Thomas Joyce

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Related Links: GitHub
Programming Languages: Python, Java, JavaScript, HTML, CSS, SQL
Frameworks: Flask, React**,** Tensorflow, PyTorch, scikit-learn, NumPy, pandas
Technologies: Git, AWS, Vercel, PostgreSQL, Docker

EDUCATION

University of Limerick **September 2023-Current**

- BS Immersive Software Engineering

WORK EXPERIENCE

Amazon **September 2024 - December 2024**

SDE Intern for Cloudwatch Predictions Anomaly Detection Dublin

- Developed a prototype Random Cut Forest model for anomaly detection
- Implemented Java-Python interoperability, grid-search cross validation and hyperparameter tuning of the ML model, achieving a high F1 score while working in an Agile environment
- Integrated Random Forest model into OpsTool Simulation framework, enabling stored S3 data to be replayed for anomaly detection and comparison with other detection algorithms currently used in production
- Collaborated with data science team, used pyextremes library (Extreme Value Theory) to refine model performance and identify rare events for alarming effectively

BD (Becton Dickinson) **June 2024 - August 2024**

SDE Intern Limerick

- Built a React-based Internal Developer Portal with a suite of inbuilt tools to streamline development workflows
- Designed and implemented a FastAPI & Python backend, enabling efficient and scalable API interactions
- Resolved multiple high-priority bugs to enhance the porting and refactoring of the previous website from Bootstrap
- Led front-end development of the Cheers for Peers platform using TailwindCSS
- Worked on a full CI/CD pipeline using Docker, ensuring seamless automated deployments

European Space Agency **March 2025**

Life Support Systems Solutions from Space for Earth Training Course ESEC-Galaxia, Belgium

- Learned about Closed-Loop Environmental Control and Life Support Systems
- Conducted market research, created simulations and researched the applications of Microbial Fuel Cells, pitching a startup venture

SensEye startup | Website **November 2024- April 2025**

Co-founder of Healthcare Startup Limerick

- Created Javascript website with Google sign-in, ORM database, digitised Snellen charts, fundal image disease identification via Tensorflow AI model, hosted on Vercel
- National winner of Inspire Impact Innovation Impact competition hosted by Trinity College Dublin and Queens University Belfast
- National finalist in the Hult Prize, May 2025
- Representing Ireland in the Grand Global Health Innovation Competition in the University of Illinois, April 2025
- Prizewinner University of Limerick Student Entrepreneur of The Year

PROJECTS

Eye Disease Detection AI Model | Github Code | (Pytorch, Pandas) **2025**

- Created an eye disease detection model using Google Research's Vision Transformer for feature extraction and classification
- Applied SHAP to enhance model interpretability by visualizing feature importance
- Achieved >86% precision, recall, and F1 score, identifying diabetic retinopathy, cataracts and glaucoma

Full-stack Metric Monitoring Dashboard| Github Code | (Flask, Pythonanywhere) **2025**

- Developed a full-stack application to monitor local system metrics with psutil which displays real-time data
- Designed and implemented a Python-based local collector to fetch and publish system metrics to PythonAnywhere cloud storage
- Built a SQL database to store historical data, enabling trend analysis
- Developed a responsive front-end UI using JavaScript and Flask, allowing users to visualise both live and historical system metrics