

# CONTACT

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# KEY SKILLS

- Programming game features and systems
- Advanced mathematical toolset
- Object Oriented Programming
- Set up & management of a shared code base (Perforce)
- Innovative, systems thinker
- Team Player

# MATHS

- Chaos and Dynamical Systems
- Coordinate Transformation
- Arbitrary Geometry
- Lagrangian & Hamiltonian Mechanics and Analysis
- Fundamental Algebra
- Applied Mathematics

# LANGUAGES

- C++
- Python
- GD Script

# KEY TOOLS

- Unreal
- Blender
- Godot
- Perforce
- Curl
- Nlohmannjson
- Numpy
- Pandas
- wxwidgets

# SAM ZAKERS

**Gameplay programmer with strong maths and physics skills.**  
**Passionate about gaming and design.**

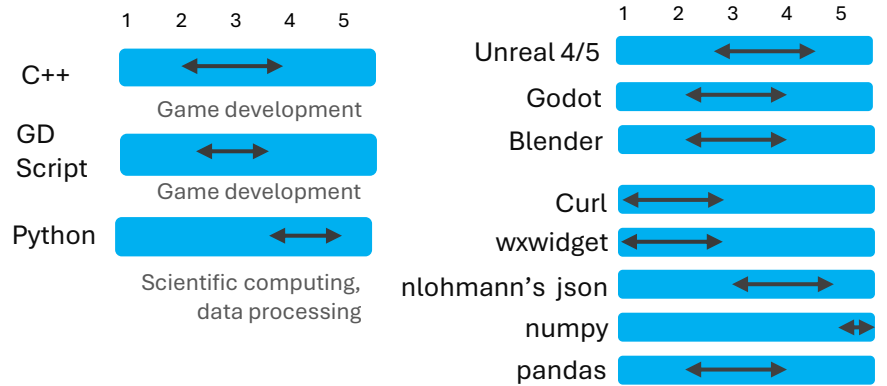
Highly sociable Physics graduate, with electives in advanced theoretical modules such as Chaos, Lagrangian Mechanics and ‘Radiation and Relativity’. A divergent and analytical thinker bringing fresh perspectives. Thrives on understanding complex systems and working in a team to bring together different perspectives, exploring hypotheses and solutions.

## Key Skills and Attributes

- Programming game features and systems
  - Employing theoretical concepts to programming challenges, breaking boundaries and pioneering ambitious gameplay.
  - Deep knowledge of Physics and Maths underpinning approaches to problem solving to produce high-quality solutions to design concepts.
- Advanced mathematical toolset across a range of specialities
  - Physics (Labs) degree combining theoretical based modules and complex abstract concepts with practical applications and skills.
  - Advanced concepts in mathematics, acquired pursuing electives from the theoretical physics course.
  - Ability to sort, manage and analyse large sets of data in extended time series, using Python.
  - Confident in statistical and probabilistic calculations from core modules and regular practical work.
- Object Oriented Programming
  - Capable, self-taught programmer, in line with the innate disciplines required for Physics degree.
- Set up & management of a shared code base (Perforce)
  - Familiar using multiple version control tools.
  - Set up of a shared, version-control server for maintaining game assets, using Perforce.
- Innovative systems thinker
  - Logical mind-set and problem solving
  - Skilled in approaching large inter-related, dynamic, complex problems.
- Team Player
  - Bringing together small agile development teams (scrums)
  - Practiced leader and team player in a variety of settings
    - Working with fellow cadets and as a Non-Commissioned Officer leading a platoon in Combined Cadet Force (CCF)

## Languages and Key Tools – Advanced Beginner to Competent

Self-evaluated proficiencies; the scale 1-5 represents the skills between ‘advanced beginner’ and ‘competent’ levels in line with industry guides.



# EDUCATION

University of Birmingham,  
Bachelor of Physics (Hons)  
09/2020 – 06/2023

Ellesmere College  
09/2011 to 07/2020

A Levels: Physics A\*, Mathematics A, Chemistry A  
Practical Endorsement in Physics & Chemistry, Pass

Additional Qualifications:

- AQA Media Studies; Unit 1 45 D, Unit 2 111 A\*
- AQA Spanish M
- English Speaking Board (ESB) Level 2 'Merit +', Level 3 Certificate in Speech (Grade 8) Distinction
- BTEC Level 2 Extended Diploma in Teamwork and Personal Development in the Community
- ILM Level 3 Award in Leadership and Management
- Extended Project Qualification (EPQ) D
- Award in Personal Finance (APF1) Principles of Money and Money Management Distinction
- 11 GCSEs

Other Achievements:

- Ellesmere College Mark Willis Science Prize 2020 (awarded to the highest average mark across two sciences at A-Level)
- Represented school in rifle shooting including the Ashburton Shield competitions at Bisley National Shooting Centre
- Represented school at inter-school STEM competitions.

*"Sam has put his passion for Physics at the forefront of his learning and has competed successfully in STEM challenges as well as organising work experience to enhance his knowledge. This has given him insight into the science being used to help make a difference in the world."*

Headmaster's Testimonial

# SAM ZAKERS

## PROJECTS



### World Builder

- Collaborative driving game bringing in mapping data to deliver driving and navigating experience across the world's real roads.
- Coded, packaged and launched within local interest group.
- Using Bezier curves, employing interpolation between points to produce a relaxed Bezier curve.
- Innovative use of mapping data and key co-ordinates within a game setting.



### Wizards & Ninjas

- An ambitious VR RPG leveraging the power of Unreal engine and blueprint.
- The game outlined a concept for a kinaesthetic input system where the various positions and orientations of the fingers and hands could be used to control the inputs to the game.
- The game realised the initial outline for a magic spell casting system based on hand signals through the VR hand controllers.
- Demo produced in a small maze setting with roaming enemies.



### Wizard on a Skateboard & Tech Demos

- Run and gun platforming combine with the tricks and versatility of classic skateboarding games bringing a fresh take on the genre.
- Tight controls compliment a scoring system based around speed and flair to provide quick and engaging gameplay.
- Wizard on a skateboard is one of a larger series of demos, designed to explore different genres.

*I have always been curious about the 'whys', behind every 'how'. A Physics degree gave me a strong set of analytical skills... a set of underlying rules that underpin a unique approach to developing solutions...all supported by the fundamental knowledge of advanced maths and physics. Since graduating, I work developing games, across the extent of the development pipeline. I specialise in programming, focusing on gameplay elements. I have a passion for constructing experiences I can share with others. I enjoy working with people and at places that encourage and foster creativity, collaboration and teamwork.*



### Hide and Seek Society

- Founder of the UoB Hide and Seek Society, setting up a collaborative game based on the traditional hide and seek concept within the boundaries of the University.
- Core belief in a self-contained society focussed on creating an environment independent of external factors with a mission solely based on inspiring play and fostering joy.