Today’s business systems generate unprecedented amounts of data. Within this data is vital information about customer behaviour, resource usage and business patterns. Companies that exploit the opportunities presented by data science will gain an advantage over their competitors. Lancaster University is looking for partner organisations to offer business-relevant challenges for our Data Science MSc students to address over a 12-week placement, during which the student will work on a project specified by their host. We have established partnerships with a wide range of businesses to bring the benefits of advanced analytics to UK industry. Our partners have included specialist SMEs, government agencies and large corporates such as The Co-operative Insurance, Fujitsu, AstraZenca and Unilever. Our partners have gained access to additional skills and resources from the University including 12-week student placement projects, workshops and bespoke advice.

What Can Data Science Offer Business?

- How can you maximise return from marketing spend?
- How satisfied are your customers?
- How can you detect fraudulent transactions?
- Are you using your infrastructure efficiently?

Information technology has made it possible to amass vast data sets covering social trends, public opinion, purchasing habits, medical profiles and environmental records.

Data science enables the analysis that can transform this information into insight. From understanding which products appeal to which customers, to optimising fleet logistics; data analytics can provide organisations with the ability to use their data to their best advantage. A partnership with Lancaster University’s Data Science programme offers organisations access to the latest analytical technologies and techniques, backed by a global top 1% university.

Why Data Science?

- A report by PwC revealed that 62% of business leaders believe that data science has significant potential to create business advantage.
- McKinsey reported that efficient use of the data available to a retailer could increase their operating margin by 60%.
- A recent government report highlighted that a new generation of skills are needed to extract this value for UK businesses.
- A Home Office report identified that companies that lack the capability to perform appropriate analysis of large data sets are vulnerable to repeated cybercrimes.

“We were very impressed by the quality of the students and the obvious quality of the programme.”
Thomas Scott, Sky Bet.

“We were really impressed. You are clearly teaching the students very relevant skills.”
Ben Wilson, The Co-operative Insurance.

www.lancaster.ac.uk/dsi/education
Activities and Benefits

Programme Of Collaborative Activities
- 12-week student placement: working on a research project to improve your company’s profitability and productivity by making the most of your company’s data
- Group Projects: provide a business-relevant challenge and suitable data for a team of 5 students to analyse. Gain fresh insight into your data free-of-charge
- Lancaster University Data Science Partnership Accreditation: Membership logo and company profile on our website
- Data science workshop: gain experience and understanding on how data science can help your company with speakers from the cutting-edge of data science
- Guest lectures: attend lectures provided by senior public and private sector speakers, give guest lectures to promote your student body
- Hackathon: set challenges for our students to tackle

Benefits Of Collaboration
- Gain resources and time to develop insight into your data and a new competitive advantage
- Work with a global top 1% university and tap into our global networks
- Interact with leading academic and commercial data science researchers
- Access skills in data mining, programming, statistical modelling, statistical inference
- Increase profitability through the introduction of new innovative products, processes and/or services
- Gain an early view of talented data science professionals
- Trial a new role and give a student valuable industry experience

Multi-disciplinary Approach to Big Data

Unlike other Data Science MSc offerings in the UK, the Lancaster programme combines interdisciplinary teaching from three world-leading departments. Collaborating businesses will benefit from expertise from the School of Computing and Communications (SCC), the Department of Mathematics and Statistics, and the Lancaster Environment Centre (LEC) through one unique programme.

Data science workshop: gain experience and understanding on how data science can help your company with speakers from the cutting-edge of data science

Student Placements

We recruit the brightest minds onto the Data Science MSc and train them in the latest technologies and analytical techniques.

What Should Projects Be About?
- Improving business decision support through enhanced modelling and visualisation
- Creating insight from bringing together diverse data sources and applying innovative data exploitation techniques
- Investigative and analytical expertise in processing data and in the extraction of meaning from complex datasets
- Techniques for the storage and processing of diverse datasets
- Approaches to interpreting and integrating information from heterogeneous data sets using methods such as natural language processing, anomaly detection and computational analytics, statistical forensic approaches
- Improving business decision support through advanced modelling and inference

What Is The Process And Timeframes?
Each partner organisation will be expected to provide an agreement in principle to the university of their wish to participate in the programme. This agreement will give an indication of the number of students wanted and, in broad terms, the likely focus of the project.

What Is The Final Cost Of The Programme?
There is some flexibility on start dates.

Project Examples
- Extracting novel information from existing host data sources (e.g. profiling customers via social media interactions)
- Creating insight from bringing together diverse data sources (e.g. generating insights from the synthetics of public and social media datasets)
- Improving the investigation of existing data analysis solutions
- Improving data visualisation and communication
- Capturing insight from public sources (e.g. scraping Twitter to allow inferences about public perception of companies and products)
Case Study

Framed Data Inc., Silicon Valley

Framed Data, Inc., based in Silicon Valley, San Francisco, is a data science as a service product that helps companies understand their users and improve their business. Rather than focusing on usage analytics, Framed provides predictive machine learning products to identify potential high-value users before they buy and high-risk users before they actually leave.

www.framed.io

The Challenge

Framed Data built an automated machine learning platform that takes in user data and predicts when users are going to leave an application. It does this by engineering a feature space out of past user behaviour, and then running a list of selection heuristics to pare down the space. Churn prediction allows a company to determine which of their customers are likely to leave and take steps to prevent this.

Expertise Sought

- Experience in programming language and machine learning
- Experience and ability in feature selection
- Experience and ability in engineering of high-dimensional datasets
- Familiarity with statistics and data visualization
- Familiarity with Git software and GitHub hosting service, or a version control system

The Solution

Philip Spanoudes, MSc Data Science, worked with the company’s CEO and data scientists to improve feature selection and engineering heuristics for the company’s predictive analytics pipeline. They worked together on optimising model accuracy against a subset of sample data. Models that they created for this subset were run against Framed’s production data to evaluate this accuracy. Philip found efficient and effective ways of both enhancing Framed’s churn prediction process and investigating the application of deep learning techniques to their analysis of churn prediction.

Cost

The project was fully funded by Framed Data at a total of £3,000 and conducted as part of the MSc Data Science at Lancaster University.

Impact

The research project, as part of a larger project, helped improve the efficiency of Framed’s churn prediction, delivering an improved approach to feature engineering and selection on high-dimensional datasets at scale as well as improving the feature selection and engineering heuristics for the company’s predictive analytics pipeline. This provided the potential for Framed’s clients to better identify where and why their customers are leaving, and how to prevent them doing so.

Company Benefits

- Potential to increase efficiency of Framed’s churn prediction processes
- Potential to deliver an improved approach to feature engineering and selection on high-dimensional datasets at scale
- Potential to improve the feature selection and engineering heuristics for the company’s predictive analytics pipeline

Company Feedback

"The calibre of students that we have interviewed at Lancaster has been top notch, and we continue to be impressed not only by their intellect, but also their ability to apply their skills to industry-grade problems, especially in a fast-paced environment like Silicon Valley."

"We hope to establish a high-quality hiring pipeline of data science candidates from Lancaster University, and Philip is clearly no exception - he has been a great team player on the data team." Thomson Nguyen, CEO, Framed Data, Inc.

View www.lancaster.ac.uk/sci-tech/framed-data to read full case study

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