LEELA VENKATA SAI K B KASYAP VARANASI

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EDUCATION

Bachelor of Technology in Computer Science and Engineering, VIT-AP University — 2020 - 2024
CGPA - 9.23/10 (till 6^{th} semester)- Best UG Researcher Award, Vice-president at IEEE Student Chapter — *Inavolu, AP*

PROFESSIONAL EXPERIENCE

University of Toronto - MLCH lab — Jun 2023 - Aug 2023
Mitacs Globalink Research Intern (Guided by - Rahul G. Krishnan) — *Toronto, ON, Canada*

- Surveyed on various methods to evaluate the AI-based breast cancer detection and constructed CancLite.
- Developed a simple technique requiring less computation for breast cancer detection with good accuracy.

Harvard Univeristy - HAIHG lab *(Hybrid)* — Certificate Dec 2022 - March 2023
Winter Research Intern (Guided by - Trishan Panch) — *Cambridge, MA, USA*

- Conceptualized a novel comprehensive gene panel specifically for early-stage colorectal cancer detection.
- Analyzed gene expression patterns in a large cohort of individuals using hybrid and genetic algorithms.
- Introduced innovative data augmentation techniques tailored to pathological gene data.

Apple - AI/ML Team *(Remote)* — Certificate Aug 2022 - Nov 2022
Applied AI Intern — *Cupertino, CA, USA*

- Modeled a compact deep-learning-based approach for watch to predict cardiac arrest using raw ECG data.
- Reviewed various existing Hybrid models used for cardiac activity recognition and published a research paper.
- Explored a hierarchical learning approach involving training the model at different levels of granularity.

IIIT SriCity - Computer Vision Research Lab — Certificate Jun 2022 - Nov 2022
Student Research Intern (Guided by - Chandra Mohan D) — *SriCity, AP, India*

- Provided an efficacious method for recognising significant psychiatric illnesses using QnA, EEG, Genetic patterns.
- Capitalised rs-EEG as a biomarker for psychological disorders identification in deep learning algorithms.
- Adopted a variety of EEG based protocols and datasets for depression and bipolar disorder detection.

Protohus.io - Research and Development — Certificate May 2022 - Aug 2022
Deep Learning Intern — *Chennai, TN, India*

- Investigated the association between musical aspects such melody, rhythm and harmony with human emotions.
- Innovated techniques for producing music in real-time that change based on emotional changes detected in EEG.

1. TA for CSE 4005- Deep Learning at VIT-AP — Winter Semester 2022-2023
2. TA for CSE 4003- Introduction to Machine Learning at VIT-AP — Fall Semester 2022-2023
3. RA at Artificial Intelligence and Robotics Center VIT-AP — Fall 21 - Winter 23

PUBLICATIONS

1. GNN based Model for Aroma Prediction using Molecular Structures, GCAT, IEEE Xplore. — Paper
2. Early Detection of Forest Fire Using Mixed Learning Techniques and UAV, CIN, Hindawi. — Paper
3. Early Detection of ColoRectal Cancer Using Patch-Based Hybrid Model, CVBIC, Springer. — Paper
4. PsychNet: Explainable DNN for Psychiatric Disorders and Mental Illness,CICT, IEEE Xplore. — Paper
5. Deep Learning based Techniques for Neuro-Degenerative Disorders Detection, EAAI, Elsevier. — Paper
6. A Novel Deep Learning Framework for Diabetic Retinopathy Detection, CICT, IEEE Xplore. — Paper
7. A Novel Approach to Detect Fake News Using eXtreme Gradient Boosting, ISDFS, IEEE Xplore. — Paper
8. Gastric Cancer Detection using Hybrid-Network and SHAP Analysis, Book Chapter, IEEE Xplore. — Paper
9. RoadSDNet: Algorithm for Road Boundary Detection using MN and HT, ACM, IEEE Xplore. — Paper

10. Certain Integral Representations of Hypergeometric Polynomials, EMEA, American Inst. of Physics. Paper
11. Neural architecture of 3D face modelling using GANs, EMEA, American Inst. of Physics. Paper
12. VitaDNet: A Deep Learning-based approach for Vitamin-D Deficiency Prediction, JIKM, World Scientific. Paper

