

# Stuart Ballantyne

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## Education

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**University of St Andrews**, BSc (Hons) in Physics

2018 – PRESENT

- Year four (final)
- Expected graduation June 2022
- Modules include: object-oriented programming (using Java), multivariate and vector calculus, linear algebra, mathematical modelling, electronics, computational physics, signal processing, data mining, transferable skills

**Bathgate Academy**

2012 – 2018

- **Advanced Highers:** Mathematics, Computer Science, and Physics
- **Highers:** Mathematics, Computer Science, Physics, Chemistry, and English

## Experience

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**Canon Medical Research Europe**, Software Engineering Intern

JUNE – AUG 2021

- Prototyped a client-side (web browser based) 2D medical image renderer, comparing performance of renderers built using SDL+WebAssembly, GPU.js, and Cornerstone.js
- Learned TypeScript and gained a better understanding of JavaScript
- Results were presented to the rest of the company at the end of the internship

## Skills

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- **Proficient in:** C++, Python, Lua, Java
- **Familiar with:** TypeScript, JavaScript, Mathematica
- Knowledge of Git, CMake, Meson, WASM, Node.js
- Experience using Windows and Linux for development

## Projects

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**Two-week physics group project: modelling trajectory of golf balls**

- Led a team of five to model the flight path of a golf ball as part of first-year physics coursework
- Quickly learned Python and the NumPy API so I could develop the model
- Model considered effects such as drag, lift, spin, and effect of dimples on the ball trajectory
- Helped format the 2000-word report using LaTeX; wrote about the underlying physics and the approximations used

**Chess engine**

- Created a C++17 chess engine as a pet project
- Improved my knowledge of OOP, data structures, game tree search algorithms, and multithreading

## Other

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- Active member of the St Andrews chess society
- Volunteered and helped 2nd-year Computing Science students during high school
- Volunteered and assisted with running the Lindores Abbey chess tournament