Samia **Menon**

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Education & Honors

Columbia University (School of Engineering and Applied Science) *New York, NY*

B.S. in Computer Science with a Minor in Anthropology *Aug. 2019 - May 2023*

- Magna Cum Laude (GPA: 3.996/4.00)
- C.P. Davis Scholar
- **National Science Foundation CSGrad4US Fellowship (3 years of funding)**

Research Experience

Computational Design Lab (Supervised by Prof. Lydia Chilton) *New York, NY*

Researcher *Sep. 2022 - Present*

- Designed, implemented, and conducted studies on system (MoodSmith) leveraging generative AI to allow non-profit organizations to effectively explore a spectrum of narrative 'moods' in their advocacy campaigns.
- Created human-AI collaborative workflows for scriptwriting and storyboarding for news-to-video translation system (ReelFramer).
- Conducted user studies to investigate efficacy of AI-supported Tweetorial Hook writing system.

Work Experience

Squarespace *New York, NY*

Software Engineer *Aug. 2023 - Present*

- Established the backend infrastructure for a new microservice, the foundation of an upcoming product offering, using tools including Kubernetes, Docker, and Gradle.
- Planned and executed transition from local caches to low-latency Redis-based system.
- Led work to implement 2024 Black Friday Campaign, including restructuring queuing infrastructure to create a more resilient email sending pipeline and developing the frontend 'playbook' experience.

American Museum of Natural History (AMNH) & Brown Institute for Media Innovation *New York, NY*

Experience Lead & Technologist (Volunteer) *Jan. 2024 - May 2024*

- Scoped, designed, and executed an AR experience, *Carbon Catchers*, in the Hall of Ocean life at the AMNH as a member of the leadership team behind the project.
- Designed and implemented key aspects of *Carbon Catchers*, including multiple games, user interface features, the final React application, and general visitor experience.
- Facilitated exhibit during *EarthFest 2024* (Earth Day at the Museum) to museum visitors.

Brown Institute for Media Innovation *New York, NY*

Data Visualization *Jan. 2023 - May 2023*

- Designed and implemented a data visualization investigating how virality is defined and achieved on the Twitter (now X) platform.
- Developed final app in React and p5.js.
- Presented work at the Knight First Amendment Institute's *Algorithmic Amplification and Society* symposium.

Publications & Presentations

Samia Menon, Sitong Wang, and Lydia B. Chilton. 2024. MoodSmith: Enabling Mood-Consistent Multimedia for AI-Generated Advocacy Campaigns. In *Proceedings of the the 15th Conference on Computational Creativity (ICCC '24),* (Jönkoping, Sweden), Association for Computational Creativity.

Sitong Wang, **Samia Menon**, Tao Long, Keren Henderson, Dingzeyu Li, Kevin Crowston, Mark Hansen, Jeffrey V Nickerson, and Lydia B Chilton. 2024. ReelFramer: Human-AI Co-Creation for News-to-Video Translation. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24),* (Honolulu, Hawai'i, USA), Association for Computing Machinery, New York, NY, USA, Article 169, 1–20. https://doi.org/10.1145/3613904.3642868

Samia Menon and Sahil Patel. Visualizing Virality. 2023. Presented at *Optimizing for What? Algorithmic Amplification and Society Symposium*, New York, NY, USA, April 2023.

Tao Long, Dorothy Zhang, Grace Li, Batool Taraif, **Samia Menon**, Kynnedy Smith, Sitong Wang, Katy Gero, Lydia B. Chilton. 2023. Tweetorial Hooks: Generative AI Tools to Motivate Science on Social Media. In *Proceedings of the the 14th Conference on Computational Creativity (ICCC '23),* (Waterloo, ON, Canada), Association for Computational Creativity.

Service Experience

NYC Audubon *New York, NY*

Volunteer *May. 2023 - Present*

- Monitored and counted horseshoe crabs along Plumb Beach in Brooklyn, New York.

Columbia Girls Who Code *New York, NY*

VP Finance *Nov. 2019 - May 2023*

- Secured and distributed funding to support in-person computer science classes for high-school girls in the NYC area.
- Provided free MetroCards for all students for whom transportation cost was an obstacle to attendance.

Meet Me at the Museum *New York, NY*

Tour Guide *Oct. 2019 - May 2023*

- Supported free, in-person museum tours of the Metropolitan Museum of Art for NYC public elementary schools.
- Delivered free virtual art museum tours to elementary and middle school classes during the COVID-19 pandemic.

