Divyagna Bavikadi

dbavikad@asu.edu | divyagnab.github.io/home/

Education

Ph.D. in Computer Engineering **2022 - Present**
Arizona State University
- Advised by Paulo Shakarian

M.Tech in Information Communication Technology (University Topper) **2017 - 2022**
Central University of Karnataka *CGPA: 9.68*
- Thesis: Representational Learning and Analysis of Explainable Human Pose Recognition adn Correction

B.Tech in Electronics and Communications Engineering **2017-2022**
Central University of Karnataka *CGPA: 8.97*
- Thesis: Speech Emotion Recognition with Deep Learning

Experience

Research Assistant, Teaching Assistant **2021 - 2022**
Indian Institute of Technology, Hyderabad, India
- Worked on an explainable pose correction(in the wild) application; compiled two novel datasets
- Assisted with the course 'Deep Learning for Computer Vision'

Research Assistant **2021 - 2022**
International Institute of Information Technology, Hyderabad
- Worked on building a Brain Atlas with Deep learning using brain MRIs

Data Science intern **2021**
DeveLearn Technologies Pvt Ltd, Mumbai
- Worked on an end-to-end biometric mobile/desktop app that can detect faces live on the field and recognizes under various occlusions

Technologies Used: Ml, AppDev, django

Intern **Summer 2020**
Bharat Sanchar Nigam Limited, Hyderabad (in collaboration with ITU(International Telecommunication Union))
- Internship entitled IoT technologies, Fibre Optic network design, Transmission and Networking technologies, GSM & GPRS architecture, 4G, 5G technology

Technologies Used: IoT,4G,5G

Engineering Trainee **Summer and Winter 2018**
at Advance Training Institute Electronics & Process Instrumentation (ATI-EPI), Hyderabad
- The training was based on VLSI (Front End Development), Digital Electronics and their applications including implementation on ARM micro controller.

Technologies Used: Assembly language, VHDL,Verilog.

Publications

1. Bowen Xi, Kevin Scaria, **Divyagna Bavikadi**, and Paulo Shakarian. Rule-based error detection and correction to operationalize movement trajectory classification, 2024
2. **Bavikadi, Divyagna**, Dyuman Aditya, Devendra Parkar, Paulo Shakarian, Graham Mueller, Chad Parvis, and Gerardo I Simari. Geospatial trajectory generation via efficient abduction: Deployment for independent testing. In *Proceedings of the 40th International Conference on Logic Programming (ICLP 2024)*, 2024
3. **Bavikadi, Divyagna**, Ayushi Agarwal, Shashank Ganta, Yunro Chung, Lusheng Song, Ji Qiu, and Paulo Shakarian. Machine learning driven biomarker selection for medical diagnosis. *arXiv preprint arXiv:2405.10345*, 2024
4. Bhat Dittakavi, **Bavikadi, Divyagna**, Sai Vikas Desai, Soumi Chakraborty, Nishant Reddy, Vineeth N Balasubramanian, Bharathi Callepalli, and Ayon Sharma. Pose tutor: an explainable system for pose correction in the wild. In *Proceedings of the IEEE/CVF conference on computer vision and pattern recognition*, pages 3540–3549, 2022
5. **Bavikadi, Divyagna**, A Manjunatha, Abhishek Pol, and Akshat Kadam. Real-time face recognition for organisational attendance systems. In *Recent Trends in Image Processing and Pattern Recognition: 4th International Conference, RTIP2R 2021, Msida, Malta, December 8-10, 2021, Revised Selected Papers*, page 134. Springer Nature, 2022

Projects

Explainable Pose Correction- Unlabeled data are given to the system to recognize complex poses like of yoga, martial arts and detect the most important joints that lead to the fine-grained prediction and give live feedback on how to correct the pose. Also, used algorithmic recourse to correct poses using counterfactual explanations.
Speech Emotion Recognition- Recognizes emotions from a live stream that is embedded with a web application with real-time 3D visuals, and a backend with the deep learning architecture wrapped with multiple models trained on multiple datasets.
FaceMap- A smart multi-purpose end-to-end approach for an automated app (works only in on premises) that marks attendance of the staff, gives various features for the staff to check upcoming holidays, apply for a leave etc. The developed system has an architecture that uses MTCNN-Facenet framework tuned to faces of colour, doesn't require a large database.
AutoTask- IoT based voice controlled home automation system, that automates the appliances, monitoring plants using raspberry pi/Arduino via python.
Various other projects like- Brain Atlas Formation with Deep Learning, Personalized emotion based music recommendation system, Personal Equipment Detection System, RADAR Detection system, Audio and Image processing GUI, Temperature monitoring system using IoT and Arduino sleepmodes to save power, RealTime Intrusion Detection for Smart Home.

Technical Skills

Programming Languages: C, Python, VHDL, Verilog, CSS, HTML, Javascript
Scientific softwares: MATLAB, Simulink, Scilab, Lab-VIEW
Software and IDE Tools: Visual Studio, PyCharm, Spyder, Jupyter notebook, Xilinx, Keil, CodeBlocks, Adobe Indesign, Arduino,SQLite
ML libraries and frameworks: PyTorch, OpenCV, tensorflow, numpy, scipy, scikit-learn, librosa, pandas, matplotlib, django
Office softwares: Microsoft Office, Libre Office, LaTeX, DocBook
Operating systems: iOS, Linux, Windows, FreeRTOS

Relevant Courses

Planning and Learning in AI, Statistical Machine Learning, Knowledge Representation and Reasoning, Deep Learning for Computer Vision, Perceptual Reasoning and Symbol Grounding, Robotics and Automation, Industrial Internet of Things, and Computational Methods and Parallel Processing on Science and Technology.

Awards & Achievements

- Awarded Fulton Scholarship at Arizona State University [Fall 2022]
- Awarded Prof.A.M.Pathan **gold medal** [2022]
- Awarded **two gold medals** for academic excellence in Bachelor and Master of Technology at CUK [2022, 2021]
- Awarded INSPIRE Scholarship from Ministry of Human Resource Development(MHRD), India [2014]

Professional Activities

- Advising (4 grad students, 1 high school student): Ezra Lee, Devendra Parker, Dyuman Aditya, Ayushi Agarwal, Shashank Ganta [2022-24]
- Reviewing: KR '24
- Founder and Chief-Editor of Tarang (IEEE bimonthly magazine of IEEE-CUK student chapter) [2021-22]
- Team member of SAC (Students Activities Committee) and WIE (Women In Engineering) of IEEE student branch [2021-22]
- Volunteered for YRM (Young Researchers Meet) conducted by IEEE SB Central University of Karnataka [2021]
- Have also volunteered to teach 'Computer Education' for underrepresented students as a social activity [Spring 2022]
- Coordinator for Street Cause PAW (Non-profit NGO for social service) [2021-22]