helping to facilitate mentorship and networking events for graduate students

GVU Brown Bag Talks, Student organizer **Spring 2023**

- Coordinated graduate student "lightning talks" for the GVU Brown Bag seminar series

Duke Statistical Science Majors Union, Member and student mentor **Fall 2020 – Spring 2021**

- Mentored two first-year students interested in data science for the 2020-21 school year

Duke Mi Gente Cultural Organization, Member and student mentor **Fall 2019 – Spring 2021**

- Mentored one first-year student in the "Mi Familia" program for the 2020-21 school year
- Mentored three first-year students in the "Mi Familia" program for the 2019-20 school year

Service

- **Reviewer:** IEEE VIS Conference (2023, 2024, 2025), EuroVis Conference (2024, 2025), *IEEE TVCG* Journal (2024, 2025), *Information Visualization* Journal (2024)
- **Program Committee Member:** PacificVis Conference Short Papers (2026)

Skills

- **Programming:** Python (NumPy, sklearn, Pandas, PyTorch, Flask), R (dplyr, rshiny, plotly, leaflet), Java, JavaScript (React.js, Vue.js, D3.js), HTML/CSS, MATLAB, SQL
- **Productivity:** Git, GitHub, Zoom, Slack, Microsoft Teams, LaTeX
- **Languages:** English (native language), Spanish (elementary proficiency)