Kevin **Leahy**

Data Scientist

Limerick, IRELAND

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Summary

Data Scientist with doctoral degree and former Fulbright Scholar with over 5 years' experience distilling complex problems into data-driven insights and value-driven solutions. Expert in a broad spectrum of predictive modelling and machine learning techniques. A clear and effective communicator driven towards positive impact.

Skills

Technical Skills	Machine Learning, Data Cleaning, Data Visualisation, Research, APIs, Probability/Statistics, Deep Learning, Web Scraping, Data ETL
Tools	Python, sklearn, Pandas, matplotlib, jupyter, NumPy, ImbLearn, SQL, TensorFlow, Microsoft Azure, Git, Command Line
Languages	English, Spanish (high level), Irish (conversational), French (conversational)
Familiarity With	R, Matlab, Node.js, AWS, Javascript, HTML, CSS

Education

PhD | Fulbright Scholarship — *Cork, IRELAND | Berkeley, CA, USA*

University College Cork | University Of California, Berkeley — *Apr 2014 - Nov 2018*

Thesis: Applying machine learning techniques to predict faults on wind turbines using noisy SCADA data

- Successfully delivered a comprehensive research project, from problem formulation and conception to on-time completion
- Built a system which successfully predicted and diagnosed wind turbine faults hours before they occurred
- Full python data science stack: scikit-learn, pandas, numpy, matplotlib, jupyter notebooks and more
- Included classification (with highly imbalanced classes), regression and clustering problems with time-series data and novel ways of validating model performance
- Created the WTPHM python package for cleaning and processing disparate datasets to label training data (available on GitHub)

Other PhD Experience

- Extensive journal publication history with more than 300 google scholar citations
- Collaborated with colleagues on topics including Industrial big data pipelines and a machine-learning based energy measurement and verification solution utilising AWS
- Presented at 5 major international conferences for both technical and non-technical audiences, including the flagship WindEurope industry conference
- Designed and taught data science python labs to undergraduate students
- Advised a team of masters students in UC Berkeley and liaised with a number of different outside stakeholders in designing and building a low auditory and environmental impact wind energy device

BEng. Energy Engineering — *Cork, IRELAND*

University College Cork — *Sep 2009 - May 2013*

- Final year project was a front and back end solution for tracking energy project savings, using Ruby on Rails, HTML, CSS, SQL and jQuery, received highest result in class

Relevant Work Experience

Data Science Consultant — *Remote*

Self-Employed — *Nov 2018 - Mar 2020*

- Initially full-time and then part-time whilst travelling (from Mar 2019)
- Built continuous relationships with clients who returned to me for multiple projects, based on consistent feedback that I was a clear communicator who intuitively understood their business needs

Project - AllSquare Energy Ltd, OK, USA (Nov 2018-Mar 2019)

- Developed a python library for scraping, cleaning and processing publicly available natural resource data, fully documented for client handover
- Extensive use of regex to clean data read through OCR with version control through Git
- Final solution was deployed as a Function App on Azure, using efficient queries to Azure SQL databases and interacting with blob storage

Data Analyst *Cork, IRELAND*

ENERGY ANALYTICS LTD. *Nov 2016 - Nov 2018*

- Provided consulting services and gave best practice recommendations for various energy-related activities across pharmaceutical and manufacturing industries as part of EA consultancy team
- Audited facilities and prepared internal and client-facing reports for major multinational and blue chip companies outlining data sources and best practices for managing energy data and driving savings
- Applied regression and time-series techniques to model and verify energy savings for verification purposes on behalf of the Sustainable Energy Authority of Ireland, personally verifying over €1M and 60GWh in savings

Research Engineer *Cork, IRELAND*

INTELLIGENT EFFICIENCY RESEARCH GROUP, UNIVERSITY COLLEGE CORK *Aug 2013 - Apr 2014*

- Liaised with a wide cross-section of data owners at manufacturing facilities of major multinationals to build "data harmonisation" plans
- All data sources on sites were audited with a view to creating a central data warehouse, from large SQL production DBs to localised excel files used by operators
- Audited sites to ensure current energy management best practices and worked with energy managers for implementation plans

