

An extremely hard-working, driven, and enthusiastic individual working as a software engineer. Recently graduated **top in his year at UCL (GIS and Computing, 1<sup>st</sup> of 50 students)**, with a proven ability to thrive in tough environments when using geospatial data for problem solving globally. He has been named on **nine professional reports**, for clients including the World Bank and Asian Development Bank. This wide range of experience from full stack **web development, orbital mechanics and GIS research** would allow him to thrive in a PhD at UCL.

## Experience

Software Engineer, Informed Solutions, London

September 2021– Current

- Integrating OpenLayers into the Home Office (Fire Incident Response Service), using **VB and C#**
- Building testing environments for the Home Office with **NodeJS, Express, PostgreSQL and JS**
- Supporting DevOps and Service Desk Analysts (SDA) on Joint Air Quality Unit (JAQU)
- Daily use of **AWS services** including CloudWatch, API Gateway and EC2 instances to ensure a continuous and effective deployment of bug fixes, implementing new features and patching of technologies.
- **Automating** SDA's daily tasks for reporting user activity using R and Python
- Developing projects within the **Charities** Team to raise money for local charities
- Leading tutorials for interactive mapping for the company, using NodeJS, Express, PostgreSQL and JS

Junior Geospatial Data and Risk Analyst, Gatherhub, London

March 2020– December 2020

- **Researched and innovated Madagascar's first Sanitation Risk Index (SRI).**
- The SRI is used to identify priority investment areas for local stakeholders. v
- Designed and built a Shiny (R) [interactive visualization application](#) for NGOs, Governmental Departments and the World Bank (username: gather password: sanitation).
- **Lead data-analyst** behind the [Benchmark Initiative project](#), looking at the accessibility, accuracy and availability of global sanitation data
- **Predicted** toilet locations in low data-coverage areas through semi-variance analysis
- **Managed** a team of 4 volunteers, supported their work at Gather alongside welfare and professional development.
- Acted as **Data Steward**, where I reported and analysed how Gather is using their data for social good.
- Independent Research Consultant alongside my master's.

Geospatial Analyst and Cartographer, Mekong Modelling Associates, Phnom Penh, Cambodia

Jul 2019– Feb 2020

- **Secured US\$ 300,000** in future funding packages for Mekong Modelling Associates (MMA).
- Assigned to analyse dam-burst flood scenarios through HEC-RAS and Flood Modeler Pro.
- Created risk indexes using **Google Earth Engine (JavaScript) from flood and drought** data using satellite imagery.
- Analysed the effect of future development, loss of floodplains and climate change on the Mekong Transboundary Area between Cambodia and Thailand.
- **Reported and presented three papers for the Mekong River Commission (MRC).**
- Extensively used Python 3.0 to extract time-series data for over 10,000 ISIS hydrological nodes and visualized this for reports (Matplotlib, Geopandas, Pandas).

Independent Consultant, *United Nations Development Program, Phnom Penh, Cambodia*

Oct 2019

- **Innovated** a 'Structured Operational Procedure' (SOP) for Flood Early Warning Systems in Cambodia.
- The SOP was instrumental in implementing an effective and efficient knowledge transfer between independent parties: the **Prime Minister's Office and the Ministry of Water Resources and Meteorology.**

Assistant Lecturer, *Institut de Technologie du Cambodge, Phnom Penh, Cambodia*

Aug - Nov 2019

- Taught 30 4<sup>th</sup> year Engineering students GIS. Starting with the basic interface of ArcMAP, to complex raster manipulation, spatial analysis, and 2D/3D professional cartography.

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## Education

MSc. GIS and Computing (Geospatial Sciences), UCL (82%, *Highest Overall Student*)  
Sept 2020– Sept 2021

Dissertation: Democratising Data: Exploring Future Satellite Space Populations (84%)

This project built a visualization tool for future satellite populations (up to 2030), including database integration with a REST API. See the project here: <https://future-satellites.herokuapp.com/>

Modules:

Geospatial Programming (96%)  
Geospatial Science (70%)  
Spatial Analysis and Geocomputation (76%)  
Spatial Databases and Data Management (84%)

Machine Learning for Data Science (79%)  
Web and Mobile App Programming (88%)  
Spatial Temporal Analysis & Data Mining (69%)  
Catastrophe Risk Modelling (84%)

BSc. Geography, Durham University (2:1, 67%)  
Sept 2016– July 2019

Relevant Modules:

Catchment Modelling (84%)  
Remote Sensing (68%)  
Scientific Research in Geography (72%)

Natural Hazards Risk and Resilience (70%)  
Landslides (74%)  
Introduction to Geographic Research (74%)

