



UNIVERSITY  
OF HULL



**Centre of Excellence for**

# **Data Science, Artificial Intelligence and modelling**



**Applicant Supplemental Information Pack**

# Message from the Vice-Chancellor

We are an ambitious University: ambitious for ourselves, our staff, our students and our alumni. Through our Strategy 2030 we take seriously our role in shaping a fairer, brighter and carbon-neutral future.

Within this context, the world is changing rapidly as a result of the power of artificial intelligence and data science. This can be seen in almost every walk of life and at every level of society. Educating the next generation of data scientists and artificial intelligence practitioners and conducting research in this vital field are very much part of responding to this global challenge.

Through the launch of the University's new Centre of Excellence for Data Science, Artificial Intelligence, and Modelling (DAIM), we are responding to the increasing need for qualified practitioners by delivering a step-change in the provision of educational excellence - and high quality research - which cuts across traditional disciplinary departmental and faculty boundaries.

Crucially, through knowledge exchange, DAIM's ambitions encompass the provision of exemplary service within the University, and beyond to the public sector, that will enhance mutual goals and tackle complex industry issues. DAIM will become a portal for business partnerships and will deliver dynamic inter-disciplinary collaborations and external partnerships leading to research and skills outcomes that are of strategic priority to our region, the UK and the world.

We are delighted to be in a leading position during this latest industrial revolution, and to be able to recruit the future education, research, and business-interfacing leaders of tomorrow. We hope that you feel inspired to come and join us.



**Professor Susan Lea**  
Vice-Chancellor  
University of Hull



# Education for the New Industrial Revolution

**An unprecedented revolution of not only scale, but complexity and speed is revolutionising the way we live our lives.**

Behind this revolution is a true fusion of novel technologies that break traditional lines between old disciplines such as artificial intelligence, mathematics and statistics, and physics, and is starting to make the digital world inseparable to the physical one.

Set against the backdrop of the disruption that the Fourth Industrial Revolution is causing, it is clear that the workforce will need upskilling to create new opportunities in the data science, artificial intelligence, and modelling domains.

Our highly successful MSc in Artificial Intelligence and Data Science has grown substantially in popularity with both UK and overseas students.

Through this Masters course, the University of Hull seeks to create a new education paradigm for the Fourth Industrial Revolution and prepare our workforce for the opportunities and challenges that await.



Every sector is beginning to recognise how data science can transform their business in some way, shape or form. Whether you're in manufacturing, retail, or construction, there are significant opportunities to deliver efficiencies and improvements to customer experience, and this can be achieved through the application of data science techniques. Data can be regarded as the new oil and is set to become the most valuable resource in the immediate future.

Lampada is seeing a significant increase in enquires from organisations to support them with data science projects. It is clear that every sector will need a greater supply of data scientists and universities will play a crucial role in training and developing the data scientists of the future. We have been working very closely with the University of Hull on the MSc syllabus, and see huge opportunities to unleash this talent into the market.

**Andrew Parkinson**  
**CEO Lampada Digital Solutions**

Official partner in the University of Hull MSc in Artificial Intelligence and Data Science.

# Life-Changing Research

**Our research underpins the University Strategy 2030 that orients around the themes of social justice and environmental sustainability, and the pillars of people, place, and partnership.**

Research conducted at the University of Hull covers the largest length scales possible. Spanning the cosmological scale in the E.A.Milne Centre for Astrophysics to reveal our place in the universe, through to the biological and microscopic in the advancement of wound treatment, our research is not only diverse, but impactful, as judged by recent Research Excellence Framework returns.

DAIM will enhance this research, not only within the Departments of Computer Science and Technology, and Physics and Mathematics, but encompass the Faculty of Science and Engineering itself, and our sister faculties within the University.



**“ We undertake fundamental research at the interaction of deep machine learning and natural language processing, and work with local and global partners to develop AI-driven solutions to real-world problems towards a sustainable environment and society.**

**Our recent projects include social media analysis for detecting mental health issues and monitoring floods, using AI to monitor sea water quality, and improving the reliability of wind farms to contribute towards a carbon net zero future.”**

