Jefferson Umanzor

+1 818-331-0678 • jumanzorurrutia@ucsd.edu • GitHub • LinkedIn • Digital Portfolio

EDUCATION

University of California, San Diego | San Diego, CA Expected Graduation June 2027

B.S. Mathematics and Computer Science | Provost Honors *Major GPA: 3.675*

Coursework: Data Structures, Algorithms, Machine Learning, Artificial Intelligence, Theory of Computability, Software Tools, Object-Oriented Design, Computer Organization, Probability, Statistics, Linear Algebra, Discrete Math, Graph Theory, Differential Equations

SKILLS & TECHNICAL TOOLS

Languages: Java, Python, C, C++, HTML/CSS, JavaScript, MATLAB, Bash, C#

Tools & Technologies: Visual Studio Code, JUnit, Git, GitHub, Vim, Jupyter Notebooks, NumPy, Pandas

PROJECTS

Weather Predictor – Hidden Markov Model Classifier | *Python, NumPy, Pandas* | GitHub *Mar 2025*

- Developed a probabilistic time-series classification system in a 4-person team using a **Hidden Markov Model** (**HMM**) to forecast next-day rain/snow from **binarized temperature and humidity**
- Engineered HMM parameters, including a **transition matrix, emission matrix**, and **initial state distribution** from **2,500+ labeled climate records** using **NumPy-based frequency analysis**
- Applied **Forward Algorithm** for **state estimation** and **next-step prediction**, enabling **real-time inference** via a **CLI**
- Achieved **53% validation accuracy**; analyzed performance limitations due to seasonal drift, binary discretization, and Markov assumptions

Lie Detector – Naive Bayes Text Classifier | *Python, Pandas, NLP* | GitHub *Feb 2025*

- Co-developed a **probabilistic text classification model** in a team of 4 using **Naive Bayes** to predict whether political statements were truthful or deceptive, based on the **PolitiFact dataset**
- Cleaned and tokenized **11,000+ labeled entries,** creating a **bag-of-words representation** and computing **word–class conditional probabilities** from scratch
- Designed custom logic for input filtering and query validation; supported **interactive sentence classification** via a **CLI**
- Achieved **58% validation accuracy**; identified performance constraints from unseen words, data sparsity, and lack of Laplace smoothing

ShelterGuide - Pathfinding Website Prototype | *Java, HTML, CSS, JavaScript* | GitHub *Apr 2024*

- Led a **3-person team** in developing a **functional prototype** of a **location-aware web app** that helps unhoused people find shelters, using custom **BFS** on a **hand-modeled graph** of **75+ San Diego intersections**
- **Designed** and implemented the **core routing algorithm** in **Java**, including **graph traversal**, **linked node modeling,** and **reverse path reconstruction** to generate **step-by-step navigation**
- Contributed to **migrating** the **backend logic** from **Java** to **JavaScript** to enable **browser deployment** and integration with **HTML**-based user input/output
- Collaborated on **frontend integration** by providing routing outputs to be rendered through **HTML** form interactions, enabling user access to **real-time directions** based on backend pathfinding logic

WORK EXPERIENCE

Entrepreneurship Mentor and Project Lead | Project ECHO *Jul 2022*

- **Mentored 20+ students** in a competitive entrepreneurship program and **tech-for-good** innovation, teaching **business strategy**, **market research**, and **data-driven problem-solving**
- **Led a 4-member team**, delegating tasks and running daily check-ins to develop a **scalable business model** that connects unhoused individuals with nearby shelters
- **Directed research** on shelter accessibility, geographic accessibility, and technology adoption; synthesized findings into a concise, metrics-backed pitch deck
- **Advised** and **optimized** the team's presentation, securing **2nd place among dozens of schools** at a **professional showcase** hosted at **Los Angeles City College** and reviewed by industry entrepreneurs