CHRISTOPHER REBOLLAR-RAMIREZ

San Diego, CA, United States
Email: christopherrebollar0@icloud.com | **LinkedIn:** christopher-rebollar-ramirez | **Github:** crebollarramirez

Education

University of California San Diego	**La Jolla, California**
Bachelor of Science in Mathematics & Computer Science	*Expected Graduation, June 2025*
Bachelor of Science in Cognitive Science with a Specialization in Machine Learning and Neural Computation	

Relevant Coursework

- Advanced Data Structures in C++
- Supervised Machine Learning Algorithms
- Practical Data Science with Python
- Algorithm Design & Analysis
- Software Engineering
- Machine learning in Practice using Python
- Discrete Structures
- Computer Organization in C/ARM
- Deep Learning

Experience

ACM Hack	**San Diego, California**
Full-Stack Team Lead	*Sept 2024 – Jan 2025*

- Developed Swipe Style, a Tinder-inspired web app for browsing fashion items, using **MERN Stack** and **TailwindCSS.**
- Implemented **10 API routes** for managing user interactions and integrating **Google OAuth** for secure authentication.
- Led a team of 5 members, organized weekly meetings, and delegated tasks to ensure efficient development.

Projects

Optimizing Fully Convolutional Networks for Semantic Segmentation | Deep learning

- Developed and optimized **CNN-based segmentation** models **(U-Net, FCN, DeepLab)** in **PyTorch** on PASCAL VOC-2012, improving **Mean IoU** from **0.0553 to 0.084** and **Pixel Accuracy** from **72.8% to 73.6%** using **class weighting** and **data augmentation**.
- Accelerated model training by **5x** with **GPU utilization**, optimized learning rate scheduling (**CosineAnnealingLR**), and **transfer learning** using a pre-trained **ResNet34 encoder**.
- Enhanced segmentation accuracy by **3.2%** through **Xavier weight initialization**, **batch normalization**, and **dropout**, reducing overfitting and improving generalization.

Breast Cancer Prediction Using Perceptron and Logistic Regression | Machine Learning

- Achieved **98.25% training/testing accuracy** with a **custom Perceptron** model after 900 epochs on the **Breast Cancer Wisconsin dataset**.
- Compared **Perceptron** and **Logistic Regression** models, utilizing **NumPy** and **scikit-learn** for binary classification.
- Applied **data normalization** and **visualized performance** trends using **Matplotlib** for deeper model insights.

Digits-classifier-KNN | Machine Learning

- Built a **KNN model** for MNIST classification, achieving **92.2% accuracy** using **cosine distance** (outperforming Euclidean distance).
- Improved **Wine dataset** classification accuracy from **71% to 97%** through **feature normalization**.
- Developed a **custom KNN model** with support for **multiple distances metrics** and **hyperparameter optimization**, matching **scikit-learn**'s performance.

DaybyDay | Full-Stack Web App

- Developed a responsive frontend with **React.js** and **TailwindCSS**, building **5+ reusable components** for dynamic user interfaces.
- Designed a robust backend using **Python Django** and **AWS DynamoDB**.
- Integrated **OpenAI API** and **WebSockets** for a real-time chatbot.
- Conducted **unit testing** for backend features using **Django Rest Framework** (DRF) and implemented **10+ API routes** for managing user interactions. Implemented secure **user authentication** with Django and **JWT tokens**.

Technical Skills

Languages: C++, Python, Java, JavaScript, TypeScript, Swift, HTML/CSS
Frameworks & Tools: React.js, Next.js, Node.js, Express.js, Django, Flask, AWS, MongoDB, SQL, DynamoDB, TailwindCSS
Developer Tools: Git, Docker, GDB, JDB, Valgrind, GPROF
Certification: PC Core Hardware A+ Cert, PC Operating System A+ Cert
Professional Skills: Communication, Time Management, Teamwork, Critical Thinking

Leadership / Extracurricular

SkillsUSA Competitions	**Los Angeles, California**
Competitor/Mentor	*January 2019*

- Competed using C++, placing **3rd** among **20 participants** at the regional and state levels, demonstrating proficiency in program design and problem-solving.