DePuy Synthes *Ringaskiddy, Cork, IRELAND*

ENERGY ENGINEER INTERN *Apr 2012 - Sep 2012*

- Identified and implemented energy savings opportunities in a large manufacturing plant as part of the energy management team
- Ensured compliancy with and prepared plant for audit of ISO50001 energy management standard
- Developed an energy projects management & savings tracker tool using VBA

Achievements/Certifications

2018	**Editor's Choice Award**, Lead Author on Winning Paper in the Energies Journal	*Cork, IRELAND*
2018	**Invited Speaker & Committee Member**, Wind Energy Big Data and IOT Conference	*Prague*
2018	**UCC School of Engineering Publication of the Year Prize**, Co-author on Winning Paper	*Cork, IRELAND*
2015/16	**Fulbright Scholar Award**, Recipient	*Berkeley, CA, USA*
2015	**Dr. Elmer Morrissey Memorial Scholarship**, Recipient	*Cork, IRELAND*
2015	**Stanford/Coursera "Machine Learning"**, Received Certificate	*Remote*

Extras

- Constantly learning, motivated by a deep interest in the space. Currently undertaking personal projects in deep learning, image recognition and natural language processing
- Taught English to school children and continue to provide translation services for the Costeño Social foundation in Colombia, including their website and all promotional material
- Designed and taught an 8-week "Introduction to Engineering" summer course for 8-12 yr. olds for the Centre for Talented Youth Ireland for two years running
- Avid guitar player and love the outdoors - surfing, hiking, mountainbiking

Relevant Publications

- K. Leahy, C. Gallagher, P. O'Donovan, and D. T. J. O'Sullivan, "**Issues with Data Quality for Wind Turbine Condition Monitoring and Reliability Analyses**," Energies, vol. 12, no. 2, p. 201, 2019.
- K. Leahy, C. Gallagher, P. O'Donovan, K. Bruton, and D. T. J. O'Sullivan, "**A Robust Prescriptive Framework and Performance Metric for Diagnosing and Predicting Wind Turbine Faults based on SCADA and Alarms Data with Case Study**," Energies, vol. 11, no. 7, pp. 1–21, 2018.
- K. Leahy, R. L. Hu, I. C. Konstantakopoulos, C. J. Spanos, A. M. Agogino, and D. T. J. O'Sullivan, "**Diagnosing and Predicting Wind Turbine Faults from SCADA Data Using Support Vector Machines**," International Journal of Prognostics and Health Management, vol. 9, no. 1, pp. 1–11, 2018.
- K. Leahy, C. Gallagher, P. O'Donovan, and D. T. J. O'Sullivan, "**Cluster analysis of wind turbine alarms for characterising and classifying stoppages**," IET Renewable Power Generation, vol. 12, no. 10, pp. 1146–1154, Jul. 2018.
- C. Gallagher, K. Leahy, P. O'Donovan, K. Bruton, and D. T. J. O'Sullivan, "**IntelliMaV: A cloud computing measurement and verification 2.0 application for automated, near real-time energy savings quantification and performance deviation detection**," Energy and Buildings, vol. 185, pp. 26-38, 2019.
- R. L. Hu, K. Leahy, I. C. Konstantakopoulos, D. M. Auslander, C. J. Spanos, and A. M. Agogino, "**Using Domain Knowledge Features for Wind Turbine Diagnostics**," in 2016 15th IEEE International Conference on Machine Learning and Applications (ICMLA), 2016, pp. 300–307.
- P. O'Donovan, K. Leahy, K. Bruton, and D. T. J. O'Sullivan, "**An industrial big data pipeline for data-driven analytics maintenance applications in large-scale smart manufacturing facilities**," Journal of Big Data, vol. 2, no. 1, p. 25, Dec. 2015.