ADVIKAA RAMESH

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PROFILE

I am a graduate student in Computer Science and Engineering at The Ohio State University specializing in developing novel segmentation techniques for medical images. My research focuses on applying data-efficient machine learning to solve complex, interdisciplinary scientific problems across biomedical imaging, NLP, and astrophysical data. I am particularly interested in expanding into interpretable machine learning and vision-language models, aiming to create computational frameworks that are both powerful and transparent in advancing clinical decision-making.

EDUCATION

The Ohio State University, **Columbus, OH** (2024-Present)
MS - Computer Science and Engineering
SRM Institute of Science and Technology, Madras, India (2020-2024)
B.Tech - Computer Science and Engineering (spec. in AI and ML)
Indian Institute of Technology, Madras, India (2021-2024)
Dual Diploma- Data Science and Programming (pursued concurrently with BTech degree)

SKILLS

Machine Learning & Deep Learning: PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, YOLO, transformer-based frameworks for detection and segmentation, CNNs (ResNet, DenseNet, Inception), predictive modelling, supervised & unsupervised learning, LangChain
Data Science & Analysis: NumPy, SciPy, Pandas, Seaborn, AstroML, MATLAB, JSON, Jupyter Notebooks, Google Colab
Generative AI: GPT-4 (OpenAI API), prompt engineering, HuggingFace Transformers, LLM integration in Python, ComfyUI
Programming Languages: Python, C, C++, Java, Swift, JavaScript, R, SQL
GPU & Performance Optimization: CUDA, GPU Acceleration
Software & Productivity: Microsoft Office, iWork, Figma, Sketch
Soft Skills: Time Management, Critical Thinking, Teamwork, Public Speaking, Problem Solving, Adaptability, Data-Driven Decision Making

PUBLICATIONS

Static Segmentation by Tracking: A Frustratingly Label-Efficient Approach to Fine-Grained Segmentation
Zhenyang Feng, Zihe Wang, Saul Ibaven Bueno, Tomasz Frelek, ***Advikaa Ramesh****, et al*

- Accepted into CVPR 2025 CV4Animals Workshop

Mitigating Noise and Sparsity: A Finetuning Framework for Medical Image Segmentation
Advikaa Ramesh*, et al*

- Manuscript in preparation for conference submission

RESEARCH EXPERIENCE

Graduate Researcher
Biomedical Imaging, The Ohio State University (Oct 2024 – Present)

- Currently conducting research in **Dr. Wei-Lun (Harry) Chao's Machine Learning Laboratory** at The Ohio State University, focusing on **Imageomics** and **Medical Imaging**.
- Leading the segmentation team, with current research on fine-tuning transformer-based segmentation models (e.g., MaskDINO, SAM2) for sparse and noisy medical imaging data to improve robustness and its performance on custom datasets.

Graduate Research Project
Long-Range Context Modelling Analysis, The Ohio State University *(*Feb 2025 – Apr 2025)

- Investigated the capacity and limitations of Transformer and xLSTM models in capturing long-range contextual dependencies for next-token prediction and Question Answering tasks.

INTERNSHIPS

Research Intern **- SPARTIFICIAL, India** (Oct 2023 – Jan 2024)

- Fine tuned and evaluated deep learning models (Inception v3, ResNet, DenseNet, etc) for classifying gravitational wave glitches, advancing research in computational astrophysics.

Mentor **- Apple iOS Boot camp** *funded by Apple & Infosys* (Oct 2023 – Mar 2024)

- Mentored 50+ students on iOS app development using Swift and ML integration; conducted sessions on soft skills, UX, business skills, and communication.

iOS Intern - **INFOSYS, India** (Apr 2023-May 2023)

- Developed a hospital management application using iOS-based technologies, featuring dedicated interfaces for administrators, patients, and doctors, demonstrating practical expertise in healthcare system design.

SIGNIFICANT PROJECTS

COLD EMAIL GENERATOR (May 2025)

- A tool leveraging LangChain and Meta's Llama 3.3 70B model via Groq API to extract roles and generate personalized cold emails based on job description scraped from URLs and user's resume.
- Technologies: Python, Streamlit, Llama 3.3, LangChain, Groq API, Dotenv, Chroma DB

BEAM (Jan 2023 - Dec 2023)

- Developed an iOS application, that integrates machine learning technologies,for mental well-being. The prototype was presented to the Senior Leadership Team based out of Apple, Cupertino and was recognized for its innovation and potential impact on user well being.
- Technologies: Swift, CreateML, and UIKit.

ACCIVISION (Dec 2023- May 2024)

- Developed an AI-powered accident detection system, aimed at reducing emergency response time, leveraging computer vision and optimization algorithms to analyze CCTV content in real-time for object tracking and license plate detection.
- Technologies: YOLOv8

CAPSTONE PROJECT (Dec 2022- Dec 2022)

- Analyzed two years worth of operational data of a retail business entity leveraging cutting-edge data science techniques to identify major challenges, as part of IIT Madras curriculum. Provided actionable recommendations resulting in improvement in sales by 6% after a 6 month period.

AFFILIATIONS

Corporate Member, **GOOGLE DEVELOPER STUDENT CLUBS (officially associated with Google)** (2021 – 2023)
Head of Creatives Domain, **ALEXA DEVELOPERS SRM (officially associated with Amazon Alexa)** (2020 – 2024)
Corporate Executive, **IOT ALLIANCE** (2020 – 2024)

HONORS AND AWARDS

- Awarded the **OCWIC** (Ohio Celebration of Women in Computing) Scholarship by The Ohio State University in 2025.
- Mental Health Application (Beam) selected for the prestigious **Apple/Infosys iOS Bootcamp (2022-2023)**, chosen from thousands of applicants. Presented the prototype of this app to the Apple Senior Leadership team at Cupertino, California.
- Selected as the **only student speaker globally** to present at the Apple Education Summit 2023, representing India among a distinguished audience of global education leaders.
- Selected as an ambassador for the **International Astronomy and Astrophysics Competition**, representing a global initiative to promote astronomy and astrophysics education.
- Chosen as a mentee in the **UNOOSA Space for Women Program**, a prestigious global initiative by the United Nations to support women in space exploration and STEM fields.
- National Level Swimmer and Medallist