

# Hyemi Song

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## Summary

Hyemi Song is a researcher and designer interested in topics related to “data, communication, and humans” in complex systems. Her academic research areas include infovis, HCI, and Immersive Analytics. Currently, she studies Natural Language and Data Visualization Interplay in XR under the supervision of Dr. Amitabh Varshney.

## Educational Background

**University of Maryland**, College Park, USA, 2022-Present  
Ph.D. Computer Science

**University of Maryland**, College Park, USA, 2022-2024  
Master of Science, Computer Science

**Rhode Island School of Design**, Providence, USA  
Master of Fine Arts, Digital + Media

**University of the Arts London**, London, UK  
Foundation, Visual Communication Design

**The Catholic University of Korea**, Seoul, Korea  
Bachelor of Science, Molecular Biology

## Research Experiences

**University of Maryland College Park**, USA, 2022 - Present  
**Position:** Research Assistant (Advisor: Dr. Amitabh Varshney)  
**Labs:** UMD Graphics and Visual Informatics Laboratory, Human-Computer Interaction Lab  
Currently working on Natural Language and Data Visualization Interplay in XR (within Generative AI-powered immersive analytics).

**Massachusetts Institute of Technology**, MIT Senseable City Lab, Cambridge, USA, 2016 - 2017  
**Position:** Research Fellow, Data Visualization Specialist  
Developed an award-winning project, Cityways, Driving DNA, Pisa Pool, Urban Exposure, and more.

**NAVER Corporation**, Seoul, Korea, 2011 - 2014  
**Position:** UX Researcher  
Designed mobile/web UX/UI for a Social Network Service, 'me2day' (Korea's equivalent of Twitter), and designed the Portal Service, 'NAVER' (the largest search engine in Korea).

## Teaching Experiences

**University of Maryland College Park**, 2022 Spring/Summer, 2023 Spring/Summer/Fall  
**Position:** Teaching Assistant  
**Class:** Introduction to Data Science, Web Application Development with JavaScript

**Rhode Island School of Design**, 2016 Winter  
**Position:** Instructor  
**Class:** Measuring the Universe (2016 RISD Winter Session)

## Industry Experiences

**Microsoft**, Redmond, USA, 2019 - 2022  
**Position:** Senior Designer

Specialized in Data Visualization, Designed for Machine Learning and AI products.  
Designed Error Analysis Dashboard, Azure Machine Learning Studio, and more.

**Datadog Inc**, New York, USA, 2017 - 2019

Position: Product Designer

Specialized in Data Visualization. Designed/developed [Service Map](#), Host, and Infra map.

**eyeballNYC**, New York, USA, 2015

Position: Design Intern

Designed a Logo for Sylvia Day who is a US best-selling author, as well as working on 5+ other projects.

**VINYL Interactive**, Seoul, Korea, 2010 - 2011

Position: UX/UI designer

Designed and developed the web/mobile Service Strategies & Proposals, interactive installations, and digital media promotions for 10+ clients; SAMSUNG, Korea Telecommunication, and more. KT Olleh Square won a prize from the iF design awards.

**2015 Brothers**, Seoul, Korea, 2009 - 2010

Position: Art Director

Designed and directed advertising projects for 20+ clients, including SKTelecom, SAMSUNG, and Korea Technology.

**PXD**, Seoul, Korea, 2008 - 2009

Position: Interaction Designer

Developed and designed mobile/web UI/UX services for clients including SKTelecom and SAMSUNG.

**Samsung Electronics**, Seoul, Korea

Position: Design intern

Researched web 2.0 and worked on a Flexible Display Project proposal.

**Cheil World Wide**, Seoul, Korea

Position: Design intern

Participated in a NY Time Square Outdoor Advertisement Proposal to make a creative movie.

**Kiz Entertainment**, Seoul, Korea

Position: Clay Animator

Participated in Clay animations for an advertisement, and TV Series with 5+ Clients, including Korean Broadcasting System and Dino land.

## Research Projects

### 1. Natural Language and Data Visualization Interplay for Visual Analytics

#### 1) Natural Language and Data Visualization Interplay in XR, 2023 - Present

Role: First Author

My research explores the complex interplay between natural language and data visualizations in XR environments for users with diverse backgrounds and expertise levels. This work is situated within the broader context of Generative AI-powered immersive analytics with multimodal interaction.

