

# HANNAH K. BAKO

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## RESEARCH INTERESTS

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My research uses data visualization as a medium to explore how automation can augment human ingenuity in the design process. I leverage methodology from Cognitive Science, and Design to understand how individuals conceptualize visualization design ideas and develop tools that leverage emergent ML and AI technologies to improve the visualization generation and authoring processes.

## EDUCATION

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<b>University of Maryland</b> PhD. in Computer Science (Advisor: Zhicheng Liu)	<b>College Park, MD</b> <i>May 2025 (expected)</i>
<b>Stevens Institute of Technology</b> M.Sc. in Software Engineering	<b>Hoboken, NJ</b> <i>May 2019</i>
<b>Babcock University</b> B.Sc. in Computer Information systems	<b>Ogun, Nigeria</b> <i>June 2015</i>

## PROFESSIONAL AND RESEARCH EXPERIENCE

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<b>Research Assistant</b> Human Data Interaction Lab	<b>University of Maryland</b> <i>Aug 2021 - Present</i>
<b>User Research Intern</b> User Research: Product Intelligence (Mentor: Bruce Phillips)	<b>SalesForce/Tableau</b> <i>Summer 2022</i>
<b>Design and Visualization Intern</b> AI/ML Visualization Team (Mentor: Donghao Ren)	<b>Apple</b> <i>Summer 2021</i>
<b>Research Assistant</b> BAttle Data (BAD) Lab	<b>University of Maryland</b> <i>Aug 2019 - Jun 2021</i>
<b>Android UX Designer</b>	<b>N-Hub</b> <i>Jan 2017 - Jul 2017</i>

## AWARDS AND RECOGNITION

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<b>Fellowships</b>	
UMD Summer Research Fellowship (\$5000)	<i>2023</i>
NSF Travel Grant (\$2850)	<i>2023</i>
CRA-WP Grad Cohort for Women Fellowship	<i>2022</i>
Dean's Fellowship, University of Maryland (\$2500/yr)	<i>2019, 2020</i>
<b>Service</b>	
Special recognition for outstanding reviews	<i>ACM CHI 2023</i>
Special recognition for outstanding reviews	<i>IEEE VIS 2023</i>
Eagle Leadership Award, Babcock University	<i>2015</i>

## PUBLICATIONS

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\* Proceedings of IEEE VIS are published as a special issue of the flagship journal IEEE Transactions on Visualization and Computer Graphics (TVCG).

### Journal Papers

- J2 **Unveiling how Examples Shape Data Visualization Design Outcomes** [doi](#)  
*H.K. Bako*, Xinyi Liu, Grace Ko, Hyemi Song, Leilani Battle and Zhicheng Liu  
IEEE Transactions on Visualization and Computer Graphics  
Proceedings of IEEE Visualization and Visual Analytics Conference (VIS '24).
- J1 **Understanding how Designers Find and Use Data Visualization Examples** [doi](#)  
*H.K. Bako*, Xinyi Liu, Leilani Battle, and Zhicheng Liu  
IEEE Transactions on Visualization and Computer Graphics  
Proceedings of IEEE Visualization and Visual Analytics Conference (VIS '22).

### Conference Papers

- C3 **Evaluating the Semantic Profiling Abilities of LLMs for NL Utterances in Data Visualization** [doi](#)  
*H.K. Bako*, Arshnoor Bhutani, Xinyi Liu, Kwesi Cobinna, and Zhicheng Liu  
Proceedings of IEEE Visualization and Visual Analytics Conference (VIS '24)
- C2 **User-Driven Support for Visualization Prototyping in D3** [doi](#)  
*H.K. Bako*, Alisha Varma, Anuoluwapo Faboro, Mahreen Haider, Favour Nerrise, Bissaka Kenah, John P Dickerson, and Leilani Battle  
In Proceedings of the 28th International Conference on Intelligent User Interfaces (IUI '23)
- C1 **Streamlining Visualization Authoring in D3 Through User-Driven Templates** [doi](#)  
*H.K. Bako*, Alisha Varma, Anuoluwapo Faboro, Mahreen Haider, Favour Nerrise, Bissaka Kenah, and Leilani Battle  
Proceedings of IEEE Visualization and Visual Analytics Conference (VIS '22)

### Workshop and Lightly Reviewed Papers

- W1 **Tweets and Social Network Data for Twitter Bot Analysis** [link](#)  
Jennifer Golbeck, Niloofarsadat Alavi, *H.K. Bako*, Saptarashmi Bandyopadhyay, Calvin Bao, et al.  
Proceedings of SBP-BRIMS 2021: International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation.

