

UC SANTA BARBARA

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Using AI in pursuit of better bike paths

It's said that California has a love affair with cars. Indeed, most of the urban areas in the state cater toward the automobile, often at the expense of other modes of transportation. But cycling is gaining in popularity, and the health and environmental benefits are undeniable.

Researchers at UC Santa Barbara will be training AI to map bicycle infrastructure and develop a universal, regional wayfinding plan for the area. The California Department of Transportation has awarded a \$480,000 Sustainable Transportation Planning Grant to the Santa Barbara County Association of Governments (SBCAG), which is partnering with UCSB and Simon Fraser University, in British Columbia, on the project.

“Our project goal is to make a new bike route map for the Santa Barbara region,” said [Trisalyn Nelson](#), a geography professor at UCSB and founder of BikeMaps.org. The team will map bicycling comfort levels for roads and paths, allowing people to choose a route that is right for them. Built on AI technology, the map can be updated regularly as our bike infrastructure and roads change.

The AI Bike Mapping and Wayfinding Project aims to revolutionize bicycle infrastructure mapping and improve cyclists' safety in Santa Barbara County. The project's key objectives include:

- AI training: Data from Google Street View, OpenStreetMap and an advisory committee will inform, train and develop a tested AI model.
- Infrastructure classification: A diverse selection of individuals will consistently rank bike routes from easy to expert for the AI model.
- Mapping: A specialist in cartography will utilize the data generated by the AI model to create a digital and hard-copy bike map.
- Wayfinding plan: Develop a universal, adaptable regional wayfinding system based on AI findings. This plan could help secure future funding for installing uniform wayfinding signs countywide, enabling cyclists to navigate easily with or without smart devices.

According to Nelson, the methods developed through this initiative being developed in Santa Barbara County can be replicated throughout the state.

“Our work in Santa Barbara County has the potential to expand across California,” she said. “By collaborating closely with the community, conducting on-site infrastructure assessments, and incorporating local feedback, we create an ideal testing environment. Our objective is to develop an open-source code repository that offers insights into scaling efforts across the state. This will lay the groundwork for an AI-based classification system to serve all of California.”

Overall, the project’s objectives include improving safety and mobility for cyclists, increasing access to bicycle facilities, and reducing greenhouse gas emissions by facilitating a shift from driving to bicycling.

“With the fast-paced changes in bicycle infrastructure, and no up-to-date local map to guide cyclists, we’re thrilled to collaborate with two major universities to train artificial intelligence in creating a reliable, easy-to-understand and constantly updated resource for our county,” said Steve Lavagnino, chair of SBCAG and District 5 County Supervisor.

The California Department of Transportation (Caltrans) awards transportation planning grants each year through a competitive process to encourage local and regional projects. Since the grant program began in the 2015-16 fiscal year, Caltrans has awarded 685 planning grants totaling \$266 million. More than 60% of those projects have been completed. “We are profoundly honored to receive this generous grant from the California Department of Transportation,” said Marjie Kirn, executive director of SBCAG. “The funding is a step forward in our commitment to innovation

and enhancing bicycle infrastructure and safety throughout Santa Barbara County.”

Tags

[Artificial Intelligence](#)

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