

# Cathal Breathnach

ELECTRONIC & COMPUTER ENGINEERING GRADUATE

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A high achieving and innovative Electronic and Computer Engineering graduate. Currently working on the Data Science Team in the Genesys AI Group. Well organised with a strong attention to detail and the ability to solve complex problems as part of a team. Has the ability to learn quickly and efficiently to a high performance level. Interested in applying experience gained to solving relevant real-world problems by implementing innovative engineering approaches. A particular interest in designing practical solutions using artificial intelligence and next-generation technologies.

## Education

### National University of Ireland, Galway

Galway, Ireland

BACHELOR OF ENGINEERING (ELECTRONIC & COMPUTER)

2014 - PRESENT

- Studied a wide variety of hardware and software modules.
- Overall Final Year Result: 84.21%, First Class Honours.
- Overall Third Year Result: 86.20%, First Class Honours
- Overall Second Year Result: 88.58%, First Class Honours
- Overall First Year Result: 89.90%, First Class Honours

### National University of Ireland, Galway

Galway, Ireland

BACHELOR OF SCIENCE (FIRST YEAR ONLY)

2013 - 2014

- Overall First Year Result: 95.75%, First Class Honours.
- Subjects Studied: Mathematics, Physics, Chemistry, Applied Mathematics.

### St. Joseph's College "The Bish"

Galway, Ireland

LEAVING CERTIFICATE

2008 - 2013

- Overall result: 625 points (Maximum points).
- Subjects Studied: English, Irish, Mathematics, French, Physics, Chemistry, Applied Mathematics.

## Projects

### Advanced Techniques for Particle Swarm Optimisation

FINAL YEAR PROJECT

- Analysed and researched variations of an evolutionary algorithm to implement new variants.
- Developed a Java simulator for comprehensive testing and the collection of large amounts of data.
- Analysed results to determine statistical improvements in performance.

### Logistic Regression Algorithm Implementation

MACHINE LEARNING ASSIGNMENT PROJECT

- Developed the logistic regression algorithm from scratch using Java, implemented for the user with a GUI interface.

### Bluetooth-Enabled Electro-mechanical Xylophone using Arduino

SECOND YEAR MICROPROCESSORS SYSTEMS ENGINEERING PROJECT

- The creation of an electronic xylophone wirelessly controlled by a user worn glove. Featured record and playback functionality.

## Experience

### Genesys AI Group

Galway, Ireland

ASSOCIATE SOFTWARE ENGINEER

July 2018 - PRESENT

- Member of the Data Science Group.

### Aerogen

Galway, Ireland

ELECTRONIC & COMPUTER ENGINEERING INTERN

January 2017 - August 2017

- Student role in an the electronics R&D department.
- Responsible for product testing, analysing and collecting results for reports.
- Programmed micro-controllers and monitored power consumption over various tests.
- Created a C# GUI to interact with a micro-controller device from a tablet. Investigated different .NET libraries available for use.

## National University of Ireland, Galway

Galway, Ireland

### STUDENT AMBASSADOR

2014 - 2018

- Lead ambassador role, helping with organisation of other ambassadors and of events.
- Representing and promoting the university, interacting with prospective students and academic guests.

## NUIG Mountaineering Club

Galway, Ireland

### CLUB CAPTAIN, MAAMTURKS CHALLENGE CHAIRPERSON, COMMITTEE ADVISOR

2014 - PRESENT

- Captain of the club for 2014-2015. Overseeing the entire running of the largest university club.
- Involved with the organisation of the Maamturks Challenge since 2013, one of Ireland's largest hillwalking events.
- Advisor to the club committee for 2017-2018.

## 1st Galway St. Joseph's Scout Group

Galway, Ireland

### SCOUT LEADER, ROVER SCOUT

2014 - PRESENT

- Assisting in planning and implementing an exciting and safe programme for children aged 12-15.
- A member of the national team for the Irish Rover Network for third level groups from 2015 - 2017.

## NUIG Rover Society

Galway, Ireland

### AUDITOR, TREASURER, FOUNDING MEMBER, PROJECT MANAGER

2014 - 2017

- Treasurer of the university Scout society for 2014 - 2015. Auditor for 2015-2016, overseeing all aspects of the society.
- Team Lead for the organisation a national inter-varsity event in 2017, named best national Rover event for that year.

## National University of Ireland, Galway

Galway, Ireland

### CÉIM LEADER

2015 - 2016

- Leader for a peer-assisted learning (PAL or PASS) scheme run for first year engineering students.

## River Deep Mountain High

Galway, Ireland

### SALES ASSISTANT

Summer 2015, 2016

## Achievements

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- 2018 **David Gilmore Memorial Award**, NUI Galway & ExOrdo. Highest mark in graduating class.
- 2018 **University Scholar**, NUI Galway. Awarded for high results. Also awarded in 2017, 2016, 2015.
- 2015 **Club Captain of the Year**, NUI Galway. Chosen amongst all captains from over 50 clubs.
- 2013 **Entrance Scholar**, NUI Galway. Awarded based upon Leaving Certificate results.
- 2013 **Brother Angelus Award - Student of the Year for Academic Endeavor**, St. Joseph's College.
- 2012 **Chief Scout Award**, Scouting Ireland. One of the highest awards attainable for youth members.

## Skills

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**Java:** Most familiar language. Have studied many aspects, including object-oriented traits and GUIs. Experience with Android.

**Python:** Have a working knowledge. Have used the Scikit-learn libraries for machine learning on various data sets.

**Embedded Systems:** Have studied systems and processor architecture. Written C code for Microchip and Arduino MCUs.

**Chip Design:** Have studied chip processes and have knowledge of VHDL and simulation environments for analysing systems.

**Electronics:** Good knowledge of analogue and digital electronics, electromagnetics, signals and communication systems.

**Web Technology:** Have knowledge of HTML & CSS, SQL and other CMS systems. Also have experience with JSON databases.

**Applications:** Experience using MATLAB, LabView, LabWindows, Microsoft Office applications and LaTeX document editors.

**Teamwork:** Have worked on collaborative projects in a professional context, through university and through other past-times.

**Communication:** Excellent oral and written communication skills.

**Problem Solving:** Have a proven ability to take a structured and logical approach to problems.

**Leadership:** A determined leader. Able to manage people and their abilities effectively.

**Languages:** Have a conversational standard of French and Irish.

## Hobbies & Interests

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**Technology:** Self taught programming for different applications. Websites and app development.

**Mountaineering:** A regular hiker and climber. Have travelled extensively in Ireland and abroad.

**Running:** Have been running for a number of years, have taken part in several events.

**Scouting:** Have been involved in the Scout movement since the age of 11. An active member.

**Music:** Have played the piano for over 8 years to Grade 7 level.