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
The Programme

An interdisciplinary cohort experience

Year 1
MRes – Geospatial Data Science

Years 2-4
PhD – Geospatial Systems

Additional Training
➢ Responsible research and innovation
➢ Leadership, enterprise and innovation

Interdisciplinary Research Themes

- Spatial Data Capture & Interpretation
- Spatial Analysis & Modelling
- Spatial Statistics & Mathematical Methods
- Big Data Spatial Analytics
- Decision Support & Visualisation
- Smart Cities – Spatially Informed Mobility
- Urban & Infrastructure Resilience – Sustainable Planning
- Social Inclusion & Healthy Living
- Spatially Engineered Energy Systems
- Sustainable Planning
- Urban & Infrastructure Resilience
- Social Inclusion & Healthy Living
- Spatially Engineered Energy Systems
- Smart Cities – Spatially Informed Mobility
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
AI 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 GeoAI 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 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 expression of interest form: (https://forms.ncl.ac.uk/view.php?id=11973159)  
Or  
• Contact our Partnerships Manager: max.wilkinon@ncl.ac.uk, LinkedIn 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. |
| Scope Out   | • 30-45 minute call with our Partnerships Manager.  
• Identify synergies and viable ways to engage. |

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.

- **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