

Ji Won Chung

RESEARCHER · LONG-TERM COMPUTING · VISUAL SYSTEMS

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*My research focuses on creating long-term, human-centric systems that adapt to natural human behaviors.
I build and evaluate systems that transform people's relationships with data.*

Education

Brown University - Ph.D. Candidate, Computer Science

CUMULATIVE GPA: 4.00/4.00 - ADVISORS JEFF HUANG & JAMES TOMPKIN

Providence, RI

Sep 2021 - May 2027

Smith College - B.A. Computer Science, Mathematics Minor

CUMULATIVE GPA: 3.99/4.00 - HIGHEST HONORS IN COMPUTER SCIENCE, MAGNA CUM LAUDE, PHI BETA KAPPA, SIGMA XI

Northampton, MA

Sep 2015 - May 2018

Current Research

Brown Human Computer Interaction Lab

PHD CANDIDATE - ADVISORS JEFF HUANG & JAMES TOMPKIN

Providence, RI

May 2022 - Present

LONG-TERM BEHAVIORAL COMPUTING

- Implementing the Sleep Regularity Index, a model demonstrating day-to-day behavioral sleep changes to enhance long-term consistency in sleep behavior for **1 Million active users of Sleep as Android**
- Developing long-term systems that reflect changing, human sleep behaviors to counter current sleep-tracking systems, biased towards short-term data and normative users, via a data-driven investigation of sleep data with **150k+ users and 6.5 years of data** and an interdisciplinary collaboration with domain experts at the Brigham Women's Hospital's Division of Sleep and Circadian Disorders
- Extracting data from sleep wearables to investigate practical limitations of real-world tracking devices to help measure sleep and heart rate in persons living with Alzheimer's Disease and Related Dementias

ENABLING VISUAL SYSTEMS

- Developing drawing-directed authoring systems that generate 2.5D and 3D objects to enable new creative storytelling methods and facilitate authoring experiences for designers and artists on the web
- Creating a system enabling multi-view points and transitions on VR headsets for cinematic, film edits and set design in mixed reality
- Implementing custom raster plot visualizations in Python to help sleep clinicians detect irregular sleep behaviors

Work Experience

Adobe Research

RESEARCH SCIENTIST INTERN - MENTOR RYAN ROSSI | CORE TECHNOLOGIES, DATA SCIENCE LAB

San Jose, CA

May 2023 - Aug 2023

- Developed a performative visualization system using Swift and ARKit and a formative study with 5 visualization experts - *Paper In Submission*

Morgan Stanley

TECHNOLOGY ASSOCIATE & TECHNOLOGY ANALYST PROGRAM - LISTED SALES & TRADING

New York, NY

Aug 2018 - May 2021

- Developed new routing framework capabilities for real-time electronic sales and trading systems for high-profile, critical sales and trading platforms used by traders, account managers, quants and compliance and risk officers in C++, Python, and XML
- Comparative performance and stress testing to identify bottlenecks and load capacity to account for high-volume trading
- Created a GUI for regression testing to facilitate client migration and binary upgrades using Jasmine testing framework, Flask, Mongo DB, and Angular
- Built a release manager UI to automate software deployment workflow using Scala, Java, and Splunk

Pacific Northwest National Laboratory

NATIONAL SECURITY INTERNSHIP PROGRAM

Seattle, WA

Jun 2017 - Aug 2017

- Developed an interactive, web-based visualization tool to discover and detect anomalies and patterns in graphs containing info on interactions and behaviors of actors, entities, by linking graphs, tooltips, and histograms in React and D3.js

Publications

J. Chung, J. Fu, Z. Deocadiz-Smith, M. F. Jung, and J. Huang. 2023. "Negotiating Dyadic Interactions through the Lens of Augmented Reality Glasses". In Proceedings of the 2023 ACM Designing Interactive Systems Conference (DIS '23). Association for Computing Machinery, New York, NY, USA, 493–508, doi: 10.1145/3563657.3595967 [📄](#)

N. Howe and J. W. Chung, "Symmetric Inkball Alignment with Loopy Models," 2019 International Conference on Document Analysis and Recognition (ICDAR), Sydney, Australia, 2019, pp. 349-354, doi: 10.1109/ICDAR.2019.00063 [📄](#)

Press and Invited Talks

Computing Long-term Sleep with In-Situ Data Lifespan Women's Medicine Collaborative, Apr 2024 [🎤](#)

Sleep as Android Sleep Regularity Index, Oct 2023 [📄](#)

IEEE Spectrum AR Glasses Spawn a Whole New Social Dynamic, Sep 2023 [📄](#)

