Undergraduate Research/Master's Project

Travel Time between Settlements

Synopsis

Trade routes between settlements tell us how communities were connected, how they interacted, and what goods they exchanged. What they do not usually tell us is what the level of interaction was, and how closely the communities were connected. This project aims to determine the travel time between settlements to allow for a more detailed analysis of interactions, but also to assess the sphere of influence of regional powers.

Based on the locations of sites and the terrain (i.e. elevation, slopes, rivers, etc.), the aim is to compute travel routes and times. The most obvious approach is to compute least-cost paths, but in practice routes may be affected by other factors, such as proximity to sites/features along the way, or terrain that may allow for the transportation of one type of good, but not for another. In addition, the route and time may depend on the time of year, e.g. some routes become impassable during the rainy season and rivers run dry during the dry season.

What you should bring to the project

You should be self-motivated and able to work independently and have strong programming and analytical skills. Experience with a Linux environment and using large-scale computational resources such as the Teton cluster and familiarity with geographic information systems is not required, but a plus.

A good place to start would be the walking time plugin for QGIS (`https://plugins.qgis.org/plugins/walkingtime/`), so familiarity with QGIS and Python would be welcome.

What you will get out of it

This project is inherently interdisciplinary and you will become familiar with concepts from different disciplines, in particular geography and anthropology. You will interact with people from other disciplines and learn how to apply computer science concepts in different application areas, a skill highly sought after in industry and academia. Depending on the obtained results, this project may lead to a scientific publication. This is a project with lots of details to be defined as part of it – you can bring in your own ideas and make it your own.

Undergraduate research internships are paid.

Interested? Talk to Lars Kotthoff <`larsko@uwyo.edu`>.