Poornanand

Researcher in Machine Learning || Patent Holder || GATE Qualified (2x)
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Profile Summary

PhD Research Scholar in Computer Science with a Master's from R.V. College of Engineering, Bengaluru, and 5 years of research and development experience in Machine Learning and Artificial Intelligence. Specialized in developing, training, and fine-tuning AI models with a strong focus on Computer Vision and Medical Imaging. Experienced in designing algorithms, conducting experiments, and publishing results that advance scientific understanding and enable real-world applications.

Education

National Institute of Technology Karnataka Surathkal India **August 2020 – Pursuing**
Doctor of Philosophy (Ph.D.) in Computer Science and Engineering

R.V. College of Engineering, Bengaluru, India **August 2016 – June 2018**
Master of Technology in Computer Science and Engineering

Srinivas Institute of Technology, Mangalore, India **August 2009 – June 2013**
Bachelor of Engineering in Computer Science and Engineering

Experience

National Institute of Technology Karnataka Surathkal India **August 2020 – Present**
Ph.D. Research Scholar *Surathkal, Karnataka*

- **Rib Segmentation in Medical Imaging:** Implemented deep learning–based rib segmentation to improve diagnostic accuracy in thoracic imaging. Enhanced detection of fractures, pathologies, and lesions, while supporting surgical planning and quantitative analysis of anatomical changes.
- **Tuberculosis Detection by Suppressed Ribs in Chest X-Rays:** Developed an algorithm combining rib suppression and anomaly localization to improve visualization of apical lung regions. Reduced bony structure occlusion (ribs, clavicles), enabling more robust detection of TB-related abnormalities.
- **Head and Neck Tumour Segmentation:** Designed and validated an advanced segmentation pipeline (CNN/transformer-based) for precise delineation of GTV-1 in head and neck tumours. Enabled early tumour detection, longitudinal growth monitoring, and accurate assessment of radiotherapy response.

Parul Institute of Engineering and Technology **Aug 2018 – Oct 2019**
Assistant Professor *Vadodara, Gujarat*

- Taught Core CS Subjects such as Data Structures and Algorithms, DBMS.
- Served as a research and project coordinator for AI/ML Projects.
- Collaborated with faculty and students to facilitate academic research at the university level.
- Managed interdisciplinary projects, ensuring seamless integration of technical expertise and strategic planning.

Projects

Personal Projects:

- **Modified the optical properties of LCDs and integrated advanced 3D filtering techniques to develop anti-spy display systems for secure banking applications.**
  - Engineered modifications in liquid crystal display (LCD) optical properties to restrict viewing angles and prevent shoulder-surfing attacks.
  - Designed and implemented advanced 3D optical filter architectures to integrate anti-spy functionality at the hardware level, ensuring content visibility exclusively to users within authorized angles of incidence.
  - Addressed vulnerabilities in conventional end-to-end encryption by mitigating endpoint data exposure risks through secure display technology.
  - Achieved enhanced data confidentiality at the human–machine interface, ensuring that sensitive banking information remained protected during both data processing and visual rendering stages.
- **Water leak detection in smart water management supply– Tirupati Muncipal Corporation**
  - Collaborated with Tirupati Municipal Corporation to develop a smart water leak detection system using machine learning algorithms and mathematical modeling. Deployed an interactive R Shiny application on AWS Cloud for real-time monitoring and predictive analytics.
- **Classification of Remote Sensing Images using Active Learning Algorithms**
  - Implemented image classification and feature identification on satellite imagery using active learning and supervised algorithms. Conducted comparative analysis to demonstrate the superior performance of active learning in reducing labeling effort while maintaining or improving classification accuracy.

Technical Skills

Languages: Python, C, C++.
Tools : Pytorch, Keras/Tensorflow, Numpy, Pandas, Scikit.
Platforms : Linux, AWS EC2.
Databases : MySQL

Patents

- **IN 423922 - Method, System and Apparatus for Preventing Shoulder Surfing in Secure Electronic Transactions.** [**Granted Mar 3, 2023**]

Achievements

- Recognized as **Best Faculty** in Computer Science and Engineering Department for 'Prof. R.H. Pandya Academic Performance Awards 2019'.
- Qualified **GATE 2016** with AIR 3499 [96.77 percentile] and **GATE 2020** with AIR 12686 [87.19 percentile].

Publications

- **An Automated Deep Learning Pipeline for Detecting User Errors in Spirometry Test** - *Biomedical Signal Processing and Control*, 2024 [Published]
- **Assessment of Asthma BAL Cytokines using Machine Learning Techniques,** *2nd International Conference on Paradigm Shifts in Communications Embedded Systems, Machine Learning and Signal Processing (PCEMS), Nagpur, India*, 2023, pp. 1-5.
- **Attention Based CRNN Models for Identification of Respiratory Diseases from Lung Sounds,** *14th International Conference on Communications, Computing, Networking, and Technologies (ICCCNT), IIT Delhi,* 2023.
- **Preserving data privacy against shoulder surfing through LCD Polarization and morphological operations,** *3rd IEEE International conference on Recent Trends in Electronics, Information and Communication Technology (RTEICT-2018).*
- **Automated Rib Segmentation in Chest X-rays Using ThoraxSegNet: Enhancing Pul- monary Disease Detection and Analysis,** *Engineering Research Express* [Communicated]
- **A Dual Competitive Mean Teacher Semi-Supervised Learning Framework for Enhanced Rib Segmentation Performance,** *Sadhana* [Communicated]

Certifications

- **Coursera: Deep Learning Specialization (Offered by DeepLearning.AI)**
  Link:https://www.coursera.org/account/accomplishments/specialization/8SLVLAJKUSWY
- **Coursera: Machine Learning Specialization (Offered by DeepLearning.AI, Stanford University)**
  Link:https://www.coursera.org/account/accomplishments/specialization/QSUSWGQ6X46H
- **Coursera: Deep Neural Networks with PyTorch (Offered by IBM)**
  Link:https://www.coursera.org/account/accomplishments/certificate/7PGVBHVY45X5
- **Nvidia: Fundamentals of Deep Learning**
  Link:https://courses.nvidia.com/certificates/bbf565e3578b4322be10a294812e060d/