Teaching Experience

Introduction to Databases (Columbia Computer Science) *New York, NY*

Course Assistant *Aug. 2022 - Dec. 2022*

- Mentored several teams through creating a database schema, implementing their database in PostgreSQL, and creating a functional app.
- Supported instructor by holding office hours, responding to student questions online and attending virtual lecture, and grading assignments + exams.

Clean Object-Oriented Design (Columbia Computer Science) *New York, NY*

Course Assistant *Aug. 2021 - Dec. 2021*

- Held OH, created answer keys and rubrics for homework assignments, answered online questions, and graded homework assignments.

Hawken Upper School *Gates Mills, OH*

Teaching Assistant *Sep. 2020 - Apr. 2021*

- Substituted for subjects including Calculus, Chemistry, French, and Humanities during the COVID-19 pandemic.
- Conducted administrative tasks such as application organization and symptom tracking.

Other Experience

The Blue and White Magazine *New York, NY*

Illustrations Editor, Illustrator *Oct. 2019 - May 2023*

- Assigned, edited, and organized illustrations for a monthly publication of Columbia's Undergraduate Magazine, *The Blue and White*.
- Worked closely with a team of illustrators to collaborate with authors and create editorial artwork for each piece.

NabNew (Universe) *New York, NY*

Engineering & Marketing Intern *Jan. 2021 - Sep. 2021*

- Developed front-end product filtering features.
- Launched influencer marketing campaign that significantly decreased customer acquisition costs.

echoAR (echo3D) *New York, NY*

Engineering Intern *Jun. 2021 - Aug. 2021*

- Created 'Houseplant Picker' AR demo integrating echoAR into a custom web-app.
- Created and presented a QA testing plan for the growing service.

Skills

DevOps	Docker, Kubernetes, Jira, Gradle, Grafana, Google Cloud Logging
Backend	Spring, REST API, Redis Caching, MongoDB, Mockito Testing, Queue Infrastructure, DKIM/SPF Validation
Frontend	React, HTML5, CSS, Figma, A-Frame, d3.js, p5.js
Programming	Java, Python, Java/Typescript, SQL, C++, MATLAB, LaTeX
Languages	English (Native), French (Advanced)
Other	Public Speaking, UI Design, Video Editing, Illustration, Ethnography + Essay Writing

Samia Menon
December 2024

Personal Statement

There are infinitely many ways to be alive. One is as a star-nosed mole, with extraordinarily sensitive touch. Another is as *Boquila trifoliolata*, who can sculpt its leaves to mimic its host, sensing nuances in shape and texture. Human existence holds a small fraction of life's possibilities, yet, within that sliver are billions of stories, each offering a unique way of interacting with the world. Driven by a deep curiosity in the multitude of ways life can be navigated, **I aim to leverage evolving areas - such as generative AI, mixed reality, and computer vision - to design systems that expand an individual's horizons beyond their own lived experiences, enabling them to engage with diverse narratives and communicate their own perspectives.** By designing for a wide range of users, I hope to foster deeper connections across communities and contribute to a more equitable and empathetic society. **As I look to the future, pursuing a PhD in Computer Science (Human-Computer Interaction) at Columbia will equip me with the skills to research and develop systems that will enhance individuals' abilities to express ideas, connect with their environment, and understand each other.**

Early in my undergraduate studies, I applied my interest in technology to express human experiences. As a C.P. Davis Scholar, I sought independent funding to explore applications of information visualization to anthropology. While the pandemic began, I learned technologies to tell stories: p5.js for visualizing racial disparities in mortality due to COVID-19, GIS for documenting archaeological expeditions, and Blender for modeling buildings in historical Seneca Village. After presenting my work, I was eager to continue exploring technology-supported expression.

