Mapping her own way

August 09, 2016 10:00 AM
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Carola Wenk, associate professor of computer science at Tulane University, recently co-authored the book 'Map Construction Algorithms' with Mahmuda Ahmed, Sophia Karagiorgou and Dieter Pfoser. (Photo by Paula Burch-Celentano)

At age 12, Berlin native Carola Wenk first discovered her passion for computer science in an unlikely place — a German department store.

"They had computers in department stores, and I thought it was the coolest thing to go there and program a little loop that would say 'hello' 20 times. I always loved it," said Wenk.

Currently an associate professor of computer science, Wenk joined the Tulane University faculty in 2012 as the department was being re-established with an interdisciplinary focus.

> "It's all about the data."
>
> — Carola Wenk, associate professor of computer science at Tulane University

During the summer, Wenk collaborated with doctoral students in research utilizing algorithms that

have a multitude of theoretical and practical uses — from analyzing images of prostate cancer to tracking GPS trajectories.

"I just submitted a paper on finding a good way to deform a curve to a point," said Wenk. "This is helpful for developing distance measures to compare curves, which might be useful for comparing GPS trajectories."

Wenk also analyzes other types of trajectory data, like public transportation check-in information taken from Washington, D.C.

"We have fare-card data for the metro system when (passengers) check in and when they check out, which is publicly available," said Wenk.

Wenk's research team additionally looked at Washington's bike-rental data, with bike-rental and drop-off points taken as location data.

"The idea is to take different kinds of data on road networks and learn something from it in terms of movement behavior," said Wenk. "Construct road networks from the data, understand the movement behavior and then use that understanding for applications such as traffic management or emergency management."

Wenk and collaborators Yusu Wang from Ohio State University and Brittany Fasy from Montana State University recently received a $500,000 grant from the National Science Foundation. The team uses graphs representing road networks as a framework for analyzing network data.

Wenk additionally co-authored the recent book *Map Construction Algorithms* with Mahmuda Ahmed, Sophia Karagiorgou and Dieter Pfoser.