Alexander E. Bendeck
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Education

Georgia Institute of Technology (Georgia Tech), Atlanta, GA **Fall 2021 – Present**
Ph.D. in Computer Science
- Advisor: Prof. John Stasko
- GPA: 4.0/4.0
- Courses: Data Visualization, Human-Computer Interaction, Data & Visual Analytics

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

Research Interests

Large language models for visualization, AI-assisted visual data analysis, 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 users understand 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

Publications

How Visually Literate are Large Language Models? Reflections on Recent Advances and Future Directions.
- Alexander Bendeck and John Stasko. To appear in *IEEE Computer Graphics and Applications, 2025*.

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. To appear in *Workshop on Visualization Education, Literacy, and Activities at IEEE VIS, 2025.*

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

- Alexander Bendeck, Clio Andris, and John Stasko. *Hawaii International Conference on System Sciences (HICSS), 2025.*

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

- Alexander Bendeck and John Stasko. *IEEE Visualization and Visual Analytics (VIS), 2024.*

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. *Workshop on Uncertainty Visualization at IEEE VIS, 2024.*

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

- Alexander Bendeck, Dennis Bromley, and Vidya Setlur. *ACM Conference on Intelligent User Interfaces (IUI), 2024.*

Ground Truth Inference for Weakly Supervised Entity Matching.

- Renzhi Wu, Alexander Bendeck, Xu Chu, and Yeye He. *ACM SIGMOD International Conference on Management of Data, 2023.*

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

- Alexander Bendeck and Clio Andris. *11th International Workshop on Urban Computing, 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, 2020.*

Teaching Experience

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

- Grade projects and hold virtual Q&A sessions for an online master's course

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

- Graded assignments 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)

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**
- Inventors: Alexander Bendeck, Dennis Bromley, and Vidya Setlur

Search Tool for Exploring Quantifiable Trends in Line Charts **Filed in 2024, Granted**
- Inventors: Alexander Bendeck, Dennis Bromley, and Vidya Setlur
- US 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)

Skills

- **Programming:** Python (NumPy, sklearn, Pandas, PyTorch, Flask), R (dplyr, rshiny, plotly, leaflet), 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)