My curiosity led me to Professor Lydia Chilton's Computational Design Lab, where I joined the Tweetorial project and investigated how generative text tools could create accessible scientific content. **This work resulted in my first publication (ICCC 23) and encouraged my interest in system creation.** My next project, ReelFramer, aimed to help under-staffed newsrooms translate traditional content into short-form videos for social media. With PhD student Sitong Wang, I explored informative and entertaining storytelling methods, engineered workflows, and facilitated end-to-end user studies. **Now, multiple small newsrooms use the tool. Our system paper was accepted in CHI 2024.**

After graduation, I looked forward to starting a software-engineering position; however, I could not leave research behind. While working full-time, I began my next project, inspired by my experiences with conservation organizations. Many non-profits struggle to achieve an inspiring 'mood' when transforming somber messages into public-facing campaigns. **After months of iteration, MoodSmith leveraged GPT-4, Stable Diffusion, and the Spotify API to translate input messages and moods to short-form multimedia advocacy-campaigns that cohesively achieved the intended tone**. Users found the tool useful, allowing professionals who were not trained in communications to quickly create prototypes of advocacy campaigns. **As the first author, I was excited to present our paper on MoodSmith in ICCC 24.**

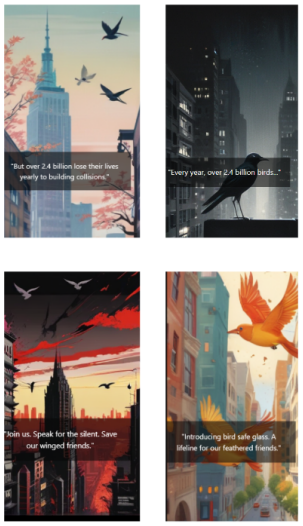

Figure 1: *Stills from four videos created with MoodSmith conveying the same message with different input moods: tranquil, depressed, delighted, angry (clockwise from top left).*

In addition to building systems, **I pursued my interest in innovative methods of information communication at the Brown Institute, where I developed a data visualization examining 'virality' on Twitter.** Based on the work of Dr. Arvind Narayanan, our final product, Visualizing Virality, involved months of data-cleaning, design iteration, and React/p5.js development. The centerpiece follows a tweet as it approaches our definition of virality. Each user is presented as a circle, with a radius proportional to follower-count. A retweet is presented as a burst of particles, radiating outwards to the user's follower network. **As my collaborator and I presented our work at the Algorithmic Amplification & Society Symposium, I was excited to tell the story of a tweet - as well as the complex social interactions behind it - in a novel way.**

The next story I was tasked with telling was **at the American Museum of Natural History (AMNH), where I helped lead the effort to create a new augmented reality (AR) experience in the Hall of Ocean Life.** Alongside the Science Visualization Team, we constructed the experience from the ground up. While imagining visitors immersed in an undersea experience, we developed content with scientists, designers, and technical interns, programmed the application in A-Frame and Javascript, and

spent late nights debugging under the belly of the famous Blue Whale. We gazed at the exhibits with the wonder-filled perspective of children who visit the hall. In addition to working on individual parts of the experience, I combined our team's hard work into one cohesive React app, in which guests could collect badges for completing the games at each station and take celebratory selfies with the animals. **The experience opened to over 2000 visitors, captivating guests as the animals came to life, and demonstrating AR's ability to channel a world to a wide audience** - some of whom were still learning to walk on two feet.

Pursuing a PhD at Columbia will allow me to collaborate with innovators who consistently push forward the boundaries of emerging technologies while prioritizing crucial, human-centered applications. I would be thrilled to continue working with Prof. Lydia Chilton, developing systems that leverage rapidly advancing generative models to support resource-constrained groups in achieving creative tasks or expressing complex information. I am also interested in the work of Prof. Brian Smith, whose research in pairing novel techniques with existing resources aims to create a more accessible and connected world. Prof. Shree Nayar's work in developing sensors and interfaces that transform how we parse and interact with visual information inspires me; I would be grateful to learn from his expertise in creating innovative, foundational technologies to design systems that enable users to record their experiences and engage with others' stories in new and meaningful ways. Additionally, I would be excited to collaborate with Prof. Steven Feiner, whose use of AR/VR to visualize vital data in context - whether for urban planning or medicine - broadens the scope of human understanding. I am confident that, as a PhD student at Columbia, I will deeply contribute to the advancement of HCI research, shaping technologies that foster human expression, empathy, and connection.

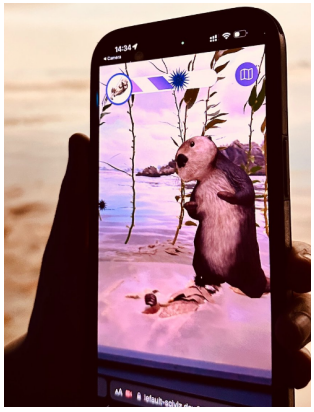

Figure 2: *A user interacting with the otter game during the Carbon Catchers exhibition*

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