Chloy Costa

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EDUCATION

CHRIST (Deemed to be University) Bangalore, Karnataka
Master of Computer Applications June 2023 – Present

Parvatibai Chowgule College of Arts and Science Margao, Goa
Bachelor of Science in Physics, 78.27% Sept 2021 – May 2024

TECHNICAL PROJECTS

Student Attendance Monitoring System | *Python, OpenCV, YOLOv8, TensorFlow, MySQL* GitHub
- Engineered a real-time attendance system with emotion tracking using computer vision to automatically detect, recognize, and monitor students.
- Custom-trained a YOLOv8 model on a local dataset of 20 students to ensure high detection accuracy in a specific classroom environment.
- Leveraged transfer learning with a pre-trained ResNet model in TensorFlow to bootstrap the facial recognition component.
- Integrated DeepFace for emotion analysis and logged all attendance and engagement data to a MySQL database using SQLAlchemy.

RESEARCH EXPERIENCE/ PROJECTS(CURRENT)

Photometric Redshift Estimation | *Self-Directed Research Project* *In Preparation for Submission*
- Architected a hybrid pipeline combining clustering (K-Means, GMM) with a stacked ensemble of boosting models (XGBoost, NGBoost) to estimate galactic redshifts.
- Implemented a multi-method outlier detection strategy (Isolation Forest, LOF, Z-score) and engineered astronomical features from Sloan Digital Sky Survey (SDSS) data.
- Achieved high predictive accuracy with an R^2 score of 0.84 and an RMSE of 0.21, demonstrating the model's robustness.

Review of ML for Exoplanet Detection | *Literature Review* *In Preparation for Submission*
- Authored an in-depth review paper on the application of machine learning and deep learning models for analyzing light curve data from the TESS and Kepler missions.
- Analyzed state-of-the-art techniques, including LSTMs and WaveCeptionNet, for addressing challenges such as noise reduction and scalability in exoplanet detection.

CURRENT WORK

Exposition Email Automation | *JavaScript, face-api.js, Chrome Extension API* *In Active Development*
- Developing a browser-based solution as a Chrome Extension to automate email submission handling for the Arch Diocese of Goa's media department.
- Implementing DOM scraping to extract submission data from Gmail and integrating face-api.js for client-side ML-based face detection and cropping.
- Building an interactive UI for the extension with an auto-fill feature to streamline data entry into a target web application, significantly reducing manual workload.

AirSign: Real-Time American Sign Language (ASL) Recognition | *Python, PyTorch, YOLOv8, OpenCV In Active Dev*
- Engineered a robust data pipeline to process the WLASL video dataset, using MediaPipe for intelligent frame extraction to create a high-quality, annotated image set for training.
- Trained and fine-tuned a custom YOLOv8 model, achieving a high mean Average Precision (mAP50-95 of 0.79) on the challenging task of recognizing nuanced hand gestures in a live environment.
- Demonstrated proficiency in the end-to-end ML workflow, from data preprocessing and model training to real-time inference and performance optimization.

Workshops

Astrophysics & Cosmology Workshop | *IISc Bangalore, Ethical Edufabrica & Pravega*   *2025*
- Gained hands-on experience in Optical Astrophysics, covering photometric redshift estimation, spectroscopy, and data analysis using IRAF.
- Explored Radio Astrophysics techniques, including data reduction and processing with CASA (Common Astronomy Software Applications).
- Studied X-ray Astrophysics concepts such as pulsars and X-ray binaries, with an introduction to data analysis using Heasoft.

Certifications

Introduction to Relational Databases in SQL | *DataCamp*   *July 2025*
Intermediate SQL | *DataCamp*   *June 2025*

Leadership and Extracurriculars

Selected as a member of *Advitiya Netrutva,*the student council of the college at Parvatibai Chowgule College of Arts. Successfully organized state-level events, including *Tatastu*, the biggest college event, and led the *Battle of Bands* event to completion.

Served as the President of the Physics Club at *Parvatibai Chowgule College of Arts and Science.* Led and organized key events, including overnight sky observations, *Singularity* the biggest physics event organised by the department which included projects, games and competitions and workshops to foster student engagement.

Served as the ACC music head for the science deanary at Christ university for the academic year 2024-2025 and lead the choir and music ministry.

Active member of the Christ University Central Campus Choir (2024-Present), performed at major university events including the grand Christmas concert, Magnificat

Technical Skills

Programming Languages: Python, Java, Kotlin, SQL, JavaScript, C, R, Bash, Fortran
Data Science & ML: Scikit-learn, Pandas, NumPy, Matplotlib, OpenCV, TensorFlow, PyTorch, XGBoost, Astropy
Web & Mobile Dev: Android (Jetpack Compose), React, Node.js, Express.js, Streamlit, HTML5, CSS3, Tailwind CSS
Databases: PostgreSQL, MySQL, MongoDB
OS & Developer Tools: Linux (Fedora), Git, Docker, VS Code, IntelliJ, NPM