

Geospatial Systems

EPSRC Centre for Doctoral Training Newcastle University and The University of Nottingham

The next generation of Geospatial Data Scientists and Engineers

2019-2027

50 Doctoral-level geospatial practitioners

- 4-year programme, diverse, inter-disciplinary cohorts
- Industry-centric, applied research
- Upskilling and preparation for industry
 - Business leader talent pipeline
 - Training in leadership, enterprise and innovation

research.ncl.ac.uk/geospatial-systems









Engineering and Physical Sciences Research Council

Smart Cities – Spatially Informed Mobility -

The Programme

An interdisciplinary cohort experience

Year 1 MRes – Geospatial Data Science

Years 2-4 PhD – Geospatial Systems

Additional Training

Visualisation & Decision Support

gineered Energy Systems

- Responsible research and innovation
- Leadership, enterprise and innovation





Interdisciplinary Research Themes



Spatial Data Capture & Interpretation

Social Inclusion & Healthy Living

Our Researchers – Cohort 1

2019 Intake – PhD research







David Alvarez

Developing and calibrating agent-based models of future urban mobility to inform development decisions.

Anna Klimkowska

Improving semantic knowledge of urban environment based on data fusion and ML.

Tahsinur Khan

Mapping food systems and soil quality using agent-based models: Intervention strategies, demand and behaviour.



Rachael Sanderson

Identifying 'left-behind' places through geospatial analysis to inform social policy and support local communities.

Kristina Wolf

Incident response for resilient smart environments: Developing a geospatial infrastructure for multi-domain multi-stakeholder data.

Aleksandra Zaforemska

An IoT sensor network to monitor tilt of trees as an infrastructure hazard: Impacts to transport and power distribution.

Mingyu Zhu

Development of a digital twin of the Port-of-Tyne for use in planning & resilience management.

Our Researchers – Cohort 2

2020 Intake – PhD research



Nasia Apostolopoulou

City-scale energy modelling: data challenges in scaling up from buildings to cities. Adam Booth

Al and big data analytics with a focus on air quality measurement in smart cities.

Richard Burke

Addressing future flood risk under urban growth scenarios using spatio-temporal agent-based modelling and data visualisation.

Samuel Christelow

Monitoring environmental change using EO data, particularly through GNSS reflectometry.

Rebecca Guiney

Downscaling GRACE-derived groundwater storage changes using InSAR ground displacement data and investigating how groundwater responds to climate variability









Luis Patino Velasquez

Applying GeoAl to enable greater understanding of climate change in water risks and food security in the global south.

Clara Peiret-Garcia

Applying GIS to better understand urban mobility patterns and improve sustainable mobility from a 15-minute city perspective.

Neil Sutherland

Combining Reality Capture, 3D Mobile Mapping and eXtended Reality for Architectural and Cultural Applications.

Samuel Valman

Geospatial analysis and modelling of riverine systems: realising the potential for satellite supplied data assimilation.

Our Researchers – Cohort 3

2021 Intake – MRes Geospatial Data Science



Corneliu Cotet

Interested in developing an understanding of the socio-technical implications brought by new mobility systems.

David Gregg

Interested in the modelling of tides around estuaries and harbours. **Philip Home**

Background in environmental science and disaster risk reduction. Interest in climate change adaption and resilience, biodiversity management and active travel design. **Chris Larkin**

Interested in spatial analysis and simulation for planning a more sustainable future.



Keneuoe Maliehe

Geospatial scientist and aerial surveyor. Research interests: AI and ML techniques for resilient and sustainable cities while reversing the effects of climate change.

Sophie Mann

Interested in using remote sensing and satellite data to map the sea floor. Ambreen Masud

Background in urban planning, environmental change and international development. Interested in inclusive cities and understanding spatial inequalities. **Rachel Walker**

A geographer with research interests in mapping climate change mitigation through carbon sequestration and adaptation through environmental management

Engagement Opportunities

Studentship Funding and Project Supervision



- Address your research challenges
- Work directly with CDT researchers
- Develop a talent pipeline
- Upskill within your organisation
- Support and direct the vision of the CDT

Innovation Festival (April)



- Open forum of innovation and engagement
- Present your research challenges
- Engage with CDT researchers
- Explore collaboration opportunities
- Tie-in with other industry partners

Challenge Week (Summer)



- Challenges and sprints set by industry
- Utilise diverse CDT expertise
 - Rapid results
- Work directly with researchers
- Promote teamwork and leadership

Placements (In-person or Remote)



