

# Toby Backstrom

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## EDUCATION

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### University of Sussex

*Bachelor of Science with Honors in Computer Science*

Falmer, East Sussex

*Sep. 2025 – Present*

### Cheshire College South & West

*T Level in Digital Production Design and Development*

Chester, Cheshire

*Sep. 2022 – Aug 2024*

## EXPERIENCE

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### E-Learning Content Developer

*Auxo Consultancy*

April 2024 – Sep 2024

*Chester, Cheshire*

- Developed courses in a diverse range of fields including, software engineering, cybersecurity, engineering, green skills and Environmental Social Governance (ESG)
- Collaborated with a team to make decisions on appropriate materials relevant to course curriculum

### Web Designer & Marketing Assistant

*The Welding Academy*

April 2021 – May 2021

*Chester, Cheshire*

- Helped achieve consistent look and visual theme across the website
- Collaborated with a team to create intuitive interfaces, ensuring improved usability
- Leveraged Google Advertisements and social media platforms to enhance our marketing strategy, ensuring targeted campaigns reached ideal demographics and increased brand engagement

## PROJECTS

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### Real-time Financial News Broadcasting System | C++, TCP Sockets, REST API

- Developed a high performance C++ TCP server and client that fetches real-time financial news from Finnhub and broadcasts it to multiple concurrent clients
- Implemented multi-threaded architecture with proper resource management and thread synchronization primitives
- Integrated Finnhub REST API using libcurl for real-time financial data retrieval and JSON parsing with nlohmann/json
- Built fault-tolerant client connection management with automatic cleanup of disconnected sessions

### Black-Scholes Option Pricer | Python, Flask, REST API, NumPy, SciPy

- Developed a Flask-based web application that calculates call and put option prices using the Black-Scholes model
- Integrated real-time stock price data via the yfinance API to enhance pricing accuracy
- Implemented core financial mathematics including option Greeks using NumPy and SciPy
- Utilized OOP principles to encapsulate financial logic in a clean reusable way

### CHIP-8 emulator | C++, SFML

- Developed a CHIP-8 emulator using C++ and SFML which supports video and input
- Implemented the instruction decode and execute cycle
- Gained experience with emulating hardware architectures
- Gained experience with low-level system programming

## TECHNICAL SKILLS

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**Languages:** C++, Python, HTML/CSS, JavaScript, SQL

**Frameworks:** React, Flask, Node.js, FastAPI

**Developer Tools:** Git, Docker, NeoVim, Linux

**Libraries:** Pandas, NumPy, Matplotlib, PyTorch

**Interests:** Golf, Poker, Reading, Fashion, Fitness, Fishing, Film, Learning Mandarin, Crypto