Patents

1. ML Based System And Methods For The Detection Of Cardiac Events Using Image Processing - 202341025471 A
2. A System for measuring Intra-site Heterogeneity in a tumor using Artificial Intelligence - 202241061682 A
3. Smart Glass For Assisting Visually Impaired Users With Voice Assistance - 202341013863 A
4. The Mechanical Arm Tele-control System Based On Virtual Reality - 202341028068 A

Upcoming Papers

1. FBDNN: Fetus Health Management using Morse-based Bi-LSTM Deep Neural Network–In review at IEEE TPAMI.
2. DIVS: A Real-time Video Stabilization Framework for Consumer Camera - Accepted at Springer AISC. [In Press]

PROJECTS

Design and Development of Autonomous Underwater Vehicle: Ocean Voyager
– Focused on creating smart algorithms for AUVs, enabling autonomous underwater vision-guided navigation.
– Worked on SIFT algorithm (Difference of Gaussians and Space Generation) to describe local features under water.
Skills Used: Underwater robotics, Sensor integration, Control systems, System integration.

Water to Cloud: Realtime River Monitoring System
– Encompasses setting up sensors in rivers, gathering data like water quality, temp., pH, and revealing correlations.
– Used fog computing to establish a seamless and efficient system, ensuring data reliability and timely insights.
Skills Used: Cloud computing, Remote monitoring, Real-time visualization, GIS Mapping, System scalability.

AI-enhanced Breast Health Assessment: Advancing Early Detection and Care
– DL model that empowers timely breast health detection, and monitoring with Hadamard approach and LSTMs.
– Developed circularly polarized wearable sensor for monitoring breast health all the time and monitoring women.

Frontier Forge: Dynamic 3D Scene Generation in Virtual Reality
– Created immersive VR environments through AI and generating dynamic 3D scenes enhancing VR interactions.
– Incorporating 3D Artificial Intelligence models with AR and VR sets with motion-based audio and music generation.

Contactless Heart Rate monitoring using Hartley Transform and AI
– Applied Hartley Transform for remote heart rate monitoring, for analyzing cardiovascular and systolic rhythms.
– Utilised Eulerian Video method and GoogleNet architecture to fabricate accurate non-inavsive heart rate sensor.

ACHIEVEMENTS AND AWARDS

1. **Ramanujan Young Researcher Awardee 2023 by Govt. of India.**
2. Undergraduate Research Scholarship by TIFR-Bombay.
3. Excellence Leadership Award.
4. RMO, IMO Gold medalist.
5. Microsoft Imagine Cup 2022 National Finalist.
6. ICAR-NAHEP 3.0 Third prize Winner, Smart India Hackathon Winner.

CERTIFICATIONS AND SKILLS

1. Applied Deep Learning Certification by NVIDIA DLI.
2. NVIDIA CUDA AI Developer Certification.
3. Google Cloud Machine Learning Engineer Certification.
4. AWS Machine Learning Certification.
5. Stanford Artificial Intelligence Course; 6. Stanford Machine Learning Course; 7. Stanford Deep Learning Course.

Other Skills: Bash, C++, CUDA, Flask, Git, Hadoop, Java, Javascript, Julia, Kafka, Keras, Kubernetes, Latex, MLlib , Pandas, pyTorch, PySpark, Python, R, Scala, Selenium, Spark MLlib, Spring Boot, SQL, Tensor Flow.

EXTRACURRICULAR, LEADERSHIP AND VOLUNTEER WORK

1. Core Member at Cord.ai - Student community for AI research.
2. Pencil art - I present my work at RBV Art Gallery.
3. Vice-president at Machine Learning Club VIT-AP.
4. Student Research Head at AIR-VIT AP.
5. Organized two Annual Techno-Hackathons at IIIT-SriCity.
6. Started playing Football-in my 2nd year undergrad.

- Volunteer Teacher at ePatashala running by Govt. of India to teach India's kids in tribal areas.
- Consistently supporting the Sacred Heart NGO, which caters to both disabled and non-disabled individuals. During one of my visits, I focused on conducting research specifically on ADHD, Bipolar disorder kids.