- 1-3 month duration
- Host researchers within your team
- Ringfenced time to progress research set by you
- Enhance working relationships with researchers
- Supported by researcher grant

Guest Lectures



- Inspire the next generation
- Promote your organisation and research to the CDT
- Network within our wider research base
- In-kind contribution to the CDT
- Travel and subsistence costs covered

Join our partner network



Return on Investment: What our partners say

Studentship Collaboration & Supervision

'This project has the potential to improve the way in which Ordnance Survey handle multimodal datasets in the creation of complex 3D models at the national scale. The geospatial sector has a real need to better integrate traditional technologies like airborne photogrammetry with recent optical sensing capabilities overcoming the limitations of single platform solutions.' **Dr. Stefano Cavazzi**, Principal Innovation & Research Scientist, Ordnance

1.000

Survey

MRes Group Project

'Hosting the CDT in 2021 was a fantastic opportunity for the Vindolanda Trust to put one of the most pressing issues of our time, the impact of climate change on sensitive archaeological deposits, to a bright, creative and highly motivated team. I cannot speak highly enough of the professional attitude of the staff and students involved in this project, and the results of their hard work was duly published in a well received academic paper. The positive collaboration of being part of the CDT will form one of the foundation stones for the future management of this part of the World Heritage Site.' **Dr Andrew Birley**, CEO, The Vindolanda Trust

Challenge Week

'It was fantastic to see the Geospatial PhD students at Newcastle University apply their skills to our optimisation of EV charging locations project, building on the work engineers at Kinewell Energy have undertaken over the past 18 months. Fresh ideas and data were injected into our project, which we continue to work on as we develop our optimal EV charging location solution.' **Dr Andrew Jenkins**, CEO and Founder, Kinewell Energy

The Partnership Process

Intro	 Complete our <u>expression of interest form</u>: (https://forms.ncl.ac.uk/view.php?id=11973159) Or Contact our Partnerships Manager: max.wilkinon@ncl.ac.uk, <u>LinkedIn</u> or face-to-face.
Onboarding	 Integrate the partner into the CDT, specific to their engagement: Follow-up meetings with academics and students; NDAs and partnership agreements; Data sharing; Invitation to deliver seminars etc.
	• 30-45 minute call with our Partnerships Manager.

Scope Out

FAQs

What's your Value Proposition?

We are developing your future staff who will drive your growth. We offer the opportunity to establish working relationships and steer the development of these individuals during their formative years.

Identify synergies and viable ways to engage.

- What's the time commitment for project supervision?
 1-hour per month.
- What's the financial commitment for a studentship?
 £12.5k (part-funded) or £25k (fully-funded) per year over 4-years.
- Can I be involved for free?
 Yes, industry can partner on CDT-funded projects.
- When will the students be graduates we can employ? Graduation is yearly between 2023-2027.
- I've never supervised a student before, what does it involve? You will provide feedback on their research to maximise impact to industry. For instance "Your analysis is great, but I'd also like to see X, could you work on this?"
- ➤ Who owns the IP?

Student-generated IP in fully-funded studentships is owned by the industry partner. Partners of part-funded studentships will have right to negotiate an exclusive license.

CDT Team

Internationally recognised experts from a diverse range of academic backgrounds

Prof. Jon Mills - CDT Director
Prof. Stuart Marsh - Nottingham CDT Director
Dr. Paul Blunt - Director of Spatial Data Capture & Interpretation
Prof. Doreen Boyd - Director of Training Delivery
Prof. Jeremy Crampton - Director of Responsible Research
Dr. Alistair Ford - Director of Student Development
Prof. Rachel Franklin - Training Delivery Expert: Analytics
Dr. James Goulding - Training Delivery Expert: Decision Support
Dr. Joe Matthews - Training Delivery Expert: Mathematics & Statistics
Dr. Paolo Missier - Training Delivery Expert: Big Data Analytics
Jamie Stogden - CDT Manager
Dr. Max Wilkinson - CDT Partnerships Manager

Additional expertise is utilised across both Institutions

Newcastle University

School of Engineering – Geospatial Engineering research group School of Computing School of Mathematics, Statistics and Physics School of Geography, Politics and Sociology School of Architecture, Planning and Landscape

The University of Nottingham

Nottingham Geospatial Institute Dept. of Civil Engineering Dept. of Environmental Engineering Dept. of Architecture and Built Environment School of Geography Business School

Further Enquiries

Max Wilkinson CDT Partnerships Manager

- Scope-out meetings to explore synergies
- Discuss engagement opportunities
- Promote your organisation within the CDT

max.wilkinson@newcastle.ac.uk



