Shreyas Dongre

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Education

NMIMS University — Mumbai, IN
Bachelor of Technology in Artificial Intelligence; GPA: 3.8 / 4.0 — Aug. 2020 – May. 2024

Experience

Actofit — Mumbai, IN
AI & CV Research Engineer — Dec 2023 - Present

- **rPPG Face Scan**: Developed an rPPG face scan system to extract pulse waves from 30-second face videos, implementing signal processing algorithms and training AI models for near accurate predictions of various vital parameters such as BP, asthma, hemoglobin, HbA1c, etc. Ensured all models maintained error rates within medically accepted limits (less than 3%) and required 20% less compute power, leading to securing a deal and thereby adoption of the face scan module by a multi-billion dollar pharmaceutical company.
- **Sit Rise Test**: Designed and trained a sit-rise test model that assessed sitting and standing movements, utilizing 2D image capture to segment the floor in 3D for dynamic scoring. Additionally, I was responsible for evaluation and deployment of all models on the backend server, handling networking, load balancing, and ensuring real-time performance with a delay of under 40ms. This module's high efficiency and unique approach contributed to securing a deal and adoption of our module by one of the leading insurance companies.
- **Internal AI Developer**: Operating with internal tools to perform large-scale GPU training, experimentation, 3 PB+ data processing, and data scraping for various tasks, while managing all processing through cloud resources such as GCP and AWS.

Publications

- **Dongre et al. DeLT Net: Unveiling Sponsor Segments in YouTube Videos with DistilBert, LSTM, and DeiT fusion models, (2023)**: Developed a multi modal language-independent deep learning model to recognize and skip sponsored segments in YouTube videos with 98% accuracy. [Published IEEE - IIT Delhi]
- **Dongre et al. Elevating fingerprint matching with a unified dHash, SIFT, and LSH model, (2023)**: Implemented a highly accurate and fast fingerprint-matching system using advanced Image hashing, CV and LSH algorithms and achieving 99% accuracy and 99.9% F1 score with robust performance against flagship biometric benchmarking datasets. [Published IEEE - CVMI]
- **Dongre et al. Guiding the Student's Learning Curve - Augmenting Knowledge Distillation with Insights from GradCAM, (2023)**: Work on investigating the effects of using GradCAM representations of Teacher models as direct inputs to Student models for quicker convergence. [Published IEEE - BITS]
- **Dongre et al. RetViT - Retentive Vision Transformers, (2024)**: Developed a novel retention-based model architecture for Vision achieving 91.57% accuracy on ImageNet-1k with just 6M params, surpassing larger models in efficiency and performance. [Published IEEE]

Recognitions

- **NASA Security Researcher**: Received a formal appreciation and recognition from National Aeronautics and Space Administration for identifying and reporting a critical bug and potential backdoors on their official website and subdomains.

Projects

- **Developing Kornia, an Open-source Differentiable Computer Vision Library**: The goal of project was to migrate kornia using keras-core as a backend to support multiple backends focusing on PyTorch, Jax and NumPy and become the reference library for computer vision and robotics practitioners to build their applications for both research and production.
- **RL based DQN for Game playing and Testing**: Optimizing Gameplaying through an Advanced DQN-Based Reinforcement Learning Approach with CNN-LSTM Adaptations.
- **Android SelfCare Application**: An app with login module, cascade of fitness related videos and relaxation music, how to's and benefits of yoga poses and scribble.

Programming Skills

Languages: Python, C++, HTML, Javascript, C#, Bash, SQL, Java

Technologies: AWS, GCP, Matplotlib, NumPy, Pandas, OpenCV, Keras, Root, TensorFlow, PyTorch, HuggingFace, Jupyter, Scikit-Learn, Docker, AutoCAD, Git, Wireshark, WandB, 3DS MAX, Blender, Android Studio, Azure, Windows, Heroku, MacOS, SQL, Unity, Linux, Unreal Engine, Qt, Kornia, Socket Programming, Flask