### Preprints and Manuscripts

- M2 **VisAnatomy: An SVG Chart Corpus with Fine-Grained Semantic Labels**  
Chen Chen, *H.K. Bako*, Peihong Yu, John Hooker, Simon C. Wang, Samuel Kim, Jessica Wu, Aouxue Ding, Lara Sandeep, Alex Chen, Chayanika Sinha, Zhicheng Liu  
Under Review.
- M1 **How Do Observable Users Decompose D3 Code? A Qualitative Study**  
Melissa Lin, Heer Patel, Medina Lamkin, *H.K. Bako*, Yuanjie Tu, Soham Raut, Leilani Battle  
Under Review.

## TEACHING EXPERIENCE

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### Guest Lectures

**Interactions: Theory, Taxonomies, and Applications** Oct 2024  
CMSC 471: Introduction to Data Visualization

**Visualization Languages and Toolkits** Apr 2023  
CMSC 471: Introduction to Data Visualization

## Teaching Assistant

### CMSC 471: Introduction to Data Visualization

Fall 2024, Spring 2023, Spring 2022

Graded labs, assignments, and exams, held office hours

### CMSC 434: Introduction to Human-Computer Interaction

Fall 2022

Provide feedback on student projects, Graded assignments and exams, held office hours

### CMSC 433: Programming Technologies and Paradigms

Fall 2019 - Spring 2021

Designed and graded mid-terms and finals, held office hours

### CMSC 320: Introduction to Data Science

Summer 2020

Designed and graded mid-terms and finals, held office hours

## MENTORSHIP

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<b>Xiaoyu Liu</b> , Ph.D. at UMD	Fall 2024 - Present
<b>Ariya Mehra</b> , UMD	Fall 2024 - Present
<b>John Hooker</b> , UMD	Summer 2024 - Present
<b>Arshnoor Bhutani</b> , UMD, worked on C3	Jan 2024 - Present
<b>Heer Patel</b> , UW, worked on M1	Fall 2022 - Present
<b>Melissa Lin</b> , CMU (REU intern at UW), worked on M1	Fall 2022 - Present
<b>Xinyi Liu</b> , UMD and UT-Austin, worked on J1, J2, & C3	Fall 2022 - Spring 2024
<b>Grace Ko</b> , UMD, worked on J2	Fall 2022 - Spring 2023
<b>Alisha Varma</b> , UMD, worked on C1 & C2	Spring 2020 - Summer 2022
<b>Bisaka Kenah</b> , UMD, worked on C1, & C2	Fall 2022 - Spring 2023
<b>Anuoluwapo Faboro</b> , UMD, worked on C1 & C2	Spring 2020 - Fall 2021
<b>Mahreen Haider</b> , UMD, worked on C1 & C2	Spring 2020 - Summer 2021
<b>Favor Nerrise</b> , UMD on C1 & C2	Spring 2021

## PROFESSIONAL SERVICE

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### Paper Reviews

2024	ACM Intelligent User Interfaces Conference (IUI)
	PacificVIS: IEEE Pacific Visualization Conference
	ACM Conference on Human Factors in Computing Systems (CHI)
	IEEE VIS: Visualization and Visual Analytics (Short Papers)
2023	ACM Conference on Human Factors in Computing Systems (CHI)
	IEEE VIS: Visualization and Visual Analytics (Full & Short Papers)
2022	ACM Creativity & Cognition

## Service

2023	ACM Intelligent User Interfaces Conference (IUI)	Student Volunteer
2021	IEEE VIS: Visualization and Visual Analytics	Student Volunteer
2020	Denson Summer Enrichment Program	Volunteer Trainer
	ACM Very Large Databases Conference (VLDB)	Student Volunteer
2019	Conference on Systems Engineering (CSER)	Student Volunteer
	African Students Association (Stevens Institute of Technology)	Founding Member
2016	Nigerian Youth Service Corps Education Development Group	Vice President & Volunteer
2015	Graduating Class Student Representatives (Babcock University)	Financial Secretary

## PRESENTATION & TALKS

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2023	<b>User-Driven Support for Visualization Prototyping in D3</b> <i>ACM IUI, March 31, 2023, Sydney, Australia.</i>
2022	<b>Understanding how Designers Find and Use Data Visualization Examples</b> <i>IEEE VIS, October 20, 2022, Oklahoma City, Oklahoma.</i> <b>Streamlining Visualization Authoring in D3 Through User-Driven Templates</b> <i>IEEE VIS, October 19, 2022, Oklahoma City, Oklahoma.</i>
2021	<b>Innovation or Imitation? Measuring the influence of examples on visualization design</b> <i>HCIL (Lightning Talk), October 21, 2021, Virtual.</i>