

CHARLES HUGHES-FAGAN

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Summary

- Recent graduate from Trinity College Dublin, BA Theoretical Physics.
- 5 years part-time experience in science communication and education
- Excellent interpersonal skills, and trilingual with Irish(C1) and French(B1).
- Leadership experience organizing large engineering and programming camps, oversaw hiring/planning of workshops.
- Experience in full-stack development (PHP/JS/MySQL) and computational physics (Python/C++).

Education

BA Theoretical Physics - Trinity College Dublin

Sep 2020 – May 2024

Honors, 2:1

First class honors: Practical Numerical Solutions, Intro to Numerical Analysis, Capstone Project: “SO(8), Triality, Octonions and Two Exceptional Lie Algebras”.

Upper Second class honors: Differential Geometry, Quantum Field Theory, Quantum Optics & Information.

Final grade: Second Class Honors (First Division).

Societies: Trinity Five-A-Side, Climbing Soc, Physics Society, Theoretical Physics Student Association.

Professional Experience

Life Skills Academy

04/21 –

Head of Tech Skills

Blackrock, Dublin

- Organized week long courses for kids and young teens, with hands-on projects to inspire an interest in engineering and computer science.
- Class sizes were roughly 30 with a total of 8 in a day. (250 children total).
- Designed and gathered materials for 3 projects during the week.
- Project examples: Arduino traffic lights, ‘Hexbug’ robots, buzz wire game.

Inventors Club CLG

06/20 – 06/25

Programming teacher

Sallynoggin, Dublin

- Taught programming lessons in Machine Learning with python, Unity and Javascript.
- Examples: Arduino microcontrollers, Lua for Roblox, C# for Unity game development.

Meat & Bread Cambie St

06/25 –

Sandwich Artist

Vancouver

- I’ve worked as a sandwich artist in Vancouver for 6 months.
- Learned teamwork, efficiency and food handling practices while working with M&B Cambie.

Central Statistics Office

02/22 – 06/22

Census Enumerator

Dublin Central

- Delivered and collected 500 census forms within the strict national deadline.
- Handled sensitive data with care and discretion.
- Responded professionally to refusals, maintained positive interactions with residents.

Technical Skills

Programming: Python, Java, C++, Arduino, Full Stack web (CSS/JS/MySQL)

Language: Irish (C1), French (B1)

Programming Projects

Personal meal tracker | *JS/PHP/MySQL*

- * Using JS fetch API to connect to my database, I calculate my daily intake and compare to my macro goals, food data coming from the USDA database.

Built Texas Hold'em game in Java | *Java: (JFrame for UI)*

- * Wrote the code for a Texas Hold'em game, where the players can bet on their hands until the final round, where the house determines the winner.

Used MCMC method for simulating Potts Model spin field | *C++*

- * Determined the phase transition probability for spins on a 20x20 grid, and determined the fractional magnetization for different temperatures, including the critical temperature, and for different numbers of distinct spins.

Modelling the distribution of energies of molecules in a piston | *Python: (Matplotlib, numpy)*

- * Python program to model particles in a piston, the distribution of velocities tended to the Poisson Distribution after many iterations

References

LSA - Stephen Flood - stephen@lsa.ie

Inventors Club - Spain@inventorsclub.ie

S. Frolov - Bachelor Thesis Supervisor, ref on request.