

RICARDO CABRERA-MARTINEZ

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EDUCATION

Georgia State University
BS Computer Science *GPA: 3.8*

Atlanta, GA
Aug 2022 - May 2026

CSC 4520-DESIGN AND ANALYSIS OF ALGORITHMS

algorithm design principles, complexity analysis, various algorithmic strategies (brute-force, decrease-and-conquer transform-and-conquer, dynamic programming,)

CSC 3350-SOFTWARE DEVELOPMENT

Learn software architecture elements, object-oriented programming principles, development of software(AGILE, Refactoring)

SKILLS

Programming Languages: Python, Javascript, Html, React
Developer Tools: Git, Linux, Conda, Jupyter Notebook
Libraries: PyTorch, OpenCV, Numpy, Matplotlib

WORK EXPERIENCE

Freelance Developer

Fullstack Development/Data Preprocessing

Atlanta
April 2020 - February 2023

- *JavaScript, React, Ruby on Rails, MongoDB, SQL*
Rapid creation and deployment of websites were executed from scratch or through the enhancement of pre-existing databases and source codes, consistently adhering to stringent project timelines.
- *Librosa,PyTorch, Numpy, SciPy*
Cleaning, augmenting, and enhancing datasets by removing background noise and disturbances; along with adding real-life imperfections, contributing to better training data for deepfake model training.

PROJECTS

Parking Image Classifier *PyTorch, Multiprocessing Optimization, OpenCV, Data Augmentation,Matplotlib*

Developed a comprehensive image processing pipeline to classify and augment parking lot images under varying weather conditions. Implemented data extraction, preprocessing, augmentation, and multi-process optimization to efficiently process and train on a dataset of over 24,000 images.

Test Question Multimodal *PyTorch, CNNs & Transformers, Model Evaluation, Multimodal Machine Learning*

Implemented a multimodal machine learning prototype that combines visual and textual data for answering education-related questions. This rapid prototype utilizes pre-trained CNNs and transformers to process images and text, respectively, providing insights into geography questions from various educational levels.

Hyperspectral Anomaly Detection *PyTorch, Hyperspectral Image Processing, Tiff Data, Anomaly Detection (Local & Global)*

utilizing UAV-borne hyperspectral imagery collected from various crops in Hubei, China. The process involved local and global anomaly detection methods to identify unusual patterns or inconsistencies within the data. The hyperspectral images, initially in TIFF format, were preprocessed and converted into tensors for efficient analysis and processing with machine learning models designed for anomaly evaluation.

COMPETITIONS

Semantic Bridge Damage Segmentation

WACV 2024 (IEEE)

PyTorch, CNNs & Transformers, Model Evaluation, Multimodal Machine Learning

Implemented an advanced Computer Vision model using PyTorch for automated bridge damage detection and classification using the dacl10k dataset. The system effectively identifies, classifies, and localizes 19 distinct classes related to bridge damage and components through sophisticated semantic segmentation techniques, significantly enhancing the efficiency of bridge inspections.

EXTRACURRICULARS

Computer Science Club

Project Lead

Led a semester initiative where I oversaw the development of React websites and guided a team through computer vision projects. Responsibilities included planning, teaching basic model creation, and ensuring project progression while maintaining team communication and collaboration.