**Dr. Nina Dethlefs**  
Senior Lecturer in Computer Science and Technology

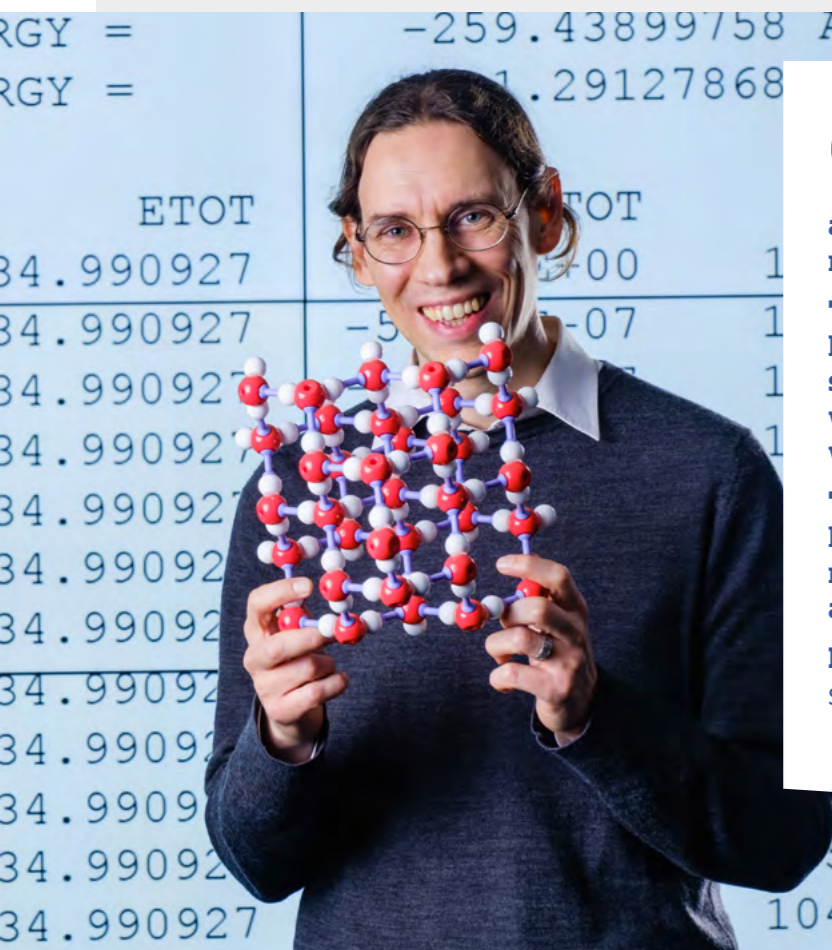
# VIPER

## The Top Rated HPC in the North of England

**Within the university sector, VIPER is one of the leading High Performance Computing centres and the highest rated in the North of England.**

This is a significant research investment that provides a vital requirement to meet the ever growing demands of the University's research community, and underpins DAIM's research, education, and external partnership remit.

VIPER is being used in a wide variety of cutting edge research across the University. This ranges from studying and simulating the galaxy in which we live, the vibrational effects of molecules, semiconductor effects, through to computational linguistics.



**“VIPER has truly enabled us to look beyond standard computational approaches and deploy techniques on a scale that we never anticipated before.**

**The capabilities of VIPER's specialised hardware, for example, allows us to significantly cut model training times and work on huge datasets in unprecedented ways.**

**This means our research sees shorter lead times from model development to results - in terms of being competitive on a world stage, this is absolutely crucial.”**

**Dr. David Benoit**

Senior Lecturer in Computational Astrochemistry

### VIPER Technical Specifications

- Linux OS with approximately 5500 nodes
- 180 compute nodes, each with 2x 14-core Broadwell E5-2680v4 processors (2.4 -3.3 GHz), 128 GB DDR4 RAM
- 4 high memory nodes, each with 4x 10-core Haswell E5-4620v3 processors (2.0 GHz), 1TB DDR4 RAM
- 4 GPU nodes, each identical to compute nodes with the addition of 4x Nvidia Tesla K40m GPUs per node
- 2 visualisation nodes with 2x Nvidia GTX 980TI
- Intel Omni-Path interconnect (100 Gb/s node-switch and switch-switch)
- 500 TB parallel file system (BeeGFS)

# Investing in Student Futures

## The University of Hull is the 14th oldest in England.

We are proud of our teaching record and have not only been awarded a Silver rating within the Teaching Excellence Framework, but also achieved Sanctuary Status in June 2018.

Such outcomes do not arise by chance. We are committed to improving the lives of the students that we teach and forging a bright future for them.

We strongly believe in inclusive access to higher education, and we endeavour to continue reducing barriers and supporting people seeking sanctuary in realising their academic potential, as well as fostering a culture of welcome, diversity and support among staff, students and the wider community.

Over the past decade we have invested over £330M in delivering a step-change in academic provision. This includes:

- ▶ £27M transforming the University Library
- ▶ £27M enhancing ICT services
- ▶ £130M creating a 1500 bedroom on campus accommodation
- ▶ £16M for international standard sport facilities
- ▶ £9.5M for a world-class concert hall

# An Invitation to Work With Us



“DAIM is an exciting venture within the University of Hull. Building upon our success with our postgraduate taught MSc in Data Science and AI, DAIM is ready and actively looking to expand.

If you share our values, if you share our outlook on education, research, interdisciplinarity, and business partnerships, I would personally like to extend an invitation for you to apply to work with us in the dynamic environment. Help us to build something brand new and train the next generation for the Fourth Industrial Revolution.

**Dr. Kevin Pimblet**

Director of the Centre of Excellence in Data Science, Artificial Intelligence, and Modelling (DAIM)

Informal inquiries may be directed to [DAIMenquiries@hull.ac.uk](mailto:DAIMenquiries@hull.ac.uk)



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