

SANDEEP REDDY SABBELLA

Artificial Intelligence & Robotics Researcher

@ sabbella@diag.uniroma1.it

in linkedin.com/in/sandeepsabbella

www.github.com/Sandeepsabbella

0039-349-7827185

Roma, Italy

ORCID: 0000-0003-2629-1734

A complete list of technical skills and additional certifications are on my LinkedIn page.



Experience

Ph.D Candidate

Sapienza Università di Roma

Nov 2021 – Present

Rome, Italy

- Researching on **Human-Robot Interaction in Precision Agriculture**.
- Implementing real-time detection algorithms that best suit for effective HRI interaction using Gestures, Speech and other modalities.
- Developing innovative multi-modal HRI algorithms for human-robot communication. Researching on incorporating LLMs and LVMs into HRI.
- Creating and utilizing VR simulations for training and evaluating HRI systems.

Research Assistant

Sapienza Università di Roma (Prof. Daniele Nardi)

Oct 2020 – Nov 2021

Rome, Italy

- Integrated Semantic exploration techniques into mobile Robots using a new framework designed on semantic active vision exploration and object detection.
- Research and Implementation of real-time detection algorithms that best suit 3D and 2D object recognition tasks. Created novel evaluation metrics to facilitate semantic exploration.

Machine Learning Engineer

Clarifai

Nov 2020 – Jul 2021

Tallinn, Estonia

- Built models for the clientele using ML, DL, and Computer Vision and deployed trained models to cloud architecture using a proprietary platform.
- Researched and built new features into the NLP and Computer Vision platform products.
- Created Python notebooks and Bash Scripts for various purposes.
- Designed testcases around the portal to ensure proper deployment of models.

Artificial Intelligence Engineer

Smart-I

Jul 2019 – Oct 2020

Rome, Italy

- Researched and built applications on Machine Learning, Deep Learning, and Computer Vision using state-of-the-art artificial intelligence approaches.
- Deployed trained models on to Edge devices, cloud architecture and embedded sensors.

ABOUT ME

I'm a passionate AI, Robotics, and HRI Research Scientist with a strong research background and collaborative excellence.

Driven by a passion for advancing the frontiers of AI, robotics, and human-robot interaction, I possess a strong research background in computer vision, deep learning, edge computing, multi-modality, and virtual reality. With a keen eye for detail and a commitment to collaborative problem-solving, eager to contribute to innovative research projects that will shape the future of these fields.

AI Skills



- Hands-on experience in Machine Learning and Deep Learning applications in Python and C++ implemented on cloud and Edge Devices.
- **Computer Vision** - Data Modelling, Evaluations, Correlations, Clustering, Classification, Regression, Detection and Segmentation.
- **Machine Learning**— Supervised, Unsupervised, and Reinforcement Learning, and Natural Language Processing.
- **Deep Learning** — Convolutional Neural Networks, Recurrent Neural Networks, Transfer Learning, Generative Adversarial Networks.

Research Interests



- Multimodal Human-Robot Interaction (HRI) using natural language processing and computer vision.
- Virtual Reality (VR) simulations for training and evaluation of HRI systems.
- Applications of AI and robotics include autonomous systems, precision agriculture, and environmental monitoring.
- Edge computing strategies for optimizing AI performance on resource-constrained devices.
- Deep learning techniques for anomaly detection and image understanding.
- Computer vision algorithms for object detection, classification, and segmentation.

- **Thesis:** Fire and Smoke detection for smart cities using Deep Neural Networks and Edge Computing on Embedded Sensors.



Automation Test Lead
Cognizant Technology Solutions

-  Apr 2016 – Sep 2017
-  Hyderabad, India
- Led a team of 4 engineers in the QA/QC department and performed a complex business goals and objectives analysis.
 - Built a successful agile workflow and facilitated all the test automation projects in a deadline-driven environment.

Quality Assurance Engineer
Cognizant Technology Solutions

-  Jan 2015 – Mar 2016
-  Chennai, India
- Analyzed, designed, and developed test-automation methodologies.
 - Provided ongoing maintenance, support, and enhancements in the existing systems and platforms.

Associate Software Engineer
Tech Mahindra limited

-  Jun 2014 – Dec 2014
-  Hyderabad, India
- Worked alongside a professional team of engineers and elevated technology services to clients in the banking domain.

Publications

- Empowering Collaboration: A Pipeline for Human-Robot Spoken Interaction in Collaborative Scenarios. [ICSR 2023]
- Gesture Recognition for Human-Robot Interaction Through Virtual Characters. [ICSR 2023]
- Virtual Reality Applications for Enhancing Human-Robot Interaction. [ACM IVA 2023]
- Speech Act Classification in Collaborative Robotics. [ROMAN 2023]
- Testing Human-Robot Interaction in Virtual Reality: Experience from a Study on Speech Act Classification. [HRI 2023] VAM-HRI]
- RoSmEEry: Robotic Simulated Environment for Evaluation and Benchmarking of Semantic Mapping Algorithms. [ARMS2021 | IJCAI2021]
- Semantic Active Vision Exploration and Mapping of Indoor Environments for Mobile Robots [ECMR 2021]



Other Skills

- **Programming** – Python (TensorFlow, Keras, Numpy, SciKit-Learn, Pandas, Matplotlib, PIL, OpenCV, NLTK); C++, SQL, Docker, Git, grpc, AWS, GCP, Edge Computing, Rest and Post-man API's
- Experienced in CI/CD integration and End-to-End deployment solutions.

Education

Ph.D in Engineering in Computer Sciences
Sapienza Università di Roma
 2021 – 2024 Ongoing  Rome, Italy
Research Interests: Human-Robot Interaction, Multi-Modal communication, Virtual Reality, Edge Devices, Computer Vision, Deep Learning

Master's in Artificial Intelligence and Robotics
Sapienza Università di Roma
 2017 – 2020  Rome, Italy

Score: 100/110
Erasmus Program
Technische Universität Dortmund
 2018 – 2019  Dortmund, Germany

B.Tech. in Mechanical Engineering
J.N.T.University Kakinada
 2010 – 2014  Kakinada, India

Score: 83/100

Languages

English	<div><div></div><div></div><div></div><div></div><div></div></div>
Telugu	<div><div></div><div></div><div></div><div></div><div></div></div>
Italian	<div><div></div><div></div><div></div><div></div><div></div></div>