

Raquel Ana Bush

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🏠 New Bedford, Massachusetts

Computer science BS/MS student. NSF CyberCorps Scholarship for Service recipient.

Education

- **Master of Science in Computer Science** (*Expected May 2026*)
 - GPA: 4.0
- **Bachelor of Science in Computer Science** (*Expected May 2025*)
 - Artificial Intelligence concentration, Mathematics minor
 - GPA: 4.0
 - Big Data Club (Vice President 2024-2025), Navigating Leadership, Math Circle
- **Associate of Science in Mathematics and Computer Science** (2023)
 - Certificate - Java Programming
 - GPA: 4.0

Experience

- **Team Lead, Fog of War Chess Assistant Capstone Project** (2024)
 - Client: NUWC Division Newport
 - Leading a team to develop an AI-powered chess assistant that adapts modern chess engine decision-making for Fog of War variant constraints, leveraging AI to simulate incomplete information scenarios. Designing a collaborative assistant tool that strategically supports a user in exploiting their opponent's biases, integrating NLP to interpret user input and influence move suggestions for the chess engine.
 - Overseeing project milestones, coordinating team responsibilities, and ensuring alignment with client requirements and expectations.
- **Research Assistant, University of Massachusetts Dartmouth College of Engineering** (2024)
 - Aided in developing wearable device using Arduino Nano 33 BLE Sense Rev2, with a focus on sensor programming, power management integration, and remote data storage.
 - Handled hardware design, software development, and system integration.
- **Research Assistant, Duke Empathy Development Lab** (2019-2020)
 - Recruited research participants.
 - Collected data for ongoing studies using Matlab.

Personal Projects

- **Masqueraded File Checker:** Created a program that checks if the file extension matches the hex file signature for each file within a given folder.
- **Harmoniac:** Developed a music recommendation system utilizing content-based filtering and k-means clustering to overcome the cold-start problem.
- **PopOpinions:** Created a Twitter sentiment search application utilizing NLP techniques.

- **Analysis of a Spotify Collaboration Network for Small-World Properties:** Applied Big Data and graph theory techniques to study a large feature collaboration network of artists in order to uncover structural patterns of great significance to recommendation systems and industry research.
- **Synthetic Number Generator:** Generated synthetic handwritten numbers using GAN with discriminator training on real vs. fake detection.
- **Smart Hangman:** Created a hangman game that dynamically changes the word, making it difficult to beat.
- **Personal website:** Developed a responsive, interactive portfolio website using HTML, React, and Tailwind CSS to showcase professional experience, technical skills, and projects.

Skills

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|----------|-------------------|---------------------|--------------------------------|
| • Java | • AI/ML | • OOP | • Collaboration |
| • Python | • Neural networks | • Linux | • Teamwork |
| • C++ | • NLP | • Critical thinking | • Communication |
| • C | • APIs | • Problem solving | • Bilingual English/Portuguese |

Community Involvement

- **Intern, California Desert Chorale (2018-2019)**
 - Contributed to the ensemble as a vocalist for the concert season as invited and sponsored by the Chorale.
- **Intern, Dr. Raul Ruiz for Congress (2018)**
 - Spread the word about Congressman Dr. Raul Ruiz's political platform and connected members in the community with information and resources for voting.
- **Worship Team member, Our Savior's Palm Springs (2015-2019)**
 - Contributed as a guitarist and vocalist for Sunday worship services and other events.
- **Palm Springs High School (2015-2019)**
 - Latin Club (Events Coordinator), Interact Club (Historian), Choir Council (Secretary)
 - World Affairs Council for America WorldQuest, National Youth Leadership Forum: Medicine 2018, District 5330 Rotary Youth Leadership Awards 2018
 - Madrigal Singers, Concert Choir, Southern California Regional Honor Choir 2018, OPERAtunity Palm Springs Opera Guild, musical production performances (You're a Good Man, Charlie Brown, 2016; Bye Bye Birdie 2018), Carnegie Hall performance with PSHS Concert Choir (2017)

Relevant Coursework

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|-----------------------------------|---------------------------|---------------------------|
| • Cyber Defense & Operations | • Artificial Intelligence | • Discrete Mathematics II |
| • Parallel & Distributed Software | • Data Mining | • Calculus III |
| • Digital Forensics | • Machine Learning | • Differential Equations |
| • Design of Operating Systems | • Statistics | • Small World Networks |
| • Computer Architecture | • Linear Algebra | |
| • Data Structures & Algorithms | • Probability | |