Samir Ghosh

Research interests

Virtual Reality & Human Computer Interaction: multi-user interfaces, scientific tools, ML integration, interface validation, user telemetry, web-based applications, participatory design

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

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   Jun 2023
Digital Arts and New Media, UC Santa Cruz

Wildfires in Virtual Reality   Mar 2023
UC Santa Cruz Grad Slam, Kuumbwa Jazz Center

Multi-user VR workshop   Feb 2023
Digital Arts and New Media, UC Santa Cruz

Surveillance and the Attention Economy   Mar 2022
Polymathic Making Workshops, Ahmanson Lab at USC

Computational Art   Feb 2022
Polymathic Making Workshops, Ahmanson Lab at USC

WebRTC, WebGL, and other web protocols   Jan 2022
Polymathic Making Workshops, Ahmanson Lab at USC

Techniques with Graphics Code   Sep 2021 - Oct 2021
Emergent Technology Series, Ahmanson Lab at USC

VR Web Development   Sep 2021 - Oct 2021
Emergent Technology Series, Ahmanson Lab at USC

Object recognition, privacy rights, and data collection   Sep 2021
Polymathic Making Workshops, Ahmanson Lab at USC

Sensors, lights, and motors   Sep 2021
Polymathic Making Workshops, Ahmanson Lab at USC

3D Modeling Basics   Sep 2021
Polymathic Making Workshops, Ahmanson Lab at USC

Glitch + D3.js   Oct 2020
Generative art-a-thons, Ahmanson Lab at USC

VR with Mozilla Hubs   Oct 2020
Generative art-a-thons, Ahmanson Lab at USC

p5js   Sep 2020
Generative art-a-thons, Ahmanson Lab at USC

Applied Neural Networks   Apr 2020
Polymathic Making Workshops, Ahmanson Lab at USC

Introduction to Creative Code   Apr 2020
Polymathic Making Workshops, Ahmanson Lab at USC

STEM Speaker Series   Mar 2020
Katherine Johnson STEM Academy

Deepfake Detection   Mar 2020
Polymathic Making Workshops, Ahmanson Lab at USC

Practical Arduino   Mar 2020
Polymathic Making Workshops, Ahmanson Lab at USC

Data Surveillance and Digital Rights   Feb 2020
Polymathic Making Workshops, Ahmanson Lab at USC

Introduction to 3D Printing and the Makerbot Replicator   Feb 2020
Polymathic Making Workshops, Ahmanson Lab at USC

Wearable Technology   Oct 2019
Polymathic Making Workshops, Ahmanson Lab at USC

Get your own climate data   Oct 2019
Polymathic Making Workshops, Ahmanson Lab at USC

Introduction to 3D Printing and the Makerbot Replicator   Sep 2019

Polymathic Making Workshops, Ahmanson Lab at USC

Practical Arduino   Sep 2019

Polymathic Making Workshops, Ahmanson Lab at USC

WebVR   Nov 2019

Polymathic Making Workshops, Ahmanson Lab at USC

Promise and Peril of Algorithmic Living   Apr 2018

USC Visions and Voices

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

Committee for Planning and Budget 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 University of Southern California

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

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