Posters

J. Chung, I. Raut, J. Y. Yun, K. Pien, S. Sridhar, M. R. Crouser, and R. J. Crouser, "DSMVis: Interactive visual exploration of the DSM5 for mental health providers," *2017 IEEE Conference on Visual Analytics Science and Technology (VAST)*, Phoenix, AZ, USA, 2017. **Honorable Mention Best Poster** 🏆

J. Chung, "Dynamic Network Analysis via Motifs (DYNAMO) Software Development," *2017 Pacific Northwest National Laboratory National Security Internship Program Research Symposium*, Richland, WA, USA, 2017. Presentation 🏆

J. Chung, Z. Rizvi, S. Sridhar, and J. Y. Yun, "A Business Opportunity: Targeting Expedia's Niche Market in Travel Packages Via Analytical and Predictive Modeling," *2017 Electronic Undergraduate Statistics Research Conference (eUSR)*, 2017. **Third Placed Paper in USCLAP Competition in Intermediate Statistics**. 🏆 Presentation 🏆

Past Research Experience

Graph-based Matching for Word Spotting in Handwritten Documents

Northampton, MA

SENIOR THESIS - NICK HOWE | AWARDED HIGHEST HONORS 🏆

Sep 2017 - May 2018

- Proposed a new method to measure similarity of two part-structured Inkball models and increased accuracy in query retrieval of handwritten words on the standard George Washington 20 dataset using MATLAB
- Formalized similarity of two models via a bidirectional match between two graphs and an introduction of two new measures to capture many-to-one matches of nodes and the structural differences between graphs

Human Computation & Visualization Laboratory

Northampton, MA

RESEARCH ASSISTANT - R. JORDAN CROUSER

May 2016 - May 2017

- Designed and developed *DSMVis: Interactive Visual Exploration of the DSM-5 for Mental Health Providers*, an interactive diagnoses filtering system via bubble charts to reduce diagnostic bias of mental health clinicians and organizational bias of the DSM-5 using D3.js, HTML, and CSS
- Conducted machine learning analysis and web-scraped, curated, and cleansed data through use of Python packages Grahpviz, scikit-learn, matplotlib, Seaborn, NumPy, SciPy, pandas, and plotly and R
- Created interactive network graph and corresponding adjacency matrix using D3.js, HTML, and CSS to investigate new data visualization techniques in networks for cyber security analysts

Mentoring

EMILY LIN 🍃	Undergraduate, Brown University	Aug 2024 - Present
IVERY CHEN 🍃	Undergraduate, Brown University & RISD - Software Engineer at Tesla	Feb 2023 - May 2024
KEVIN HSU 🍃	Undergraduate, Brown University - Software Engineer at Stripe	May 2022 - May 2024
NEIL XU	Undergraduate, Brown University	Feb 2022 - May 2022
LUCAS WEISSMAN	Undergraduate, Williams College, exploreCSR Program	Feb 2022 - May 2022
JIAHUA CHEN 🍃	Undergraduate, Brown University	Sep 2021 - Dec 2022

Service

REVIEWING

CHI 2024	Paper Reviewer (x3)	Oct 2023
CHI 2023	Helped Paper Review (x1)	Oct 2022
SIGGRAPH 2022	Poster Reviewer (x2)	May 2022
UIST 2022	Paper Reviewer (x1)	May 2022
CHI 2022	Helped Paper Review (x1)	Oct 2021

BROWN UNIVERSITY

GWICS+	Lead Organizer of Graduate Women in CS+	Feb 2022 - May 2024
D&I COMMITTEE	PhD Student Representative of the Diversity and Inclusion Committee	Sep 2021 - May 2024
EXPLORECSR	PhD Mentor for undergraduates pursuing Socially-Responsible Artificial Intelligence	Feb 2022 - May 2022

Awards & Honors

FINALIST	Digital Health Pitch Competition, Sleep Regularity in the Wild	Jun 2022
GLOBAL EXCELLENCE AWARD - GIVING BACK	Awarded by Morgan Stanley for Volunteering on Billion Oyster Project, Deployed UI App for Oyster Data Collection	Oct 2022
HONORABLE MENTION BEST POSTER	IEEE Visual Analytics Science and Technology Conference, DSMVis: Interactive Visual Exploration of the DSM-5 for Mental Health Providers	Aug 2017

Related Coursework

Advanced Graphics, Computer Vision for Graphics and Interaction, Deep Learning, UI/UX, HCI Seminar, Designing Human-Centered Technologies

Technical Skills

Python, Swift, C#, React, Java, Angular, Flask, JavaScript, C++, Unity, MATLAB, Scala, D3.js, React.js, XML, HTML, CSS, x86 Assembly, Git, Linux, Bash, C, Data Wrangling, Web-Scraping, WebGL, Blender, SQL, Sybase