

# SMITHA REDDY

[smithasreddy13@gmail.com](mailto:smithasreddy13@gmail.com)

+91 8722053459 | Bengaluru, India

[Homepage](#) | [LinkedIn](#) | [GitHub](#)

## RESEARCH INTEREST

My research interests lie in deep learning, computer vision and multi-modal learning. I am particularly drawn to exploring how vision-language models can enable richer scene understanding and more intelligent systems.

## EDUCATION

### Presidency University

B.Tech in Computer Science and Communications Engineering - GPA: **3.89 /4.0**

*Bengaluru, India*

*Nov 2023*

**Honors:** Gold Medalist & Highest GPA in cohort

## RESEARCH EXPERIENCE

### Manipal Institute of Technology

*Bengaluru, India*

*Research Scientist Intern*

*May 2024 - Present*

- **Designed conditional GAN augmentation pipeline** to address data imbalance, reducing manual data collection costs by **~80%**
- Led a **3-member-team** to benchmark and fine-tune **CNN architectures** (EfficientNet, ResNet, VGG) on medicinal leaf image datasets
- **First author** contributor on a journal manuscript currently under review

### Educational Robotics Center, NTNU

*Taipei, Taiwan*

*Robotics Intern*

*Oct 2024 - Mar 2025*

- Investigated **deep reinforcement learning literature** on policy optimization and sim-to-real transfer methodologies for humanoid robots
- Ran **experimental simulations** with weekly research reviews to optimize robot behavior and training workflows
- Built custom **URDF models** and developed kinematics, ROS controllers, and motion-planning pipelines using **ROS2 and Gazebo**

### Presidency University

*Bengaluru, India*

*Research Assistant*

*Jan 2023 - April 2024*

- Developed **deep learning pipelines** for cervical cell classification, achieving **99.5% test accuracy** on SIPKaMed dataset, surpassing existing benchmarks
- Evaluated **segmentation and classification architectures** for medical imaging workflows on cervical cell datasets
- Conducted psychological survey study on undergraduate mental health post-COVID, **presented findings at IEEE International conference**
- **Co-authored multiple journal publications** and performed experimental reproducibility testing on trained models

## PROJECTS (*Selected*)

### Herb-GANNet | TensorFlow, Keras, Python, OpenCV

- Developed **GAN-based augmentation** method for highly imbalanced datasets

### Iris - LLM based Health Assistant | Python, scikit-learn, TensorFlow, NLTK | [Project](#)

- Developed a disease prediction pipeline integrating **Machine Learning classifiers with LLM reasoning & conversational AI**

## Tiny Shakespeare GPT | PyTorch, Python, NLP | Project

- GPT language model from scratch implementing **transformer, self-attention, multi-head attention, and positional encoding mechanisms**

## YOLO Object Detection | YOLOv5, PyTorch, OpenCV, Streamlit | Project

- Developed **yolov5** based object detection model for identifying vehicles, signboards, etc on road

## PUBLICATIONS

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### **HerbGANNet: Addressing Class Imbalance in Medicinal Leaf Classification Using GANs and Weighted Loss (Under Revision)**

Smitha S Reddy, Vaishnavi K, Sapna R

### **IoT and Edge Computing Security: Essential Aspects of 6G Networks**

Smitha S Reddy, Sapna R

In: *6G Cyber Security Resilience: Trends and Challenges*, Springer, 2025

### **CerConvNet: Cervical Cancer Cells Prediction Using Convolution Networks**

Pallavi M, Smitha Patil, Madhu Sudhan M V, Smitha S Reddy, Vaishnavi K.

*Informatica, 2024*

## CONFERENCES

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### **Offline Exams in an Online World: Psychometric Evaluation of Depression Anxiety Stress Scale using DASS-21 amongst UG Scholars post COVID**

Smitha Reddy S

*IEEE Conference on New Frontiers in Communication, Automation, Management and Security, Bengaluru, 2023*

### **Voice Assistant For Disease Diagnosis Using Machine Learning and Natural Language Processing**

Smitha Reddy S, Shilpa N, Thanusha M, Sowhardh C K

*National Conference on Recent Advancements and Challenges in Information Technology, Bengaluru, 2023*

## SKILLS

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**Programming Languages:** Python, Java, SQL

**ML/DL Frameworks:** TensorFlow, Keras, Scikit-Learn, PyTorch, OpenCV, NLTK, LangChain

**Libraries & Tools:** Numpy, Pandas, Matplotlib, Seaborn, Git, ROS2

**Languages:** English (Proficient), Hindi (Proficient), Telugu (Native), Korean (Beginner)

## AWARDS & RECOGNITIONS

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- **TEEP Scholarship**, Taiwan Ministry of Education, 2024
- **Abdul Hameed Memorial Gold Medal**, Presidency University, 2023
- **Best Student**, SBMJC, 2019
- **Best Outgoing Student**, William Richards, 2017