

*I am an undergraduate experienced mostly with gameplay programming, but I also have an interest in the programming of a complete engine and spend time reading about it. Games are my passion because, as well as being fun to make, they are a beautiful intertwining of my favourite parts of mathematics and programming. URaider is what I am most proud of, as it is extensive in the gameplay systems it provides.*

## TECHNICAL SKILLS

---

**Languages:** C++, C, C#, Java, Python, Haskell  
**Software/Tools:** Unreal Engine 4, Unity, Git, Visual Studio  
**Game Maths:** Linear Algebra: Vectors, Matrices, Quaternions

## EDUCATION

---

**University College London (UCL)** **Bloomsbury, London**

BSc Computer Science Sep 2017 – Jun 2020

- *Achieved a 1<sup>st</sup> overall for year one:*
  - *Principles of Programming: 76%*
  - *Applied Software Development: 77%*
  - *Engineering Challenges: 82%*
  - *Discrete Mathematics: 81%*
  - *Theory I: 61%*
  - *Theory II: 60%*
  - *Robotics Programming: 65%*
  - *Design and Professional Skills: 85%*

### Banbridge Academy

5 A-Levels (Maths, Further Maths, Physics, Software Systems, Biology)

- *A\*A\*AAB; Trophy for top A-Level results; Self-taught Further Maths*

**Banbridge, Northern Ireland**

Sep 2015 – Jun 2017

### St. Patrick's College

10 GCSEs including English and Maths

- *1A\*, 8A, 1B; Top GCSE results award; Top in Maths, IT, LLW and Statistics*

**Banbridge, Northern Ireland**

Sep 2010 – Jun 2015

## WORK EXPERIENCE

---

**UCL Institute of Child Health** **Bloomsbury, London**

– *Programming Intern: Project Fizzyo* *Jun 2018 – Aug 2018*

- Modified and debugged existing codebases for Unity games controlled by breathing apparatus
- Had to make mechanics engaging to encourage adherence to airway clearance
- Met with the patients at Great Ormond Street Children's Hospital and received feedback from them
- Worked alongside MSc students and had SCRUM stand-up meetings with Microsoft engineers

## PERSONAL PROJECTS

---

**Parkour Prototype** *Feb 2019 - Present*

- WIP True first-person free-running game prototype made in UE4 using C++
- Custom state machine with states that can be attached as components for more customisation
- Procedural ledge detection created using trace channels

## **2178: Resistance (Search For A Rising Star 2019)**

*Jan 2019*

- Third person shooter/adventure style game prototype made in Unity with climbing
- Grapple and swinging mechanics created using simple harmonic motion
- Enemy AI patrols based on waypoints with ability to attack player

## **URaider – Tomb Raider Framework**

*Dec 2017 – Present*

- Unity game framework that includes Tomb Raider game mechanics, such as climbing, combat, swimming, crawling, pick-ups, inventory, doors/switches and enemy AI
- Programmed a finite state machine using object-oriented programming techniques
- Implemented accurate ledge grabbing by adjusting jump velocity based on ledge location
- Won Most Promising Upcoming Project and nominated for Project of the Year in Core Design Awards

## **ACADEMIC PROJECTS**

---

### **Virtual Reality Cycling**

*Oct 2018 – Apr 2019*

- Team leader on an Android Unity virtual reality project based around cycling in a customisable environment (track, weather, cycle distance/time)
- Allows users to see their statistics and automatically records them for progress tracking
- Created custom scene editors and inspectors to easily edit track splines
- Planning to connect to a cloud service to store details and maybe bring in multiplayer

### **NHS Video Labelling**

*Jan 2018 – Apr 2018*

- Liaised directly with a client from the NHS to create an Android app that allows the user to record videos, tag them with human emotions, and export the data to train machine learning algorithms
- Was team leader and achieved a 1<sup>st</sup> overall in this module

### **Arduino Platformer**

*Nov 2017*

- Python 2D platforming game that takes input from buttons and an LDR on an Arduino
- Added an online leader board using Microsoft Azure

## **ACTIVITIES & HOBBIES**

---

**Hackathons:** UCL PixelJam Gaming (2017), Search for a Rising Star (2019)

**School:** UCL Technology Society (2017 – Present), School Prefect (2016 – 2017), GCSE Python Tutor (2016)

**Favourite Games:** Tomb Raider, Mass Effect, Assassin's Creed, Mirror's Edge, Hitman