

# Raquel Ana Bush

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🏠 New Bedford, Massachusetts

Computer science BS/MS student graduating in May 2026. NSF Scholarship for Service recipient.

## Education

- **University of Massachusetts Dartmouth** *2023-present*
  - Bachelor of Science - Computer Science, AI concentration, Minor - Mathematics
  - GPA: 4.0
  - Big Data Club (Vice President 2024-2025)
- **Massasoit Community College** *2021-2023*
  - Associate of Science - Computer Science, Mathematics, 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**

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- **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.
- **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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|---------------------------------------|--------------------------|
| • Artificial Intelligence             | • Discrete Mathematics   |
| • Data Mining and Knowledge Discovery | • Calculus III           |
| • Digital Forensics                   | • Linear Algebra         |
| • Design of Operating Systems         | • Differential Equations |
| • Computer Architecture               | • Small World Networks   |
| • Data Structures and Algorithms      | • Probability            |