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## Skills

- Web Development: jQuery, node.js, express, JS, React
- Python(Pandas, Geopandas, Rasterio, Numpy)
- Django (HTML, Python, CSS)
- R (Shiny, plyr, raster, ggplot, rGDAL, tmap, sp, matplotlib)
- Database Management: PostgreSQL PostGIS
- Mapping: qGIS, ArcGIS PRO, ArcPY
- Version Control: Git (Github)
- AWS, EC2, Cloudwatch, API GateWay and Linux

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## Volunteering

GIS Manager, GIS-E  
March 2020– Current

- Provide my skills to a charity providing maps for those who need them most.
- **Managing a team of volunteers** who support through cartography and data analysis.
- Increased the team from 4 to 25+ working in over 10 countries.
- Communicating and collaborating with NGOs around the world to ensure GIS-E's services are **impactful** and **sustainable**.
- Onboarding and reaching out to potential volunteers
- Pro bono work between 5-10 hours a week.
- **Creating tutorials** on interactive geospatial tools and personal development for all staff

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## Research Grants/Awards

- **UCL Hart Prize (2021)**: One of four highest grade for Taught Modules (not including dissertation)
- **UCL Festival of Code (2021)**: Best overall presentation of personal project.
- **Gant Award (2019)**: £2,000 scholarship to undertake an internship in Cambodia for 2 months. Which led to a full-time contract.
- **Gant Award (2018)**: £1,500 grant to collect Soil Organic Matter from landslide deposits near Kaikoura, New Zealand. The data was used for my undergraduate Dissertation.

## Reports/Papers

The World Bank commissioned three reports to research, innovate and produce the first Sanitation Risk Index for Madagascar:

Abdirizaq, R., Brownhall, I., Noakes, L., Peter-Archer, J., Radanielina, N., Slenders., L (2021) A Sanitation Risk Index for the 5<sup>th</sup> Arrondissement, Antananarivo, Madagascar, **World Bank** ([Link](#))

Abdirizaq, R., Brownhall, I., Noakes, L., Peter-Archer, J., Radanielina, N., Slenders., L (2020) Recommendations for the Design of a Data Standard for Sanitation Data, **World Bank** ([Link](#))

Abdirizaq, R., Brownhall, I., Noakes, L., Peter-Archer, J., Radanielina, N., Slenders., L (2020) The Sanitation Data Gap in Antananarivo, Madagascar, **World Bank** ([Link](#))

An independent study paid for the German Government (GIZ) to research the social effects of Climate Change on Water Management:

Green, A., P. Droogers, G.W.H. Simons, Brownhall, I., B. van Balen, K. Hortle, C. Oeurng, T. Bonvongsar, D. Yem, J.E. Hunink (2021) Transboundary Water management between Thailand and Cambodia as part of the Adaption of the Agricultural Sector in North Western Cambodia to Climate Change, **German Federal Ministry of Economic Cooperation (GIZ)** ([link](#))

A two-year study to assess current water resources in Cambodia, to make a decision on whether the Asian Development Bank should invest \$2 billion in water infrastructure nationally:

Green, A., P. Droogers, G.W.H. Simons, Brownhall, I., B. van Balen, K. Hortle, C. Oeurng, T. Bonvongsar, D. Yem, J.E. Hunink (2020) Detailed Surface Water and Resources Assessment in Cambodia: Stung Sreng, Prek Chit and Canal 98, **Asian Development Bank TA:7610** ([Link](#))

Green, A., K.G. Hortle, W. Giese, B. van Balen, D. Yem, J. Mills, I. Brownhall, P. Droogers, G.W.H. Simons, J.E. Hunink, C. Oeurng, T. Bonvongsa (2019) Rapid Assessment of Eco-Hydrology within the Tonle Sap River Basin Group and Mekong Delta River Basin Group, **Asian Development Bank TA:7610** ([Link](#))

Droogers, P., A. Green, G.W.H. Simons, I. Brownhall, C. Oeurng, T. Bonvongsar, J.E. Hunink (2019) Rapid Assessment of State of Water Resources Tonle Sap River Basin Group and Mekong Delta River Basin Group, **Asian Development Bank TA:7610** ([Link](#))

Hydraulic Modelling Research Papers on the impacts of future basin development and climate change:

Green et al., (2020) Task 4B: Simulation of the Impact of Future Basin Development, Land-Use Development and Climate Change on Flood Behaviour Across the Transboundary Flood Focal Area of Cambodia and Vietnam, **Mekong River Commission: Initial Studies Project**

Green et al., (2020) Task 4C: Updating, Calibration and Review of ISIS Models Used to Simulate Flood Behaviour Across the Transboundary Flood Focal Area of Cambodia and Vietnam, **Mekong River Commission: Initial Studies Project**