#### 2) Sensemaking with Heterogeneous data, 2023

Role: First Author

This study examines the impact of integrating text and visualization in data analysis tools on users' sensemaking processes. We conducted self-experiments with toy datasets on gun violence, comparing human and GPT-4 analyses, and conducted a formative study using semi-structured interviews.

#### 3) Towards understanding in-context learning with contrastive demonstrations and saliency maps, 2023, [Link](#)

Role: Co-Author

We investigate the role of various demonstration components in the in-context learning (ICL) performance of large language models (LLMs). Specifically, we explore the impacts of ground-truth

labels, input distribution, and complementary explanations, particularly when these are altered or perturbed.

## 2. Data Visualization Authoring

### 1) **Beyond Replication: How Timing and Schematic Similarity Shape Example-Based Data Visualization Design**, 2023, *(Under Review)*

Role: Co-Author

This research investigates the influence of examples on visualization design, identifying key factors in idea transfer and effectiveness and guiding future example-based design studies.

### 2) **Intents, Techniques, and Components: a Unified Analysis of Interaction Authoring Tasks in Data Visualization**, 2022-2023

Role: First Author

This paper introduces a new framework for composing interactions in data visualization, consolidating existing models based on the analysis of 45 real-world examples.

## Publications

Zongxia Li, Paiheng Xu, Fuxiao Liu, **Hyemi Song**, Towards understanding in-context learning with contrastive demonstrations and saliency maps, [arxiv.org/abs/2307.05052](https://arxiv.org/abs/2307.05052), 2023

**Hyemi Song**, Walking in a place, Walkestra, MFA Thesis, Rhode Island School of Design, 2016

## Books & Book Chapters

**Hyemi Song**, Solar System, Annual Student Artists' Book Juried Contest, Rhode Island School of Design, 2015

Steven Heller, Rick Landers, Raw Data, (Published Works: The temperature of my mind, Visualizing works), 2014

## Invited talks (Selected)

**Ohio State University** Ohio, USA, 2022

Lecture: Data and Human Communication

**GyeongGi Cultural Foundation**, Seoul, Korea, 2021

Lecture: Data as a communication medium: art, design, and human

**San Jose State University** San Jose, USA, 2021

Lecture: Data and Human Communication

Workshop: Measuring the temperature of my mind

## Jury, Peer Review, Advising service

**DIS-** Reviewer, Full papers, 2024 - Present

**IEEEVIS** - Reviewer, Full papers (2023), Short papers (2024), 2023 - Present

**PacificVis** - Juror, 2022 - Present

**IEEEVIS Arts Program** - Program Committee / [Link](#), 2018 - Present

**A' Design Award & Competition**, Italy - Jury Member, 2018 - 2022

**Brown University, Computer Science Department**, USA - Portfolio Reviewer, 2019 - 2021

**Apexart**, USA - Jury Member, 2017

## Grants, Fellowships & Scholarships

**DIS**, USA - Awarded a complimentary one-year ACM Professional Membership (for paper review contribution), 2024

**IEEEVIS**, USA - Inclusive and Diversity Scholarship, 2023

**University of Maryland College Park**, USA - Dean's Fellowship/Assistantship, 2022-Present

**Massachusetts Institute of Technology**, USA - Fellowship, 2016 - 2017

**Rhode Island School of Design**, USA - Assistantship/Fellowship, 2014 - 2016

**Samsung Art & Design Institute**, Korea - Scholarship, 2007

## Awards

**IEEE Arts Program, Melbourne**, Australia - Accepted for exhibition, 2023 (Project: Solar System)  
**A'Design Award and Competition**, Italy - Winner (Gold), 2018-2019  
**Information is Beautiful Awards**, USA - Long List, 2018  
**World Changing Ideas Awards (by Fast Company)**, USA - Finalist, 2018  
**IEEE Arts Program, Berlin**, Germany - Accepted for exhibition  
**A'Design Award and Competition**, Italy - Winner (Iron), 2016-2017  
**53rd American Graphic Design Awards, GDUSA**, USA -Winner (Student), 2016  
**Spark International Design Awards**, USA - Finalist, 2016  
**Annual Student Artists' Book Juried Contest**, USA - Accepted for exhibition and publication at RISD Fleet Library, 2015  
**Adobe Design Achievement Awards**, USA - Semifinalist, 2008, 2015, 2016  
**Adobe Design Achievement Awards**, USA - Honorable Mention 2007  
**IF Design Award**, USA - Winner, 2010  
**Good Design Award**, Japan - Winner, 2010  
**Seoul Design Olympiad 2009**, Korea - Winner (Honorable Mention)  
**SADI Graduation Award**, Korea - Experimental Portfolio Winner  
**11th Environmental Management Corporation Award**, Korea - Winner

