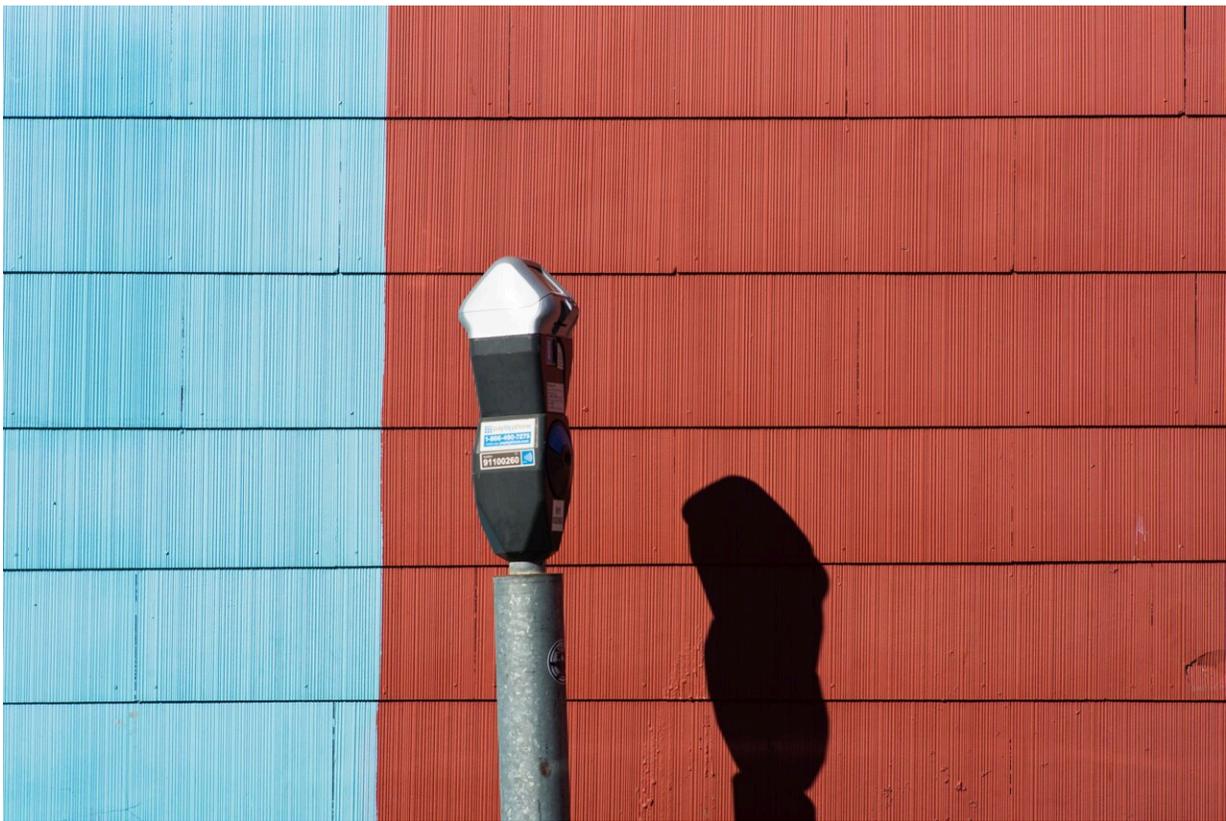


# Taking the strain out of parking in busy cities with AI technology

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Credit: Unsplash/CC0 Public Domain

Artificial intelligence that helps drivers find parking spaces in busy city centers is being developed at the University of Bath.

The software will also incentivize drivers to cooperate with local councils in their quest to keep pollution within safe limits in busy urban centers, as part of a far-reaching program designed to reduce toxic air in city centers.

As city populations continue to grow (it's expected that the world's urban population will more than double between now and 2050, with 7 out of 10 people living in cities), the need to use new technology to mitigate pollution and congestion becomes ever more pressing. However, any measures introduced to curb the use of cars in cities will also need to factor in the needs of people from rural communities who may rely on their cars to access essential services.

The new project is a collaboration between computer scientists at Bath and Chipside Ltd, a leader in the world of [parking](#) and traffic management IT. The potential for the new technology to be adopted by councils across the U.K. is high: currently, Chipside is responsible for supplying digital parking permits and cashless parking to over 50% of councils in the U.K..

## **Net-zero carbon emissions**

During the course of its 2.5-year partnership with Bath, Chipside will develop a suite of software designed to help local councils comply with milestones on parking, city access and vehicle movement, as set out in the government's ten-point plan. This plan, launched in November 2020, is using public and private investment to nudge the UK towards reaching its objective of net-zero carbon emissions by 2050.

Under the Environment Act, which became law in 2021, [local governments](#) are strongly incentivized to roll out "smart city" initiatives such as those proposed in the Bath-Chipside project, as increasingly they will likely face heavy fines if they miss environmental targets. One

important target currently being proposed is to keep [fine particulate matter](#) (PM<sub>2.5</sub>)—which originates from the combustion of fuel—within limits recommended by the World Health Organization.

## **Influencing driver behavior**

The new project will use the latest AI technology to create services that allow [local authorities](#) to analyze vast amounts of data on driver behavior and to better control local travel patterns.

Dr. Özgür Şimşek, deputy head of Computer Science at Bath and leader of the Artificial Intelligence Research Group, will be the academic lead for the project. She explains why it makes sense for services to be developed to change driver behavior during the last mile of their journey into an urban center.

"Imagine you are traveling into town on a Thursday morning and without you knowing it, your car is the one engine that triggers the town to go over the allowed pollution level, resulting in a big fine for the local government. Now imagine that instead of this happening, you receive a suggestion to park in another, better place, and you are issued a free parking space. You're also shown a low-traffic route to your free parking space. The whole service would be tailored to your individual needs while also helping towards net-zero objectives."

Dr. Tom Haines, a lecturer in machine learning from Bath's Department of Computer Science and fellow member of the KTP team, added: "An important aim of the project is to make transport services more responsive to the user. Currently, people make decisions, such as where to park, and the government reacts later. Realtime services provide a stream of data that's being accumulated on driving behavior but not used. In deploying AI, we create a dynamic system, able to adapt to the needs of drivers and the environment, ultimately for the benefit of all."

David Wright, Founder of Chipside and industrial supervisor for the KTP, says: "The new knowledge gained from the partnership will be transformational for our company. It will form an intrinsic part of our software development strategy for the future, allowing us to expand our capabilities and more importantly reduce pollution and manage mobility supply and demand in real-time."

Izaro Lopez Garcia, the business partnerships manager in Research and Innovation Services (RIS) at the University of Bath who facilitated the partnership says: "This project will be a U.K. first for local government sharing parking and movement data across borders in real-time. Chipside systems already contain data across those borders and AI can take it a step further in achieving U.K. government net zero objectives."

Provided by University of Bath

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