

Research interests

Human computer interaction (HCI) doctoral student specializing in virtual reality, collaborative applications, and scientific sensemaking.

Research methodology includes: participatory design, qualitative and quantitative UX evaluation, and rapid VR mockups and prototyping.

Education

University of California, Santa Cruz

Santa Cruz, California

PhD Student in Computational Media

2022 – Present

Advisor: Katherine Isbister

University of Southern California

Los Angeles, California

BS in Computational Linguistics

2018

BA in Cognitive Science

Honors and scholarships

Finalist, UC Santa Cruz Grad Slam

2023

Regents Fellowship

2023

CITRIS Tech For Good Award

2022

Dean's Fellowship

2022

Publications

Purposeful XR: Affordances, Challenges, and Speculations for an Ethical Future

Elizabeth Childs, Samir Ghosh, Sebastian Cmentowski, Andrea Cuadra, Rabindra Ratan

CHI EA '25 (forthcoming)

Designing Shared VR Tools for Spatial Scientific Sensemaking About Wildfire Evacuation

Samir Ghosh, Yuhui Wang, Wiliam Zhou, Kelly Lin, Joshua McVeigh-Schultz, and Katherine Isbister.

CHI EA '24

Eye Ball: Gazing as a Dilemma in a Competitive Virtual Reality Game

Michael Lankes, Samir Ghosh, Charles Bishop Lesser, and Katherine Isbister.

CHI EA '24

Designing Interaction Approaches for Shared Sensemaking in XR

Samir Ghosh, Joshua McVeigh-Schultz, and Katherine Isbister.

Sensemaking Workshop, CHI '24

Social Physiological Data Awareness in Collocated Mixed Reality Movement

Samir Ghosh, Charles Lesser, Kaia Rae Schweig, Sofia De La Vega Mireles, and Katherine Isbister.

PhysioCHI Workshop, CHI '24

Revealing Aspects of Hawai'i Tourism Using Situated Augmented Reality

Karen Abe, Jules Park, and Samir Ghosh

With or Without Permission Workshop, CHI '24

Designing a mixed-initiative multi-user VR interface for wildfire mitigation

Samir Ghosh, Yanglan Wang, Kecheng Cheng, Anthony Angeles, Andrew Moskovich, Kenichi Soga, and Katherine Isbister.

HCI for Climate Change Workshop, CHI 2023.

The Cuteness Factor: An Interpretive Framework for Artists, Designers and Engineers

Angela Y.H. Fan, Chen Ji, Ella Dagan, Samir Ghosh, Yuhui Wang, Katherine Isbister.

DIS 2023.

Selected Projects

Booksnake AR

NEH funded iOS AR app displaying assets from the Library of Congress and other archival information. Early design, software architecture, and project management contributions.

Bunker Hill VR

Historical recreation of 1930s downtown Los Angeles using civil engineering data. Project management, documentation, and technical contributions

Stanza Del Segnatura

WebGL 3D app that overlays primary sources over frescoes from The Vatican. Build and distribution contributions.

Bodyscape

Internationally exhibited (i.e. SIGGRAPH, Ars Electronica) wearable technology fashion piece by Behnaz Farahi. Contributions in gait responsive algorithms, circuit design, safety systems, and generative design

Research experience

Graduate Student Researcher, UC Santa Cruz

June 2023 - Present

VR for Scientific Sensemaking

Researching multi-user VR interfaces for scientific applications for civil engineering, marine science, environmental security, and surgical applications. Current collaboration with the Soga Research Group at UC Berkeley to build VR prototypes for wildfire mitigation, geomechanics simulations, and net-zero infrastructure planning. Supported by the [Sloan Foundation](#)

Teaching experience

Teaching assistant, UC Santa Cruz

Winter 2022

CMPM 115: Lead By Design

Intensive design, project management, and pedagogical course training students to design and teach a course. Reviewed curricular material and mentored students who then taught courses in circuit design, laser cutting fabrication, and full stack web development.

Industry experience

Ahmanson Lab USC Harman Academy Los Angeles, California
Assistant Director Jan 2019 - Aug 2022

- Produced various VR, AR, and installation experiences, collaborating across institutions (i.e. The Vatican, California Science Center, Library of Congress)
- Created and taught hands-on workshop series spanning deep learning, VR and AR development, computer graphics, robotics, 3D printing, and issues in privacy rights and AI
- Maintained fabrication resources for students and professors including 3D printing, and microcontroller resources (weekly usage 100 to 250 people)

YUR Inc. Los Angeles, California
VR Developer Jul 2021 - Dec 2021

- Specified and implemented network architecture to connect a Unreal Engine based VR app telemetry to social networking, health metrics, and game account APIs
- Created efficient GPU based instanced materials for gameplay mechanics and ambient environment elements
- Migrated assets, networking code, and machine learning models from a Unity plugin to Unreal and worked with an engineering team for XR integration and cybersecurity considerations

Intel Corporation Santa Clara, California
DevOps Engineering Intern Summer 2016, Summer 2018, Fall 2018

- Implemented a scalable, real-time cybersecurity threat responder and visualization system using OSSEC, Wazuh and Elasticsearch (200k+ server machines monitored per instance)
- Extended a hardware agnostic firmware service tool from CLI to a web interface using Node.js, various front-end frameworks, and full stack development practices
- Created real-time visualizations of server availability and update status during scheduled server farm downtime using Kibana and Python scripting

