CURRICULUM VITAE

Aman Raghu Malali

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EDUCATION

University of Massachusetts Amherst — Amherst, MA
MS/PhD in Computer Science, GPA: 4.0/4.0 — Aug 2022 - Current
Advisor: Peter J. Haas and Yanlei Diao
Data systems Research for Exploration, Analytics, and Modeling Lab (DREAM Lab)

- Research: I work at the intersection of machine learning (ML) and systems, focusing on MLOps areas such as monitoring deployed models and implementing efficient retraining strategies when models show signs of failure. I am currently exploring methods to perform model maintenance on fine-tuned LLMs when user queries start to drift.

Ramaiah Institute of Technology — Bangalore, India
Bachelor of Engineering in Computer Science and Engineering, GPA: 9.53/10.0 — Aug 2020

- Relevant Coursework: Probability, Statistics, Linear Algebra, Machine Learning, Deep Learning, Artificial Intelligence, High Performance Computing.
- Head of CodeRIT, the competitive coding club.

RESEARCH EXPERIENCE

Dolby Advanced Technology Group (ATG) — Atlanta, GA
PhD Research Intern — Jun 2024 - Sept 2024

- Developed a dynamic temperature scaling method for machine learning models that calibrates logits based on input features, improving uncertainty estimation and prediction reliability.
- Expanded predictive model maintenance by incorporating granular loss levels and adaptive loss bounds to optimize retraining decisions, while experimenting with extensions to address concept drift.

DREAM Lab — Amherst, MA
University of Massachusetts Amherst
Research Assistant — Aug 2022 - Present

- Currently working on methods to predict model performance without ground truth by utilizing custom ensemble models and uncertainty measures.
- Creating predictive retraining strategies to retrain models with minimal downtime and improved predictive performance on drifting data.

Robert Bosch Center for Cyber Physical Systems and ArtPark, IISc — Bangalore, India
Aham Avatar Xprize Team
Technical Associate — Jul 2020 - Jul 2022

- Led a small team in designing and developing a robot telepresence solution from the ground up. Users could control multiple robots simultaneously using a web interface with minimal latency. .
- Built a framework to track positions of human arms and to recreate the motion on a pair of 7 DoF robotic arms using an inverse kinematics system.
- $10 Million ANA Avatar Xprize Competition Semifinalist.

Robert Bosch Center for Cyber Physical Systems, IISc — Bangalore, India
Research Intern — Nov 2019 - Jun 2020

- Developed an aerial navigation system based on visual features for a drone with a monocular camera.
- Created a realistic simulation test environment for drones in Unreal Engine to test SLAM algorithms.

GE Healthcare — Bangalore, India
Edison AI
Research Intern — Jun 2019 - Aug 2019

- Worked on autonomous segmentation of ECG signals and diagnosis of heart conditions using a Convolutional LSTM neural network. Achieved an accuracy of 95% in segmenting P and QRS waves in an ECG, an improvement over existing state of the art methods.

PUBLICATIONS

- **Malali, A**., Hiriyannaiah, S., Siddesh, G. M., Srinivasa, K. G., & Sanjay, N. T. (2020). Supervised ECG wave segmentation using convolutional LSTM. ICT express, 6(3), 166-169.

INVITED TALKS AND POSTER PRESENTATIONS

ERC BigFastData Workshop Paris, France
Ecole polytechnique Oct 2023

- Presented my work on predictive ML model maintenance, covering advanced techniques for model upkeep and retraining strategies.

North East Database Day Boston, MA
Northeastern University Mar 2023

- Presented a poster on the machine learning model lifecycle, emphasizing the critical role of model maintenance. Highlighted preliminary results of predictive model maintenance and advanced drift detection techniques.

TEACHING EXPERIENCE

Teaching Assistant Amherst, MA
University of Massachusetts Amherst
COMPSCI 345: Practice and Applications of Data Management Aug 2022 - Current

Undergraduate Teaching Assistant Bangalore, India
Ramaiah Institute of Technology
CSE11 Machine Learning Jan 2020 - Jun 2020

AWARDS AND HONOURS

- Placed 1st in the Blume Bootstrap Professional Hackathon Aug 2019
- Placed 1st in the Mercuri Goldmann Hackathon Aug 2019
- Placed 2nd in the Red Hat Bit Byte Bit Hackathon Dec 2018
- Placed 2nd in the General Electric Precision Healthcare Hackathon Dec 2018
- Placed 1st in the IISc IBM Pravega Hackathon Aug 2018

PROJECTS

Human Segmentation in Videos Aug 2019
Won 1st place at the Blume Bootstrap Professional Hackathon

- Developed a neural network model trained on the human portrait dataset to segment humans and the background of an image frame. Achieved real time performance with minimal GPU memory.

Transfer Learning to detect eye diseases using OCT images Feb 2019
Won 2nd place at the General Electric Precision Healthcare Hackathon

- Applied a pre-trained VGG16 model to detect eye diseases in Optical Coherence Tomography(OCT) images of the retina by using transfer learning. Achieved an accuracy of 98%, previous state of the art methods had an accuracy of 92%.

SKILLS AND INTERESTS

- Programming : Python, Tensorflow, PyTorch, C++, Spark, Docker, AWS, Unix, Flask, ROS.
- Language: Fluent in English, Hindi and Kannada.
- Interests: Competitive Trivia, Formula 1, Basketball, Badminton.