SAHIL AJAY ADIVAREKAR

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EDUCATION

1. **The Pennsylvania State University, University Park** **Expected Graduation: May 2025**
   Masters in Computer Science and Engineering | 3.48 / 4.0
   Coursework: Data Structure and Algorithms, Adversarial Deep Learning, Reinforcement Learning, Vision and Language
2. **University of Mumbai** **Aug 2019 to May 2023**
   Bachelor of Engineering in Computer Engineering | 9.1 / 10.0

TECHNICAL SKILLS

Programming Languages: *Proficient*: Python [4+ years], *Intermediate*: Java [1+ years], SQL [2+ years], *Beginner*: C, JavaScript
Technologies: Hugging-Face, PyTorch, TensorFlow, Django and Django REST APIs, Android, Firebase
Software: GitHub, Ubuntu Terminal, Android Studios, MySQL Workbench

PROJECTS

1. Context-Awareness Neurosymbolic Image Augmentation

- Developed a novel image augmentation framework integrating CLIP, FILIP, and BART to create context-aware composite images by combining symbolic rules and multi-modal representations.
- Implemented a neurosymbolic pipeline to generate realistic blended images, utilizing pre-trained models for feature extraction, context alignment, and symbolic reasoning.
- Explored cross-modal synergies to advance the field of neurosymbolic image generation, contributing to research on multi-modal and symbolic reasoning in artificial intelligence.

2. Feature Mixing with Gradient Descent for Image Augmentation in Plant Disease Detection

- Developed a feature-based image augmentation technique leveraging the Hadamard matrix for enhanced data diversity.
- Optimized the augmentation process using Stochastic Gradient Descent (SGD) to maintain effective feature mixing.
- Improved model performance on plant disease detection tasks by integrating the augmentation technique with architectures like ResNet-50, VGG-16 and VGG-19.

EXPERIENCE & INTERNSHIP

1. Research Assistant at Penn State University **July 2024 to Present**

- Currently working on analyzing data extracted from Zulu trade to determine the patterns on different traders.
- Conducted in-depth research on U.S. election-related news articles and state-specific electoral rules and regulations.
- Performed web scraping to automate data collection from reliable sources and analyzed the data to identify trends and patterns in electoral processes and voter behavior.

2. **Teaching Assistant at Penn State University** **Aug 2023 to Dec 2024**

- Assisted students in BA 840, CMPSC 465, CMPSC 464, and CMPSC 131 by guiding them in relational databases, SQL, data structures, algorithms, theory of computation, and Python programming fundamentals.
- Additionally automated the process of assignment grading to ease the evaluation workload, improve consistency in grading, and provide quicker feedback to students

3. Software Developer at Nexacore Solutions, India **Jun 2024 to Aug 2024**

- Designed and implemented automation solutions for client workflows using Google Apps Script, streamlining business operations and reducing manual effort.
- Automated data management, reporting, and communication tasks thus leading to a measurable increase in operational efficiency.

4. Software Developer at Croblaze, India **Dec 2021 to Mar 2022**

- Developed and maintained APIs using Django REST Framework to support user authentication, checkout cart, and payment gateway functionalities.
- Implemented two-factor authentication and industry-standard security measures to enhance data protection and user confidence.

RESEARCH PUBLICATIONS

1. **Plant Disease Detection Leveraging Latent Space based Mixing Methods for Image Data Augmentation**
   Suryawanshi V. A, Sarode T. K, **Adivarekar S. A.** Plant Disease Detection Leveraging Latent Space based Mixing Methods for Image Data Augmentation. Curr Agri Res 2024; 12(3). Available from: https://bit.ly/4fSb1xS
2. **Implementation of Exploratory Data Analysis on Weather Data**
   S. Adivarekar, S. Nanwani, N. Mandal and T. Sarode, "Implementation of Exploratory Data Analysis on Weather Data," 2023 International Conference on Communication System, Computing and IT Applications (CSCITA), Mumbai, India, 2023, pp. 21-25, doi: 10.1109/CSCITA55725.2023.10104864.
3. **Comparative Study of Regularization Techniques for VGG16, VGG19 and ResNet-50 for Plant Disease Detection**
   Suryawanshi, V., **Adivarekar, S**., Bajaj, K., Badami, R. (2023). Comparative Study of Regularization Techniques for VGG16, VGG19 and ResNet-50 for Plant Disease Detection. In: Kumar, S., Hiranwal, S., Purohit, S., Prasad, M. (eds) Proceedings of International Conference on Communication and Computational Technologies. ICCCT 2023. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-99-3485-0_61