Enlighted Inc. Sunnyvale, California
QA Intern Summer 2014

- Designed and built test rigs for infrared sensors to verify output voltages
- Implemented tools and processes to fix mass quantities of faulty units

Talks and tutorials

Revisiting the for Loop Nov 2023
Slugworks, UC Santa Cruz

A Career in HCI and VR Oct 2023
Cognitive Science Student Association, UC Santa Cruz

Generative Art in Virtual Reality Using p5js Digital Arts and New Media, UC Santa Cruz	Jun 2023
Wildfires in Virtual Reality UC Santa Cruz Grad Slam, Kuumbwa Jazz Center	Mar 2023
Multi-user VR workshop Digital Arts and New Media, UC Santa Cruz	Feb 2023
Surveillance and the Attention Economy Polymathic Making Workshops, Ahmanson Lab at USC	Mar 2022
Computational Art Polymathic Making Workshops, Ahmanson Lab at USC	Feb 2022
WebRTC, WebGL, and other web protocols Polymathic Making Workshops, Ahmanson Lab at USC	Jan 2022
Techniques with Graphics Code Emergent Technology Series, Ahmanson Lab at USC	Sep 2021 - Oct 2021
VR Web Development Emergent Technology Series, Ahmanson Lab at USC	Sep 2021 - Oct 2021
Object recognition, privacy rights, and data collection Polymathic Making Workshops, Ahmanson Lab at USC	Sep 2021
Sensors, lights, and motors Polymathic Making Workshops, Ahmanson Lab at USC	Sep 2021
3D Modeling Basics Polymathic Making Workshops, Ahmanson Lab at USC	Sep 2021
Glitch + D3.js Generative art-a-thons, Ahmanson Lab at USC	Oct 2020
VR with Mozilla Hubs Generative art-a-thons, Ahmanson Lab at USC	Oct 2020
p5js Generative art-a-thons, Ahmanson Lab at USC	Sep 2020
Applied Neural Networks Polymathic Making Workshops, Ahmanson Lab at USC	Apr 2020

Introduction to Creative Code Polymathic Making Workshops, Ahmanson Lab at USC	Apr 2020
STEM Speaker Series Katherine Johnson STEM Academy	Mar 2020
Deepfake Detection Polymathic Making Workshops, Ahmanson Lab at USC	Mar 2020
Practical Arduino Polymathic Making Workshops, Ahmanson Lab at USC	Mar 2020
Data Surveillance and Digital Rights Polymathic Making Workshops, Ahmanson Lab at USC	Feb 2020
Introduction to 3D Printing and the Makerbot Replicator Polymathic Making Workshops, Ahmanson Lab at USC	Feb 2020
Wearable Technology Polymathic Making Workshops, Ahmanson Lab at USC	Oct 2019
Get your own climate data Polymathic Making Workshops, Ahmanson Lab at USC	Oct 2019
Introduction to 3D Printing and the Makerbot Replicator Polymathic Making Workshops, Ahmanson Lab at USC	Sep 2019
Practical Arduino Polymathic Making Workshops, Ahmanson Lab at USC	Sep 2019
WebVR Polymathic Making Workshops, Ahmanson Lab at USC	Nov 2019
Promise and Peril of Algorithmic Living USC Visions and Voices	Apr 2018

Skills

Design Research

Design methods: Participatory design, data visualization, user stories, mockups
 Qualitative Methods: Interviews, focus groups, usability surveys
 Quantitative Methods: App telemetry analysis, game data science

VR/AR Development

Experience in ML model integration, networking code, and controller binding
 Proficient: WebXR + Three.js, Unreal Engine, ShapesXR
 Familiar: Unity, Blender

Web Development

Proficient: Front-end development (Vue.js, Angular), API design, Cloud services (AWS)

Familiar: Streaming (Cloudflare), SEO strategy, back-end development (Node.js)

Programming

Proficient: JavaScript

Familiar: GLSL, Python, C++, C#

Service and outreach

Halfway to the Future Symposium 2024

Social Media Chair

2023 – Present

Social media strategy and content for an ACM archival symposium on human computer interaction and design.

Creative Code Collective

Community Lead

2023 – Present

Organizing and stewardship for an inclusive community for critical and artistic coding. Garners resources and holds in-person and remote meetings and events.

Committee for Planning and Budget Academic Senate, UC Santa Cruz

Graduate Representative

2023 – Present

Advocate for graduate student needs regarding university planning and budget; report to graduate student council

Google Summer of Code Processing Foundation

Contributor

Summer 2022

Open source contributions under mentorship from the Processing Foundation to add WebXR capability to p5js

Corpus Callosum Viterbi School of Engineering, USC

Technical Director

Fall 2015 - Spring 2018

Served on the board of this engineering student organization that provided resources to students to make creative projects with technology. Mentored project teams, provided technical support, and managed budgets and materials requisition.

Personal information

Citizenship: USA

Languages: English (native), French (proficient), Korean (basic)

Email: samir.ghosh@ucsc.edu

Website/Portfolio: samir.tech

Misc. interests: capoeira, open water swimming, creative code