



RONAN MURPHY

ARTIFICIAL INTELLIGENCE ENGINEER

WORK EXPERIENCE

RESEARCH ASSISTANT FOR COMPUTER VISION PROJECT

National University of Ireland Galway | October 2020-Present

- ALIVE (Autonomous Lifeguard and Vision Environment) project Lead
- Detecting people in open water using Computer Vision to aid Search and Rescue operations for urban and coastal incidents
- Trained models to a high accuracy which record in Real-Time, providing feedback to the emergency services through a Web application
- Entrepreneurship skills used for management, presentation, and innovation

WEBSITE AND MOBILE APP DEVELOPER

Information Solutions & Services, NUIG | September 2019-September 2020

- Worked Part-Time (20-hour/week) during my Master's Degree
- Projects to develop the NUIG Website and Mobile Application
- Design, Manipulation and enhancements to improve the NUIG APP for Students, Staff and Visitors
- Added Interactive Bus information, Mapped College Buildings and Rooms, user feedback feature, staff searching
- Modifications to conform with European Accessibility AAA guidelines for website and documents
- Presentation, Graphics, Programming in HTML/CSS, and Time-management skills obtained

CO-FOUNDER, WEB DEVELOPER, SALES AND DIGITAL MARKETING

Altus Trading Academy LTD | April 2019-January 2020

- My colleague and I founded a Limited Company which provided a training platform to educate and assist clients to trade on the foreign exchange markets
- Setup Affiliation with broker BDSWISS, who paid us monthly commission for new members
- Designed website and Instagram page which we channel our digital marketing campaign
- Trading Analysis, Sales, Digital Marketing, Web Design, Customer Support, and Management skills
- Net income over €60,000 in the first three months of business
- Left the company to focus on my Master's Degree; Website and Instagram URLs in Appendix

CLOUD SUPPORT ENGINEER

SAP Ireland | January 2018-August 2018

- Eight-month placement as part of my undergraduate degree
- Resolved customer service issues of our SAP products
- High communication, clarity, and time efficiency skills to reach customer SLA contracts
- Debugged problems in XML and created Knowledge-Based Articles and JIRA tickets for new issues

ACADEMIC BACKGROUND

(Full list of academic results and achievements can be accessed on my website)

NATIONAL UNIVERSITY OF IRELAND GALWAY

Masters of Computer Science in Artificial Intelligence (2019-2020)

- Graduated with a First Class Honors in 2020 (Maximum Grade possible)
 - Top 2 Percentile rank in the course for five modules:
 - Machine Learning and Data Mining, AI Ethics, Reinforcement Learning, Advanced NLP, and Research Topics
 - Research Project on Knowledge Graph Embeddings to implement Explainable AI
- This project and thesis received at First-Class Honours

Bachelor of Engineering in Electronic and Computing (2015-2019)

- Graduated with a First Class Honors in 2019 (Maximum Grade possible)
- Awarded scholarship to pursue a Postgraduate degree based on academic achievements
- Researched and created a system to Detect and Analyse the Subconcussive Effects of Heading a Football for my Final Year Thesis. This project received a First-Class Honours.
- Sports Scholarship for excellence in Waterpolo
- Class Representative for 250 Engineering Students in First Year

Diploma of French Language and Cultural Studies (2015-2017)

- Graduated with a Second Class Honors in 2017
- Studied Course Part-time during, but separate to, my Undergraduate Degree
- Achieved CEFR C1 fluency

PROFILE SUMMARY

An experienced Software Engineer specialising in AI, having worked in both Research and Industry roles. Passion for Computer Vision and NLP technologies. After completion of BE in Computer Engineering with first-class honours, awarded a Scholarship to pursue a MSc in AI at NUIG (1.1 obtained also). Currently looking for a position which can have a powerful and positive impact on society through the implementation of AI software.

PERSONAL INFO

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LinkedIn

www.linkedin.com/in/ronanmmurphy

GitHub

https://github.com/ronanmmurphy

ORCID

https://orcid.org/0000-0002-5433-006X

PROGRAMMING LANGUAGES (PROFICIENT)

Python

Java

HTML/CSS

R

C

MATLAB

PROGRAMMING LANGUAGES (FAMILIAR)

C++

Javascript

Bash/PowerShell/Unix Shell

UNITY

Assembly Language

AI EXPERTISE

Machine Learning:

Computer Vision, NLP, RL, Deep Learning, Data Mining in Python & Java

AI Tools:

TensorFlow, Keras, Spark, PyTorch

Data Analytics:

Large-scale data streaming and manipulation pipelines (Apache)

Databases & Cloud Services:

AWS, MySQL, Django

Agile Development:

Java and Python Repositories with GitHub and Shippable

Design and Visualisation:

Data Visualisation through R, Modelling with AutoCAD, SolidWorks and Venism

SKILLS

Problem Solving



Communication Skills



Collaboration



Time Management



Initiative



Meticulous



REFERENCES

Dr. Enda Barrett

Senior Lecturer in Computer Science at NUI Galway

Coordinator of ALiVE project
enda.barrett@nuigalway.ie

Evan Ryder

WWW Technologist at NUI Galway
Manger at ISS NUIG
evan.ryder@nuigalway.ie

APPENDIX:

