

Geographical Information Systems (GIS)



GIS are computer systems designed to capture, store, manipulate, analyse and present all types of geographical data. Most data has a 'spatial' component – this could be a precise geographic reference, defined in terms of latitude and longitude, or an imprecise geographic reference such as a place-name, street-address or postcode. Common forms of spatial data include maps, satellite images and census data, though increasing volumes of data are now being generated

by 'location-aware' devices such as smartphones. GIS let you combine data from different sources in a single map view – to visualise spatial relationships between variables and create new information products.

Lancaster Environment Centre recently supplied 30 school children in Lancaster with GPS-enabled mobile phones running a specially-designed app (pictured above) that automatically recorded their positions at 1-second intervals. The children were encouraged to use the app to capture their experiences of journeys to and from school (through photos and texts). A sample 'blog' and a selection of routes taken by children walking to school are shown in Figure 1. The GPS data reveal that the children take a variety of different routes to school.

Figure 2 shows modelled levels of air pollution for the same geographic area – and highlights that the highest levels of pollution are associated with the busiest roads. The power of GIS comes from combining spatial data from different sources in order to generate new information. In this instance, by combining the route (GPS) data with the air pollution data we are able to make simple assessments of exposure to air pollution. In this example Peter walks to school through a park, hence experiences low levels of pollution. Bianca, in contrast, walks to school along a busy main road, hence experiences higher levels of pollution.

We have a strong tradition of teaching GIS at Lancaster. We introduce students to GIS in the first year and combine it with fieldwork in a second year techniques module. Those wishing to study GIS in more depth can take the a third year option which combines concepts, theories and applications (taught in lectures) with significant 'hands-on' experience using state-of-the-art software in practical sessions and related project work. GIS is recognised as a key transferable skill within the discipline of geography and is widely sought after by employers in the private and public sector. Recent graduates from Lancaster Environment Centre have gone on to secure GIS positions with the Ordnance Survey, the Environment Agency, local authorities, utility companies and the logistics industry.



Figure 1

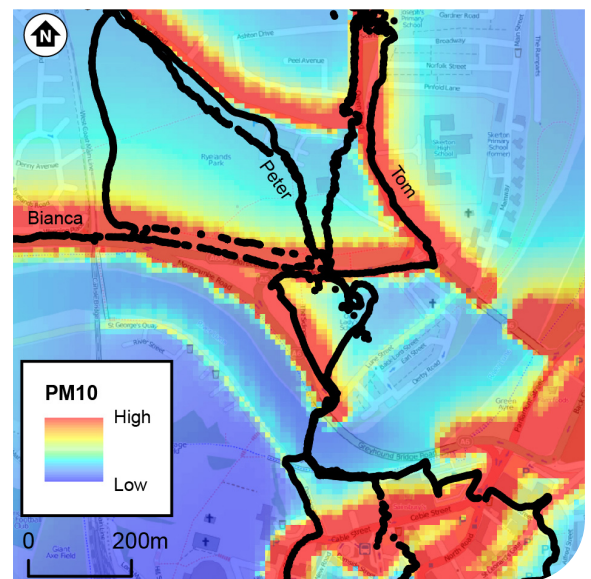


Figure 2

For more details about the reports above or about Geography courses on offer at Lancaster University please contact the Geography Admissions Staff,

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