

TechniCity – Final Project – MindMixer ID Patrick S9

Link to final project video - <https://vimeo.com/66986357>

Hello. My name is Patrick Smith. Welcome to my final project video for the Technicity MOOC. In my final project I explored how technology can be used to Improve Data Collection for Louisville’s Urban Tree Canopy.

[Research from Georgia Tech’s Urban Climate Lab](#) has demonstrated that Louisville is getting warmer at higher rate than other cities thanks to the Urban Heat Island (UHI) effect, that is, Louisville has an increasing gap in temperature between its urban area and surrounding countryside.

The best thing cities can do to combat the UHI effect is to plant more trees in urban areas.

Unfortunately in Louisville, and despite several false starts, we still do not have accurate, precise, and up-to-date data reflecting the current state of our urban tree canopy

Specifically, I wanted to use my Technicity project to I learn more about the best methods for volunteer data collection for Louisville’s urban tree canopy, including location, species, size, health, and planting environs.

In considering the best platforms for volunteer-generated, location-based data, I looked at the possibility of using Geographic information systems, mobile phone applications, tablet applications, and open-source web software.

I began this data collection effort by engaging volunteers in the use paper maps for field data collection, and then I entered the information they collected on the paper maps into an ArcGIS geodatabase.

In this manner, A lot of ground was covered for my downtown project area, But the process is very time consuming so I explored opportunities for using technology to streamline data collections.

When I told people about my project, many suggested that a mobile phone would be the perfect tool...as a phone’s GPS capacity could be used to collect the tree locations. But the question here is, how accurate and precise are coordinates collected via a smart phone?

After discussing GPS data collection via smart phones with several professional app developers, the consensus was somewhere around 3 meters of accuracy, which several of the developers thought would work just fine for a tree app. But what I had found in the field, was that there were common instances of trees being well within 3 meters of one another, so three meter accuracy from the actual point didn't seem precise enough to me, as the data for individual trees are very near one could be prone to error if we are depending on mobile phone coordinates .

One map app developer I spoke with , Michael Schnuerle of YourMapper and Safety check apps, thought a good compromise might have be the building of a phone app where a volunteer could zoom in on a map with their phone, and move the point to the correct location, which I think is a good idea, as volunteers could drag the dot to the correct location, but there might be difficulties with working on such a small screen. An app for a tablet could better, but it could be challenging providing tablets for a large number of volunteers.

Through this project I learned that the best way to employ technology to this urban problem in the short term is to perhaps continue with field canvassing with my paper maps, by that I mean collecting tree locations manually, in the field, but to save time, collect the points on the maps only, leaving out the tree data such as height, canopy width, tree health, etc. Then I could upload the points to an open source tree mapping package, called Open Tree Map. Cities such as San Francisco and Philadelphia are already using tree map for their own tree data collection initiatives.

Log in and user approval could be set upfor this software, so not just any one can jump online and edit tree data. In our deployment of open tree map, I might retain control of the locating of tree points, to make sure they were accurate in our study zones, but then I would have volunteers add the tree data to the existing points using their smart phones, tablets , or on their home computers. This would provide options for different types of volunteers. Since the open tree map software can be configured across many devices, people who found smart phones too difficult for use in the field, could use their tablets, and people that don't have tablets could make notes and add the data using the online version of the software on a PC.