Giridhar Narasapura Rajagopalaiah

Linkedin: https://www.linkedin.com/in/giridhar-nr-118592146/
Portfolio: https://giridharnr.github.io/

Email : narasapu@usc.edu
Mobile : +1-213-551-8123
Los Angeles, California

Education

- **University of Southern California, Los Angeles - CA** Jan 2022 - Dec 2023
  Masters of Science - Computer Science (Artificial Intelligence)
- **Niite Meenakshi Institute of Technology, Bengaluru - India** Aug 2014 - July 2018
  Bachelor of Engineering - Computer Science

Skills Summary

- **Languages**: C, C++, Python, CUDA, SQL
- **Frameworks**: cuDNN, OpenCV, PyQT, Hadoop, PyTorch, TensorFlow, TensorRT, OpenVINO, NVIDIA Nsight, Hugging Face
- **Technologies**: Digital Image Processing, Computer Vision, Machine Learning, Deep Learning, Natural Language Processing, Generative AI, Transformers, Large Language Models

Experience

- **Yale University, New Haven - CT** Aug 2023 - Present
  Postgraduate Researcher (Large language models, Natural Language Processing, Clinical texts)
  - Enhanced ASR to achieve a 0.78 Jaro score in noisy conditions through the development of adaptive filtering techniques.
  - Fine-tuned **BERT** with architectural modifications, elevating speaker recognition accuracy to **0.79** from 0.73.

- **Amazon, San Diego - CA** May 2023 - Aug 2023
  Applied Scientist Intern (Continual learning, Tabular data)
  - Built an efficient abuse prevention system using **Memory Relay** and **Regularization** based Continual Learning
  - Developed an **attention based Continual Learning**, achieving a **2% less** forgetting over **SOTA** methods
  - Enhanced **XGBoost's** performance by **1%** AUC on incorporating **memory-replay** continual learning

- **University of Southern California, Keck, Los Angeles - CA** March 2022 - May 2023
  Graduate Research Associate (Computer Vision, Generative AI, Multi-Modal, MRI data)
  - Employed **CycleGAN** to boost SNR ratio by **32%** and improved 3D MRI data consistency across DTI & T1 protocols.
  - Elevated precision by 0.14 by seamlessly merging 3D MRI and numerical data with a custom **multi-modal** neural net.

- **Philips Research, Bengaluru - India** Aug 2018 - Dec 2021
  Machine Learning Engineer (Computer Vision, Deep Learning, Optimization, Ultrasound Medical Imaging)
  - Improved the performance of a fetal heart view plane classification from **69% to 84%** by fine-tuning **HRNet**
  - Leveraged **TensorRT** on NVIDIA P2000 for a remarkable **5x GPU** acceleration in deep neural network performance
  - Achieved accelerated deep learning model performance on **Intel NUC CPU** using **OpenVINO** by **3x**
  - Conducted extensive research to develop **real-time pose estimation** and **semantic segmentation networks** for precise fetal heart tracking during systole and diastole phases
  - Contributed significantly to **transfer Deep Learning Algorithms** to the **Ultrasound Business**
  - Collaboratively contributed to the **filling of four patents** under the umbrella of **Koninklijke Philips N. V**

Projects

- Multi-Task Reinforcement Learning for Physical Reasoning – USC: A single RL agent that learns the variations in the environment to solve the puzzles of CREATE – Open AI Gym Environment
- GAIT for Meetings - USC: Developed a Transformer-based model to generate action items from meeting transcripts by segmenting topics, classifying actions, and creating summaries.
- Little GO - USC: Designed an AI agent using reinforcement learning which learns the rules of Go Game and plays against different players using minmax and alpha-beta pruning

Publications

[1] Soumabha Bhowmick, **Giridhar NR**, Karthik Krishnan, Seth Subhendu, Celine Firtion, Pallavi Vajinepalli. eFtus - An early first Trimester Ultrasound scan assistance. Conference: Philips Research Global. Publisher: OCUPAI 2021.

[2] Karthik Krishnan, **Giridhar NR**, Celine Firtion, Pallavi Vajinepalli. Real-Time Deep Pose Estimation in Ultrasound. Conference: Philips Research Global. Publisher: OCUPAI 2020.

[3] **Giridhar NR**, Aniketh Manjunath, Jharna Majumdar. Modelling Fade Transition in a video using Texture Methods. Conference: Cybernetics, Cognition and Machine Learning Applications - Proceedings of ICCCMLA 2019. Publisher: Springer Singapore

[4] **Giridhar NR**, Gagan PE, Jharna Majumdar. Autonomous Mobile Robot Navigation on Identifying Road Signs using ANN. Conference: 2019 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT - IIT Kanpur 2019). Publisher: IEEE

[5] Aniketh Manjunath, **Giridhar NR**, Jharna Majumdar. Optical Flow for Detection of Transitions in Video, Face and Facial Expression. Conference: Intelligent Computing: Proceedings of the 2018 Computing Conference (SAI - London, UK). Publisher: Springer, Cham

[6] Sudip Gupta, **Giridhar NR**, Jharna Majumdar. Human Tracking by a Mobile Robot in Low Illumination Environment. Conference: International Conference on Circuits, Control, Communication and Computing (I4C - 2018). Publisher: IEEE

Patents (Filed by Koninklijke Philips N. V)

[1] Methods for Guided 3D ultrasound acquisition using Spatio-Temporal Image Correlation (**App no: PCT/EP2021/081925**)

[2] Automatic Intelligent Visualization and Interaction using Real Time View Plane Classification and Pose Estimation (**App no: PCT/EP2021/080229**)

[3] Automating Localization and Estimation of Heartbeat in First Trimester Ultrasound Scans (**App no: PCT/EP2022/066933**)

[4] AI Based Approach to improve Ultrasound Image Quality (**App no: 2020ID01990**)

Honors and Awards

[1] Oct' 2021: Start Startup Award from Ramaiah Evolute for 'Postura'

[2] June 2020: Individual Award (Philips) – 'Take ownership to deliver fast' to boost the accuracy of algorithm from 69% to 84%

[3] May 2019: Individual Award (Philips) – Bringing wAssist-AI from research prototype to product in record time

[4] April 2018: DRDO: DRUSE Design and Development of Human Tracking Mobile Robot for Defense Application. Top 10 among 15000 teams to represent South India

[5] December 2016: Nokia Innovation Day (Bangalore, India) - Modern Traffic Management System. Top 2 among 850 teams.

Copyrights

[1] Modelling of Transitions in Video Using Textures. **Registration Number - SW-14707/2017**. Granted by Govt. of India.