

# Josephine Burke

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## EDUCATION

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### University College Dublin

*BA in Computer Science with Data Science*

Dublin, Ireland

*Sept 2023 – present*

- Clubs: Lacrosse, Networking Soc, Women in STEM, Sub-Aqua, AI in Medicine.
- Relevant coursework: Computer Programming I & II, Functional Programming, Data Structures, Algorithms, Object-Oriented Programming, Introduction to Computer Architecture, Intro to Operating Systems, Databases and Information Systems I, Statistics with Python, Probability, Data Science in Python, Introduction to AI, Intro to Research and Scientific Communication.

## EXPERIENCE

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### United States Marshals Service Internship

June 2025 – Aug 2025

*Investigative Operations Division — Behavioral Analysis Unit*

- Developed a Python-based investigative dashboard (Dash/Plotly) to automate analysis of complex case folders with thousands of heterogeneous files.
- Implemented file-type summarization, storage usage visualization, and advanced search (exact, case-insensitive, fuzzy).
- Built NLP pipelines (spaCy, regex) to extract entities (names, locations, emails, phone numbers) and integrated geographic visualizations.
- Reduced manual review time by delivering interactive filters, entity network graphs, and geospatial dashboards.
- Continuing to advise the USMS to help integrate and expand on this codebase for future investigative use.

### Quantum Computing Research

July 2022 – Aug 2022

- Designed and ran quantum circuits using IBM's Quantum Platform with Professor Sebastian Deffner (UMBC).
- Presented research on entanglement-assisted invariance to leaders in the quantum field.

## PROJECTS

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**Projects include but are not limited to:**

**Software Engineering — Eclipse, GitHub, GitLab, C** — Developed a C program to dynamically sort and shuffle user-provided songs; collaborated on an interactive Gantt chart tool and a board viewer built with linked lists; applied C unit testing to ensure program reliability.

**Software Engineering II — IntelliJ, GitHub, GitLab, JavaFX** — Led group development of HexOust, a JavaFX-based board game; contributed to planning, architecture design, and successful A-grade implementation.

## TECHNICAL SKILLS

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**Languages:** Java, Python, C, SQL, HTML/CSS, Scheme

**Frameworks & Tools:** Dash, Plotly, dash-cytoscape, spaCy, Git/GitHub/GitLab, VS Code, IntelliJ, Eclipse, Jupyter

**Databases & Search:** MySQL, Elasticsearch

**Testing:** JUnit, CUnit

**NLP & Text Analytics:** spaCy, rapidfuzz, pycountry, country converter

## CERTIFICATES

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**Elasticsearch — Udemy** — Hands-on labs with index design, mappings/analyzers, DSL queries, and aggregations; built Kibana dashboards and ingested data via the Python client.

**Introduction to Artificial Intelligence — The Coding School (TRAIN)** — Implemented foundational ML models (linear regression, decision trees) in Python; examined AI ethics and bias.

**Introduction to Quantum Computing — The Coding School (Qubit by Qubit)** — Built and ran quantum circuits in Qiskit; applied error-correction algorithms on IBM's Quantum Platform.

**Babysitting Basics — American Red Cross** — Completed foundational childcare and safety training.

## ADDITIONAL EXPERIENCE & ACTIVITIES

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**Child Care** — Provided long-term childcare for a family with three young children for 4+ years, including travel to Maine.

**Cybersecurity CTFs** — Ranked in open category at Zero-Days Dublin; competed at University of Galway CTF.

**Ireland Lacrosse** — Represented Ireland in European Championships and She-box Tournament.