Dr. Cathaoir Agnew

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SUMMARY

Ph.D. in Artificial Intelligence & Machine Learning, specializing in Computer Vision, with hands-on experience in developing real-world AI solutions. Throughout my 3-year Ph.D., I contributed significantly in launching two AI products in collaboration with an industry partner, from conception to deployment, while also publishing six peer-reviewed articles (four as first author). Skilled in translating academic insights into practical applications, utilising advanced deep learning techniques to solve complex business problems. Passionate about driving innovation and eager to contribute to high-impact AI projects while continuously expanding my technical expertise.

EXPERIENCE

Computer Vision Researcher

University of Limerick **September 2021 - Present，Limerick, Ireland**

- Conducted extensive research on the impact of ground truth annotation quality on computer vision performance, resulting in significant insights published in scholarly journals.
- Mentored and supervised summer interns, enhancing their understanding of machine learning principles while fostering a collaborative and supportive research environment.
- Delivered comprehensive instruction on machine learning and deep learning principles, managed computer laboratories and virtual learning platforms and assisted students in identifying and resolving coding issues.
- Published and co-authored six peer-reviewed publications during my PhD, contributing to the academic knowledge base in the field.

Computer Vision Engineer

University of Limerick **September 2021 - September 2023，Limerick, Ireland**

- Collaborated with an industry partner as part of my PhD to conceptualise and develop their first AI system, Vision AI, which automated previously manual processes in container overfill and contamination detection.
- Worked closely with multidisciplinary teams to define data requirements and align project goals, ensuring clear communication to meet their needs and expectations throughout the process.
- Trained and deployed the models on Azure Machine Learning Studio, facilitating cloud-based solutions for model deployment and production.
- Achieved 80% mean Average Precision (mAP) on automated overfill container detection and 40% mAP on contamination detection - results published in peer-reviewed journals.
- Applied and researched cutting-edge computer vision techniques to optimise performance, ensuring the final product met both the industry partner's operational needs and quality standards.

Data Scientist

Fiserv **July 2021 - September 2021，Tipperary, Ireland**

- Analysed financial transaction data using SQL to identify key trends and insights, optimising transaction acceptance rates.
- Developed interactive Tableau dashboards to visualise findings and communicate results to business stakeholders, enabling data-driven decision-making.

SKILLS

Core Skills: Python, Deep Learning, Computer Vision, Statistical Analysis, Mathematics, Artificial Intelligence & Machine Learning, Neural Networks, Research & Development, Supervised Learning, Unsupervised Learning, Semi-Supervised Learning, Self-Supervised Learning

Libraries & Tools: PyTorch, Keras, Scikit-Learn, OpenCV, NumPy, Pandas, Matplotlib, SciPy, MMDetection, OpenMMLab, Open3D, Git, AWS

Techniques: Image Classification, Object Detection, Instance Segmentation, Semantic Segmentation, Feature Engineering, Transfer Learning, Object Tracking, Data Augmentation, Convolution Neural Networks, Transformers, AutoEncoders, GANs, Diffusion Models, Siamese Neural Networks

Soft Skills: Analytical Thinking, Problem-Solving, Collaboration, Continuous Learning, Communication, Project Management, Cross-Functional Teamwork

PROJECTS

- A collection of my research and side projects can be found on my website.

EDUCATION

Ph.D. in Artificial Intelligence & Machine Learning

Minor in Computer Vision • University of Limerick • Ireland • 2024

- Thesis: The Effect of Annotation Quality on Computer Vision in Efficient Waste Management
- Published and co-authored 6 peer-reviewed articles on Computer Vision

MSc. in Artificial Intelligence & Machine Learning

University of Limerick • Ireland • 2021

- Thesis: An Investigation into the Timed Up and Go Test Using Inertial Measurements with a Machine Learning Approach

BSc. in Financial Mathematics

University of Limerick • Ireland • 2020

- Thesis: Double Trouble? A Statistical Analysis of Child and Parental Outcomes Comparing Singletons to Non-Singletons