## Press

**Monthly Design** (Oldest Korean Design Magazine), Seoul, Korea, 2018  
 Feature Interview, Title - Data Visualization Designer, Hyemi Song / [Link](#)  
**Data Vis Today**, USA, 2018  
 Feature Interview, Podcast (Episode 13) / [Link](#)  
**IdN**, Hong Kong, 2018  
 Featured article (Project: CityWays), IdN is an international Design Magazine / [Link](#)  
**The Guardian**, USA, 2016  
 News Article (Project: Urban Exposure), Data Visualization at MIT Senseable City Lab / [Link](#)  
**Visual Loop**, Brazil, 2012  
 Featured article, Title - Finding stories of data visualization from twitter / [Link](#)  
**Information Aesthetics**, USA, 2011  
 Featured article, Title - Visualizing Works: Hyemi Song's Innovative Portfolio / [Link](#)  
**Visualising Data**, USA, 2011  
 Featured article, Title - Visualizing Works: Hyemi Song's Innovative Portfolio  
**Sadi Vision**, Korea, 2011  
 Featured article (Project: Visualizing Works)  
**IF Online Gallery**, USA, 2010  
 IF Online Gallery (Project: KT Olleh Square)  
**2009 Seoul Design Olympiad**, Korea, 2009  
 Annual publication for winners  
**Adobe Design Achievement Award Online Gallery**, USA, 2008  
 ADAA Online Gallery (Project: The temperature of my mind)

## Exhibitions

**IEEE Arts Program, Melbourne**, Australia, 2023 (Project: Solar System)  
**Design Korea Festival 2020, Design Beyond Data**, @Coex, Seoul, Korea, (Declined) 2020  
**IEEE Arts Program**, Berlin, Germany, 2018  
**A'design Award Winner exhibition**, @Mood, Italy, 2017

**Shenzhen Design Week**, @Shenzhen Convention Center, China, 2017  
**RISD Nature Lab anniversary exhibition**, @Waterman Gallery, USA, 2017  
**Internet Festival**, @Waterman Gallery, Pisa , Italy, 2016  
**RISD Graduate Exhibition**, @Providence Convention Center, USA  
**Dark Matter**, @RISD Sol Koffler Gallery, USA  
**Image Landscapes**, @RISD Gelman Gallery, USA  
**Annual Student Artists' Book Exhibition**, @RISD Fleet Library, USA  
**2009 Seoul Design Olympiad**, @Jamsil Main Stadium, Korea  
**Sharing Experience 2009**, @Zero one center Gallery, Korea  
**Onepiece Magazine Ceremony Party 500**, Korea  
**Reviewing Hanul Exhibition**, @Space Hiut, Korea  
**GUANGZHOU Design Korea Exhibition**, Guangzhou, China  
**2nd D.I.P. Exhibition**, @SADI Space Gallery, Korea  
**21st D.I.P. Exhibition**, @SADI Space Gallery, Korea  
**SADI Graduation Exhibition**, @SADI Space Gallery, Korea  
**Hanul Exhibition**, @Shinhan Gallery, Korea  
**Chelsea College of Arts Graduation Exhibition**, @Hugon Road Gallery, UK

## Coursework (UMD)

Explainable Natural Language Processing [Link](#)  
Natural Language Processing [Link](#)  
User Experience Research Methods [Link](#)  
Information Visualization [Link](#)  
Advances in XR [Link](#)  
Info-Centric Design System [Link](#)  
Interactive Technologies in Human-Computer Interaction  
Visual Analytics  
Bioinformatics (AU)  
Embodied Media Design (AU)

## Skillsets

**Front, Backend, Data Visualization, Data Science, AR/VR**  
Javascript, React, Redux, Express.js, MongoDB, Python, HTML, CSS, C#  
D3js, Vegalit, Matplotlib, Three.js, PyTorch, Unity

**Design & Research**  
Graphic Design, UX/UI design, Interaction Design, UX Research, Academic Research