A ASWANTH RAJ

SOFTWARE ENGINEERING | MACHINE LEARNING | COMPUTER VISION

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Third-year B.Tech CSE (AI & ML) student at VIT Vellore, 9.53 CGPA. Strong foundation in data structures and algorithms in C++, with Python work in deep learning and computer vision and contributions merged into Keras, OpenCV, Hugging Face PEFT and PyTorch RL after maintainer review.

EDUCATION

Vellore Institute of Technology (VIT), Vellore **2024-2028 (expected)**

B.Tech in Computer Science and Engineering (Artificial Intelligence and Machine Learning) **CGPA 9.53 / 10**

Geethanjali Vidyalaya, Bengaluru | Class XII, CBSE: 93.8% | Class X, CBSE: 92.6% (best five)

Relevant Coursework: Data Structures and Algorithms | Design and Analysis of Algorithms | Structured and Object-Oriented Programming | Machine Learning | Probability and Statistics

RESEARCH EXPERIENCE

Research Intern | Remote | Computer Vision and Person Re-Identification **May-Jul 2026**

The University of Texas Rio Grande Valley | Advanced Infrastructure Materials Laboratory

- Designed and implemented a **DINOv2-S-based re-identification model** separating persistent from date-specific identity evidence for long-term UAV re-identification.
- Built the evaluation harness: source-disjoint validation, five folds, matched baselines and controlled ablations, to reduce split-driven bias and verify whether gains persisted across folds.
- Improved mAP over the matched baseline by 3.73, 3.97 and 6.53 percentage points for full-gallery, cross-date and same-date retrieval.

PROJECTS

EffiPed **Python | PyTorch | ConvNeXt V2 | BoT-SORT**

Multi-Camera Tracking and Person Search Platform | Sole author

- Finds and follows people across four camera views, then takes one person and ranks where else they appear, so a reviewer confirms a match instead of scrubbing footage.
- Trained a single 7.78M-parameter model to detect people and describe their appearance in one pass, so tracking and cross-camera matching share features and the full pipeline runs at about 18 FPS on a laptop GPU.
- 61.3% cross-camera Rank-1 and 88.4% detection mAP@0.5 on the held-out P-DESTRE test split, and 74.24 IDF1 on the MOT17 validation half.

OPEN SOURCE CONTRIBUTIONS

175 merged contributions across 23 external ML libraries, including Keras, Hugging Face PEFT, timm, PyTorch RL, OpenCV, Kornia and Ultralytics, spanning issue reproduction, tests, maintainer review and CI.

- **NumPyro #2246:** added heterogeneous concatenated constraints and bijective transforms with JAX pytree, JIT, Jacobian and round-trip coverage.
- **AlbumentationsX #421:** added patch-localized noise across four distributions with batch, replay and serialization support, and its public Compose path ran 2.35x–22.39x faster than full-map masking.

TECHNICAL SKILLS

Languages	C++, Python
Engineering	FastAPI, REST APIs, WebSockets, Git
Testing / CI	pytest, unit testing, GitHub Actions, CI/CD
ML / Data	PyTorch, torchvision, scikit-learn, NumPy, pandas, Matplotlib
Deep Learning	CNNs, Transformers, metric learning, transfer learning
Computer Vision	object detection, multi-object tracking, person re-identification
Certifications	**Deep Learning Specialization** (DeepLearning.AI, five courses) | **PyTorch for Deep Learning** (Zero To Mastery, 52 hours)

ACHIEVEMENTS & AWARDS

Third Prize | Student Innovation Project Contest 2026, SCOPE, VIT Vellore **Apr 2026**

Merit Scholarship | VIT Vellore, consecutive recipient for academic excellence **2024-25, 2025-26**