HANNAH K. BAKO

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RESEARCH INTERESTS

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

EDUCATION

University of Maryland — **College Park, MD**
PhD. in Computer Science (Advisor: Zhicheng Liu) — *May 2025 (expected)*

Stevens Institute of Technology — **Hoboken, NJ**
M.Sc. in Software Engineering — *May 2019*

Babcock University — **Ogun, Nigeria**
B.Sc. in Computer Information systems — *June 2015*

PROFESSIONAL AND RESEARCH EXPERIENCE

Research Assistant — **University of Maryland**
Human Data Interaction Lab — *Aug 2021 - Present*

Research Assistant — **University of Maryland**
BAttle Data (BAD) Lab — *Aug 2019 - Jun 2021*

User Research Intern — **SalesForce/Tabeau**
User Research: Product Intelligence (Mentor: Bruce Phillips) — *Summer 2022*

Design and Visualization Intern — **Apple**
AI/ML Visualization Team (Mentor: Donghao Ren) — *Summer 2021*

Android UX Designer — **N-Hub**
Jan 2017 - Jul 2017

AWARDS AND RECOGNITION

Fellowships

UMD Summer Research Fellowship ($5000)	*2023*
NSF Travel Grant ($2850)	*2023*
CRA-WP Grad Cohort for Women Fellowship	*2022*
Dean's Fellowship, University of Maryland ($2500/yr)	*2019, 2020*

Service

Special recognition for outstanding reviews	*ACM CHI 2023*
Special recognition for outstanding reviews	*IEEE VIS 2023*
Eagle Leadership Award, Babcock University	*2015*

PUBLICATIONS

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, Aouxe 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

Guest Lecture
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

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

PROFESSIONAL SERVICE

Paper Reviews

2024	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	Education Development Group	Vice President & Volunteer
2015	Graduating Class Student Representatives (Babcock University)	Financial Secretary

PRESENTATION & TALKS

2023 **User-Driven Support for Visualization Prototyping in D3**

ACM IUI, March 31, 2023, Sydney, Australia.

2022 **Understanding how Designers Find and Use Data Visualization Examples**

IEEE VIS, October 20, 2022, Oklahoma City, Oklahoma.

Streamlining Visualization Authoring in D3 Through User-Driven Templates

IEEE VIS, October 19, 2022, Oklahoma City, Oklahoma.

2021 **Innovation or Imitation? Measuring the influence of examples on visualization design**

HCIL (Lightning Talk), October 21, 2021, Virtual.