Data Science Academy

PROJECT/INDUSTRY ENGAGEMENT BRIEF

What is the Data Science Academy?

The Data Science Academy (DSA) has been established to ensure that Wales produces highly-skilled and employable graduates in some of the fastest growing and in-demand areas, from Data Science and Artificial Intelligence to Cybersecurity.

Led by the School of Computer Science and Informatics and in collaboration with the School of Mathematics, the School of Journalism, and Cardiff Business School, the DSA offers a core suite of Master's degree programmes.

Launched in September 2019, the DSA is based in the Ystafell Turing Suite and the newly refurbished Sandpit Room at the Queen's Buildings in Cardiff University; two dedicated, high quality, flexible study facilities that supports interactive project-based education where external partners, students and staff can collaborate.

In the longer term, we aim to introduce a suite of cross-disciplinary programmes working with other academic schools at the University including the School of Medicine.

More information available at
www.cardiff.ac.uk/data-science-academy

What does the Data Science Academy teach?

The DSA currently delivers six MSc degree programmes:

Artificial Intelligence
Full-time

Business Administration with AI
Full-time

Computational and Data Journalism
Full-time

Cybersecurity
Full-time and Part-time

Data Analytics for Government (in partnership with Office for National Statistics)
Full-time

Data Science and Analytics
Full-time and Part-time

Further information on each course and module is available on the University website.

Why should my organisation engage with the Data Science Academy?

We believe that engaging with the DSA will offer the following benefits to your organisation:

- Develop relationships with a growing cohort of specialised graduates in areas of increasing demand for skilled professionals.

- Opportunities to work with students on a short-term project to explore areas of interest.

- Informing and influencing educational programmes ensuring they are current and relevant to your business needs.

How can my organisation engage with the Data Science Academy and its students?

There are a range of opportunities for organisations to engage with the DSA.

First and foremost is the provision and supervision of "real life" projects for the students to work on during their summer dissertation. (Students are not being, or expected to be paid for this work). Further information on the summer dissertation projects is outlined below.

Other areas where we welcome external input include:

- Providing guest input/sessions into particular modules reflecting your areas of expertise.
- Providing short "lunch and learn" sessions on topics of interest (not necessarily linked to the curriculum).

- Providing scenarios for case study days where teams of students can work together to solve a problem.
- Sponsoring a prize or some other aspect of the Academy e.g. equipment.
- Assisting with marketing and publicity for the Academy.
- Providing assistance with curriculum development – helping shape the degrees for future years.
- Providing industry visits for students to come and see your company live in action.
- Work with us to identify talent that would likely suit your company after graduation.
- Create internships and placement opportunities by working with us to ensure the right candidate makes a contribution while gaining valuable work experience.

As the DSA develops, we envisage other ways in which organisations can engage. Equally, if you have any suggestions on how you might work with us and our students, we would be grateful to hear your thoughts.

What are the requirements for a suitable summer dissertation project?

There are a number of requirements for a suitable summer dissertation project:

- Projects need to be pitched at the right academic level for the students and to allow students to meet the academic aims of the dissertation module. The Academy's academic team can discuss this with you. The academic team can also advise as to which degree your project might be most suitable for.

- Projects will be around 10-12 weeks in length and will run roughly from June to September.

- Projects may involve more than one student, but the work each student undertakes will be individual rather than team based.

- Given the above, it is important to be realistic about what the students can produce in the time available to them. It should be noted that the learning opportunity presented by the project for the student is the key output.

- During the dissertation project phase, students may be based within sponsoring organisations, at the University or a combination of both. This can be discussed with the academic team.

- Each student should be provided with a mentor or supervisor within the sponsoring organisation. The University will also provide an academic supervisor. Regular meetings are expected throughout the project duration.

- In terms of data analysis, it is important that data is available at the start of the project to ensure there is sufficient time for the student to mine, clean and analyse the data before writing up the report (dissertation).

- Although we may not be able to take on every project proposed, we will select projects based on best fit with the learning outcomes required. If we are not in a position to undertake a project during this year then there is always the possibility of returning to it in future academic years and there are a number of other ways (see previous page) that organisations can still be involved.

What sorts of projects are we looking for?

MSc Artificial Intelligence

We are looking for projects around building autonomous systems that can encompass know-how (e.g. description logic, planning, propositional logic) as well as can learn from data (decision tree, SVM, probabilistic logic programming, Bayesian networks, Markov networks, neural networks), and critically evaluate them in the context of business requirements, adherence to best practices and advancement of the state-of-the-art.

MSc Computational and Data Journalism

Our students are interested in projects of two kinds. The first is long-form journalistic writing which combines computational analysis with testimony gathered from people. The second envisages and then builds technology that will help journalists or newsrooms use data analysis or computational techniques to produce journalism. Some projects mix both categories and produce original journalism together with new applications of technology. Students have also in the past spent time in industry on data journalism topics that were specific to a particular company or media.

MSc Cybersecurity

We are looking for projects around building secure systems and securing systems (e.g. IoT, Cloud), dealing with attacks (e.g. remediation, forensics), detecting attacks and evaluation of security in practice (e.g. effectiveness and efficiency of SIEMs, choice of appropriate security policies, etc.).

MSc Data Science and Analytics

We are interested in projects covering a wide spectrum of data science and analytics. Any project belonging (or being close enough) to one of the following three categories can be submitted:

a. the use of efficient algorithms to fetch data from online sources or live databases;

b. the use of data mining and machine learning methods to answer a specific research question on an already existing dataset;

c. the use of business analytics and/or techniques to optimise the performance of a process.

We are looking for challenging research questions to enable our students to apply methods and algorithms beyond the classic ones they learn in class.

What about the IP, confidentiality etc?

Given the time-limited nature of summer dissertation projects, we hope that this need not be an issue.

The University's main requirement is that the students can use the collateral produced to showcase their ability to academic staff as part of the assessment for their degree. For summer dissertation projects where there may be any commercial sensitivity, project sponsors may have the opportunity to edit any artefacts before release or to place a bar on access for a short period of time after the project has finished. The University has a standard contract which covers Intellectual Property (IP) and confidentiality and this can be used where there may be a need to protect commercial interests. Talk to us if you have any IP requirements before submitting the project.

Indicative timetable

February

Deadline for submission of dissertation ideas (you may be contacted after this period for clarification or adjustment questions)

April/May

Confirmation of selected dissertation ideas

June/July

Summer project dissertations start

September/October

Summer project dissertations end

Contact us

If you have any further queries,
please do not hesitate to contact:

DSA@cardiff.ac.uk

More information about the Data Science
Academy can be found on our website:

www.cardiff.ac.uk/data-science-academy

You can Tweet us at:

@DSACardiffUni