Saaket Agashe

Ph.D. Student, UC Santa Cruz (CSE)

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Education

Jan '24 – NOW | **Ph.D. Computer Science and Engineering** | **3.97/4**
UC Santa Cruz

Sept '21 – Dec '23 | **M.S Computer Science and Engineering** | **3.96/4**
UC Santa Cruz

Aug '16 – June '20 | **B.Tech Electronics Engineering** | **8.2/10**
VJTI, Mumbai

Experience

July '24 – NOW | **Simular** | **San Mateo, CA**
Research Intern | Supervisor: Ang Li

- Developed **Agent S**, (700+ stars on github) a novel autonomous Computer Control Framework [Preprint, Accepted at ICLR '25].
- Integrated Experience augmented Hierarchical Planning and Web Search for injecting Domain Knowledge into MLLM Agents for GUI control.
- Proposed an Agent Computer Interface that helps MLLM agents adapt to UIs designed for humans.
- Achieved state-of-the-art performance with an 83.6% improvement over previous method in the OSWorld benchmark.
- Integrated code in production in Swift

June '23 – Sept '23 | **UC Santa Cruz** | **Santa Cruz, CA**
Graduate Student Researcher | Advisor: Xin Eric Wang

- Developed the **LLM-Coordination Benchmark** for evaluating and analyzing LLMs in Pure Coordination Tasks [Preprint Accepted at NAACL '25].
- Implemented a novel Cognitive Architecture for Coordination for LLM agents, demonstrating State-of-the-art results on the Overcooked-AI benchmark.
- Created the CoordinationQA dataset for component analysis of LLMs in Pure Coordination tasks across the dimensions of Theory of Mind Reasoning, Environment Comprehension, and Joint Planning.

Sept '20 – June '21 | **Cygnus AI** | **Remote**
Machine Learning Intern | Supervisor: Atul Tatke

- Developed an LSTM-based medical term tagger to automate medical record annotation.
- Curated and prepared extensive training datasets for model development.
- Achieved over 90% tagging accuracy, significantly reducing manual annotation time.
- Implemented and tested models using PyTorch and Scikit-learn.

Awards and Achievements

Best Paper Honorable mention award at IUI'23 Received an honorable mention best paper recognition for "Interacting with Next-Phrase Suggestions: How Suggestion Systems Aid and Influence the Cognitive Processes of Writing"

Runner-Up: Alexa Prize SocialBot Grand Challenge 2023 Achieved runner-up position in the Scientific Innovation Category.

Winner: Artificial Intelligence Hackathon, Tata Motors 2019 Awarded for developing a Speaker Diarization and Speech Emotion Recognition system for Customer Interaction Data.

Semi-Finalist: ABU National Robocon 2018 Recognized for developing an autonomous robotic system for Robocon '18.

Technical Skills

Programming Languages: Python, Javascript, C, Swift, HTML/CSS, SQL

AI/ML Tools: Pytorch, Transformers, RLlib, Scikit-learn, Numpy, Pandas, LangChain, Spacy, NLTK

Misc: ROS, Git, Docker, AWS, React, Node.js, MongoDB, Tableau

Select Research Projects

Studying Writer Interaction with Langauge Model-powered Writing Assistants
Interface Link, Visualization Tool Link

- Developed a custom GPT-2-powered writing interface fine-tuned on positive and negative movie reviews using JavaScript, Python, and React
- Created a suite of visualization tools for AI-assisted writing processes.
- Developed a theoretical cognitive process model of writer-AI interaction, detailing AI's impact on writing.

Zero Shot Region Annotation for Localization using Spatial Description
Project Link

- Addressed the challenge of visually grounding spatial descriptions to image points based on nearby object context.
- Developed a method for annotating images using cross-modal prompt tuning with a pre-trained vision-language model and implemented it using Pytorch and Transformers.
- Enhanced performance on the Localization using Embodied Dialog dataset by 20% over previous methods.

Perception and Motion Planning for Autonomous Mobile Manipulator
AVITRA Project Link

- Developed an autonomous mobile manipulator to test simulation algorithms in real-world settings.
- Implemented a CNN-based object detection and grasping algorithm for a 6-DOF manipulator using the Robot Operating System (ROS).
- Transferred and Tested the system with physical manipulator.

Academic Service

Reviewer ICLR '25, EMNLP '24

Teaching Experience

Programming Abstractions Python *Teaching Assistant* Spring'24 - Fall'24

- Taught and conducted lab sections on Object Oriented Programming, Data Structures and Algorithms in Python.

Computer Systems and Assembly Language *Teaching Assistant* Fall'21 - Winter'24

- Taught and conducted lab sections related to circuit design and assembly language at UCSC.

Publications

P=Preprint, C=Conference, W=Workshop

[P.1] **Agent S: An Open Agentic Framework that Uses Computers Like a Human** [🔗]
Saaket Agashe, Jiuzhou Han, Shuyu Gan, Jiachen Yang, Ang Li, Xin Eric Wang
arXiv:2410.08164 [**ICLR '25**]

[P.2] **LLM-Coordination: Evaluating and Analyzing Multi-agent Coordination Abilities in Large Language Models** [🔗]
Saaket Agashe, Yue Fan, Anthony Reyna, Xin Eric Wang
arXiv:2310.03903 [**NAACL '25**]

[C.1] **Athena 3.0: Personalized multimodal chatbot with neuro-symbolic dialogue generators** [🔗]
Team Athena, UCSC
Alexa Prize Social Bot Grand Challenge [**SGC '23**]

[C.2] **Interacting with Next-Phrase Suggestions: How Suggestion Systems Aid and Influence the Cognitive Processes of Writing** [🔗]
Advait Bhat, **Saaket Agashe**, Niharika Mohile, Parth Oberoi, Ravi Jangir, Anirudha Joshi
Proceedings of the 28th International Conference on Intelligent User Interfaces **(Honorable Mention)** [**IUI '23**]

[W.1] **How do People Interact with Biased Text Prediction Models while Writing?** [🔗]
Advait Bhat, **Saaket Agashe**, Anirudha Joshi
First Workshop on Bridging Human–Computer Interaction and Natural Language Processing [**EACL '21**]