

# Oisín Carroll

SOFTWARE ENGINEER · MACHINE LEARNING SPECIALIST

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## Summary

A CS masters graduand from Trinity College Dublin, specializing in neural networks & machine learning. Having taught himself programming at an early age, he's spent the last 10 years working on projects ranging from AI to esolangs to game development. Loves nothing more than being challenged and learning new things, and isn't afraid to work hard to get there.

When he's not at a computer, enjoys juggling (especially passing patterns), table tennis, home-brewing, and trying to draw.

## Skills

<b>Languages</b>	<b>Very Good:</b> C#, C++, Python, C. <b>Good:</b> Rust, Java, Prolog, Haskell, Javascript. <b>Basic:</b> Lua, Lisp, Objective-C, MATLAB, LaTeX.
<b>Machine Learning</b>	<b>Good:</b> Tensorflow, Keras, Scikit-Learn, Jupyter/IPython Notebooks, Docker (for training/ deployment), OpenCV. <b>Basic:</b> OpenAi-Gym/Universe, DLib.
<b>Web Development</b>	<b>Good:</b> ASP.NET, Python-Flask, Bootstrap. <b>Basic:</b> HTML5-Canvas, Node.js, React
<b>Other</b>	<b>Very Good:</b> Algorithms & Data Structures, OOP Patterns, <b>Good:</b> Source Control/Git, Functional Programming, Computer Graphics & Shaders, Parallel Programming/Algorithms.

## Work Experience

### AlanJames Burns

Dublin, Ireland

GAME DEVELOPER & EFFECTS ARTIST

Aug. 2019 - Nov. 2019

- Developed special effects for a VR exhibit with artist AlanJames burns.
- Worked within a team of 5, consisting of 3 artists and another programmer.
- Created interactive morphing experiences using an experimental/unusual rendering technique; raymarching.

### Syze.ai

Dublin, Ireland

COFOUNDER & CTO

Jun. 2017 - Jul. 2019

- Worked on a smartphone app that allows users to take their measurements with the goal of reducing returns for online clothing retailers.
- Developed an algorithm that can, given 2 photos of a person — front and side — reconstruct a 3D mesh of them with all measurements +-2cm. This works well even if they're not wearing tight fitting clothing.
- Lead the team of 2 remote researchers.
- Pitched on behalf of the company, including to potential clients such as the Arcadia group and eShakti.com
- Co-wrote funding proposals which netted Syze.ai over 320k in Enterprise Ireland funding.

### Virtual Access

Dublin, Ireland

SOFTWARE DEVELOPER

Jun. 2016 - Jun. 2017

- Developed a configuration system for routers, primarily focusing on the the front end UI.
- Worked in a team of 3 to replace the legacy system that was becoming costly to maintain.
- Built the front end, using C#, ASP.NET, jQuery, and Bootstrap.
- Optimized the loading of the config data, speeding up the program's launch by 20-30x.
- Built on the system which validates the data both upon load and upon change from the client.
- I interned over the summer, then continued to work part time over the following year while in college.

## Honours & Awards

### PROGRAMMING COMPETITIONS

2018	<b>86th (/4800+ teams) (1st in Ireland)</b> , Google Hashcode, this year was to create routes for self-driving taxis.	Worldwide
2017	<b>3rd Place</b> , Huawei 3xD Coding Challenge, challenge to build AI for social good.	Dublin, Ireland
2016	<b>Finalist, Top-8</b> , Man AHL Coder Prize, build an AI to play a board-game called Hexplode.	London, UK
2015&6	<b>Winner</b> , 1st in Ireland both years in UKIEPC, an algorithmic programming competition.	Dublin, Ireland

### OTHER

2017 **Trinity Foundation Scholarship**, The highest category of scholar awarded, given to the top 7-10 students across all fields and courses in the college each year for excellence in a set of optional exams. This affords free accommodation and waved fees during the student's time in college. *Dublin, Ireland*

2017 **ARUP Innovation Award**, Received the award for 'Bamboocherie', a project which developed a sustainable and cheap way of treating bamboo for use in building projects in Nepal. Used old bicycle inner tubes, pop bottles, and tubing to create a system capable of chemically treating bamboo, increasing it's lifespan by 3-5 times and it's strength 10-15%. *Dublin, Ireland*

## Education

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### SCHOOL

#### Trinity College, School of Computer Science

*Dublin, Ireland*

##### COMPUTER ENGINEERING

2015 - 2020

- Awaiting honours graduation of an integrated masters course, with an 81% final grade.
- Studied computer vision, graphics, and deep learning, as well as math modules covering vector spaces, projection and advanced calculus.
- Final year dissertation is currently in review for publication at CIKM, and proposes a new method for creating finite-group equivariant neural networks.

#### St. Conleth's College

*Dublin, Ireland*

##### SECONDARY SCHOOL

2009 - 2015

- Received 530 points in the leaving cert (high school final exams), including an A+ in both Mathematics and Applied Mathematics.

### SELF STUDY - ONLINE COURSES

2017 **Machine Learning**, Andrew Ng, Stanford University

2014 **Intro to AI**, Pieter Abbeel, UC Berkeley

### SELF STUDY - BOOKS

2019 **Understanding Machine Learning: From Theory to Algorithms**, Shai Shalev-Shwartz and Shai Ben-David

2018 **Catagory Theory for Programmers**, Bartosz Milewski

2018 **The Deep Learning Book**, Ian Goodfellow, Yoshua Bengio, and Aaron Courville

2017 **Learn Prolog Now!**, Patrick Blackburn, Johan Bos, and Kristina Striegnitz

2016 **Learn you a Haskell!**, Miran Lipovaca

## Extracurricular Projects

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2019-Now **imois.in**, A page where I post about some of my miscellaneous small maths and programming projects.

2019-Now **CNP>=5**, Replicating much of the research ongoing on the Hadwinger-Nelson maths problem in fast, safe python code.

2016-Now **Open Source**, Contributing to several open source projects, including Spacemacs (emacs distribution) and the Godot game engine.

2016-Now **Is the Lizard a Wizard?**, A puzzle game centered around a procedurally animated lizard moving over 2d and 3d geometry. Puzzles are based on M.C. Escher drawings and other isometric illusions. C#, Unity, Later: Godot, Currently: A custom engine.

2018 **Fake News**, Facebook plugin which flags articles which are likely to be poor quality journalism based on the way these articles attempt to incite a reaction from their users (NLP, machine learning). Tensorflow, webkit.

2017 **BrainFast**, One of the fastest interpreters for the BrainF\*ck esolang. An experiment in trying to write very optimized code. C++.

2016-Now **Project Euler**, Solved over a hundred of the online maths/ programming puzzles at projecteuler.net. Haskell, Math.

2014 **Knights of the Round**, A pixel art clone of the Risk board game for IOS. Featuring procedurally generated islands and AI. Java, LibGDX.

2011 **Siteswapper**, My first app, a juggling pattern visualiser and generator for IOS. Allows the user to type in patterns using juggling notation 'siteswap', and then see and toy around with different throws. Obj-c, cocos2d.