Utkarsh Dhagat

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Education

- **Vellore Institute of Technology, Chennai Campus** — Chennai, India
  Bachelors of Computer Science Engineering, Specialization in AI & Robotics; CGPA: 8.67/10 Sep 2022 - May 2026
  Courses: *Data Structures and Algorithms, Algorithm Analysis and Design, Object Oriented Programming,Cryptography and Network Security,Computer Networks, Operating Systems,Machine learning for robotics,Database Systems,Artificial Intelligence*

Experience

- **AI Research Intern** — Samsung Prism
  Dec 2023 - Present — *Remote*
  - **Dataset Engineering & Model Design**: Developed a diverse audio dataset and designed a U-Net-based model with Convolutional, Residual, and Attention Blocks for optimized feature extraction in audio separation.
  - **Audio Separation & Transformer Integration**: Researched Demucs and BSRNN models, incorporating transformer technology to enhance feature extraction and performance.
- **AI and Robotics Intern** — StemTec Pvt Ltd (VIT Chennai Incubated)
  Feb 2024 - July 2024 — *Chennai, India*
  - **Autonomous Systems & Leadership**: Developed an Autonomous Ground Vehicle (AGV) using advanced computer vision with RealSense SDK and PyTorch Transformers while leading a dynamic team of five.
  - **ROS2 Integration & Computer Vision**: Integrated and optimized computer vision models into the AGV prototype using ROS2, ensuring seamless functionality and optimal performance.

Projects

- **MRIG - Medical Report Generation**: Utilized ResNet50 CNN architecture and developed algorithms to extract critical parameters from chest X-rays, enhancing medical diagnostics. **GitHub**. Tech: Python, TensorFlow, CNN
- **VitaFile - EHR Management System**: Led frontend development, integrating Google APIs for centralized EHR access and enhancing user experience with multilingual support, voice interaction, and gesture recognition. **GitHub**. Tech: Python, Google APIs, React, Django
- **PhytoFinder - Medicinal Plant Identification**: Developed a CNN-based tool for precise medicinal plant identification, leveraging deep learning and transfer learning for optimized feature extraction. **GitHub**. Tech: Python, TensorFlow, CNN, Transfer Learning

Research

- **Audio-Visual Source Separation** — Currently under final review for publication in *PLOS ONE* Journal
  March 2023 - September 2024
  - Model Development: Developed an advanced source separation model leveraging Dual Multimodal Residual Network (DMRN) and Audio-Guided Visual Maps to generate heatmaps for video frames, enabling precise audio source localization.
  - User Experience Optimization: Enabled individual control over the volume of each audio source, allowing selective amplification or attenuation of specific sounds within a video frame, significantly improving user experience in multi-speaker environments.

Positions of Responsibility

- **Linux Club** — Cybersecurity Lead
  Aug 2023 - Feb 2024 — *Chennai, India*
  - **Cybersecurity Education & Workshops:** Conducted seminars, workshops, and Capture The Flag (CTF) events to introduce participants to ethical hacking and cybersecurity.
  - **Community Building & Mentorship:** Recruited and mentored juniors and colleagues, fostering a Linux community and encouraging contributions to open-source projects.

Skills Summary

- **Languages**: Python, C++, Java, HTML5, CSS3, JavaScript, SQL
- **Frameworks**: Pytorch, Tensorflow, CUDA, Docker, ReactJS, Django, Vue.js, FastAPI, ROS2
- **Tools**: Git, MATLAB, Keil uVision, LTspice
- **Spoken Languages**: English (Full Proficiency), Hindi (Native)