Spatial analysis for community and beyond

Segue • SIUE

Published 11:28 am, Friday, April 7, 2017

At Southern Illinois University Edwardsville, students studying within the College of Arts and Sciences (CAS) have numerous opportunities for experiential learning within and outside the classroom environment.

Randall Pearson, PhD, professor and chair of the Department of Geography, has been a key player in providing opportunities for students to expand their knowledge of spatial analysis through hands-on projects with the department's Laboratory of Spatial Analysis (LASA).

During this week's episode of Segue, SIUE's premier radio show on WSIE 88.7 FM The Sound, Greg Budzban, PhD, CAS dean, discusses Pearson's LASA work and the impact his discipline has on the southern Illinois region and beyond.

Prior to joining the department and forming LASA, Pearson worked at NASA's Space Remote Sensing Center in Mississippi. He also served as the director of CSI's Center for Spatial Analysis in Tacoma, Wash.

"Ultimately, I always wanted to teach, but I didn't want to teach what I was taught," he says. "I spent eight years working for the government and industry. I brought that skillset back to the university setting, and I have been doing that for 22 years."

When he arrived at SIUE, Pearson formed LASA as a means of addressing the geographic information system and remote sensing needs throughout the St. Louis area.

The famous film quote, "if you build it, they will come," is quite fitting for this laboratory as the fixture has grown into a self-sustaining innovator for geospatial information technology.

"It serves as both a laboratory of ideas and of people," he says. "I look at our group as a teaching hospital. Our students come in and gain valuable experience working on projects that have real purpose."

For example, LASA has worked to study the coal mining systems across southern Illinois. By analyzing maps created when the systems were initially being cultivated, and overlaying new roads and land-use cover maps, the researchers can view and assess potential risk both on and below the surface.

"When you are working on projects to that magnitude, there is a large public service aspect to that," Budzban says.

"There certainly is," Pearson replies, "We're 18 years into that particular project, and through the Illinois Geological Survey data, we are working to find ways to integrate this data and allow it to serve the public."

LASA also has worked with agricultural corporation Monsanto on several different projects using aerial imagery.

Before, it was standard for photographers to head up to the sky in airplanes and helicopters to capture the landscape.

Now, the popularity and use of unmanned aircraft and drones have bombarded the market.

Although it may seem quite simple to simply record digital images of several hundred acres of fields, what some fail to realize is that these systems to be the most useful, they must be calibrated correctly and the data translated into percent reflectance.

“Companies are flying these drones without properly calibrating their equipment,” Pearson says. “They will go on to provide data (vegetation quality maps) that may be misleading. We are trying to bring this reality into the picture and hold industry’s feet to the fire. Technology will eventually catch up with the needs of industry, but right now, we’re not quite there.”

Though plenty of LASA’s work has involved the corporate sector, local communities are also looking toward the laboratory for its expertise and to educate the next generation.

LASA has worked directly with the East St. Louis community to seek out potential at-risk kindergartners.

By surveying students and parents, creating concepts of mapping neighborhoods within this community, researchers hope to understand and work to solve potential problems.

Not only have SIUE’s students been able to take a hands-on approach to projects at LASA, but also students within the Edwardsville School District have been able to participate, as well.

“We are teaching this technology to approximately 50 high school students,” Pearson says.

“As EHS high school seniors present their final projects to SIUE faculty, they will also be showcasing their research to the user community (similar to SIUE senior assignment) on April 28.”

By capturing and analyzing aerial photography, viewing census information and other homogenous grouping data, LASA continues to work on identifying hot spots or problem areas from a number of different perspectives to solve issues that exist within the region.

“Demographics mean everything,” Pearson says.

“There is an immense value to working with and within communities to solve problems, and technology can certainly help us in that cause, so we can ask and answer questions that can affect so many people.”

Catch the rest of this conversation at 9 a.m. on Sunday by tuning in to WSIE 88.7 FM The Sound.

SIUE Marketing & Communications