Altus Trading Academy

Website

www.altustradingacademy.wordpress.com

Instagram

www.instagram.com/altustrading

ST. JOSEPH'S PATRICIAN COLLEGE (THE BISH)

Secondary School (2010-2015)

- Achieved 540 points (625 maximum) graduating with Leaving Certificate
- Physics - A1; DCG - A2; Maths – B1; Applied Maths - B1; Music - B2; French - B3
- Design and Communication Graphics (DCG) award for top 10 projects in the region
Received a certificate of excellence for achieving 158/160 marks with my 'Flower Torch' project
- Competed for Mathematics Team who won the Regional Championship
- Captained the School Waterpolo Team to 2nd place in National Schools Competition

PROJECT WORK

KNOWLEDGE GRAPH EMBEDDINGS TO IMPLEMENT EXPLAINABLE AI

- Researched Knowledge Graphs and their representation as low dimensional Embeddings for Master's Thesis
- Trained and compared multiple Knowledge Graph Embedded models to a high prediction accuracy
- Applications of Link Prediction and Explainability to improve understanding of COVID19 dataset
- Worked with Genesys (AI Customer Experience Company) in the research and implementation of this project

REAL-TIME EVENT DETECTION FOR VIDEO STREAMS

- Designed and implemented Computer Vision pipeline for video stream object detection and classification
- Real-Time classifier used YOLO, MobileNet, and OpenCV to detect cars and classify their type and colour
- F1 Scores of 94%, 85%, and 90% for the detection of cars, classification of their type and colour respectively

NEURAL NETWORK FROM SCRATCH TO IMPLEMENT IMAGE RECGONITION

- Created Feed-Forward Neural Network with Back-Propagation and Gradient Descent without Python libraries
- Model tested 93% classification accuracy when differentiating between frog and deer RGB images

NEURAL MACHINE TRANSLATION WITH ATTENTION

- Developed Neural Machine Translation model with Attention to translate text from English to French
- SequencetoSequence model with transfer learning GloVe embeddings; 89% accuracy with BLEU metrics

IRONY AND SARCASM DETECTION

- Trained Log Regression and RNN to detect Ironic and Sarcastic Tweets
- Preprocessed the tweets with word vectorisation and trained and tested sequential model to 90% accuracy

MICRO-SERVICE PIPELINE WITH REAL-TIME FEEDBACK

- Created Micro-Services pipeline to process traffic and crash information for Real-Time feedback for NYC taxis
- Scalable system which followed service-oriented design principles implemented over ActiveMQ
- Provided updates for busiest locations, peak times, accidents, taxi trip frequency through Tumbling Windows

REINFORCEMENT LEARNING Q-LEARNING ALGORITHM

- Implemented Q-learning algorithm to solve deterministic FrozenLake 'grid world' problem
- From my defined policy Agent could optimally navigate through the grid, balancing exploration and exploitation

FOOTBALL HEADING TRAINING PLATFORM

- Detect the forces involved in the sub-concussive event of heading a football
- Created two circuits controlled by Arduino Microprocessors which recorded and transmitted the readings of FSRs and Accelerometers via Bluetooth to a Mobile Application
- Created a Mobile Application with Android Studios to receive and store the data received
- Trained a Time-series LSTM model to classify heading events with an accuracy of 80%

DOCUMENT AND WEBSITE ACCESSIBILITY

- Made changes to the CMS platform for NUIG's Website to adhere to EU Accessibility guidelines
- Used HTML and CSS to make necessary to web pages; for example Background Contrast, and adding Alt text
- Designed and presented a series of YouTube videos to help content creators understand and solve issues
Videos: <https://www.youtube.com/watch?v=FOPW2JSwvDE&list=PLTfeKywIRqAsmw70hkIMfrPc1FSkYRWt5>

INTERESTS

VOLUNTEERING

- Chairman of the Waterpolo Club at NUIG - Weekly Coaching, Meetings, and Organisation of Varsity Events
- Volunteered at CoderDojo - Teaching Children Computer Programming
- Pope John Paul Bronze Award for Community and Parish Service - Homeless and Elderly Charities

WATERPOLO

- Intervarsity Irish Team - Bronze in Celtic Nations Tournament Edinburgh 2018 and Cardiff 2019
- Corrib Galway - Senior Men's All-Ireland Winners 2018; Captained U19, U16, and U14 Teams to Gold Medals
- Irish U17 Team - 1st at Inter-Regionals in Manchester, 3rd in Copenhagen at the North-Sea Cup, and played at European B Championships in Malta 2015.

MUSIC

- Proficient Guitar, Bass Guitar, Piano, and Trumpet player
- Former member of Galway Youth Jazz Orchestra which Performed Live Shows around Ireland

TUTORING

- Tutored several University and Secondary School Students in Mathematics, Computer Programming, Physics
- Created Individualised Lesson Plans to Accommodate for each Student's Ability in the Subject
- Current Supervisor of a Student in Specialised Diploma for Automation Control Project