Vinayak Gajjewar

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Research statement

I am interested in the intersection of IoT, distributed systems, and scalable spatial analytics. Specifically, I want to bring geospatial and spatio-temporal applications to resource-constrained computing environments in a scalable and fault-tolerant manner.

Education

Ph.D., Computer Science — Expected June 2028
University of California, Santa Barbara

- GPA: 4.0/4.0
- Advisors: Chandra Krintz and Rich Wolski
- Research topics: IoT + distributed systems + GIS
- Selected coursework: Scalable Internet Services (291A), Runtime Systems (263), Blockchain and Distributed Systems (293B), Operating Systems (270), Program Analysis (260)

Bachelor of Science, Computer Science — Graduated June 2023
University of California, Riverside

Adrian Wilcox High School *(Santa Clara, CA)* — June 2019

Skills

Unix/Linux, Python, Django, C, C++, Docker, Git, Java, Scala, Maven, Spark, Hadoop, Node.js, JavaScript, TypeScript, MongoDB, Ruby, Ruby on Rails

Publications

Singla, Samriddhi, Ayan Mukhopadhyay, Michael Wilbur, Tina Diao, Vinayak Gajjewar, Ahmed Eldawy, Mykel Kochenderfer, Ross Shachter, and Abhishek Dubey. "Wildfiredb: An open-source dataset connecting wildfire occurrence with relevant determinants." In NeurIPS Thirty-fifth Annual Conference on Neural Information Processing Systems. 2021.

Experience

Software Products Intern — Summer 2024
Esri Inc., Redlands, CA

- Used TypeScript, CloudFormation, and Electron to develop an application for deploying ArcGIS Enterprise to AWS.

Undergraduate Researcher — Summer 2023
UC Riverside Big-Data Lab, Riverside, CA

- Contributed to the development of Raptor, a Raster + Vector query processing engine written in Java and Spark for manipulating and visualizing geospatial data.

Software Products Intern — Summer 2022
Esri Inc., Redlands, CA

- Used Node.js to write a framework for connecting remote data sources (e.g., databases, APIs) to the Esri software ecosystem.
- Wrote technical documentation and code samples for new features of ArcGIS Enterprise.

Research Fellow May 2021 - May 2022
Digital Agriculture Fellowship, Riverside, CA

- Used Maven and Apache Spark to build a scalable analytics system that uses satellite data to compute wildfire spread, resulting in a 2 order of magnitude performance increase over the state of the art.

Instructor Summer 2020
iD Tech Camps, Santa Clara, CA

- Tutored 50+ K-5 children on various topics in computer science, from basic programming concepts to video game development.

Computer Science Intern Summer 2018
SchoolCity Inc., Santa Clara, CA

- Developed a data analytics application that extrapolates patterns in School City product usage across school districts using MongoDB and Express.js.

Teaching experience

UCSB CMPSC 170: Operating Systems Winter 2024, Spring 2024
Teaching Assistant

- Worked with Profs. Rich Wolski (W24) and Tao Yang (S24)
- Subjects: processes, inter-process communication, I/O, file systems, memory management
- Debugged OS implementations, held office hours and remedial sessions,

UCSB CMPSC 190B: IoT Systems Fall 2023
Teaching Assistant

- Worked with Prof. Chandra Krintz
- Subjects: IoT fundamentals, software architectures, communication protocols, security concerns, distributed + multi-tier (sensors+edge+cloud) programming
- Managed hardware (Raspberry Pi + Arduino), debugged implementations, helod office hours and remedial sessions

Presentations

2025 — Spatial awareness for scalable IoT systems. (2025). Major Area Exam. Santa Barbara, CA.
2023 — Implementing a Distributed Evapotranspiration Model. (2023). 2023 UCR Undergraduate Research & Creative Activities Symposium. Riverside, CA.
2021 — Increasing the Efficiency of Geospatial Data Processing. (2021). Research in Science & Engineering Symposium. Riverside, CA.

Awards & honors

2023 — ASA, CSSA, SSSA Outstanding Senior (19 seniors recognized nationally)
2021 — Digital Agriculture Fellowship (Artifical Intelligence for Sustainable Agriculture)

Selected press

Ober, Holly. (December 8, 2021.) Wildfire dataset could help firefighters save lives and property. UCR News Archive. https://news.ucr.edu/articles/2021/12/08/wildfire-dataset-could-help-firefighters-save-lives-and-property