BikeMap

Tracking Change in Bicycle Infrastructure in Mannheim

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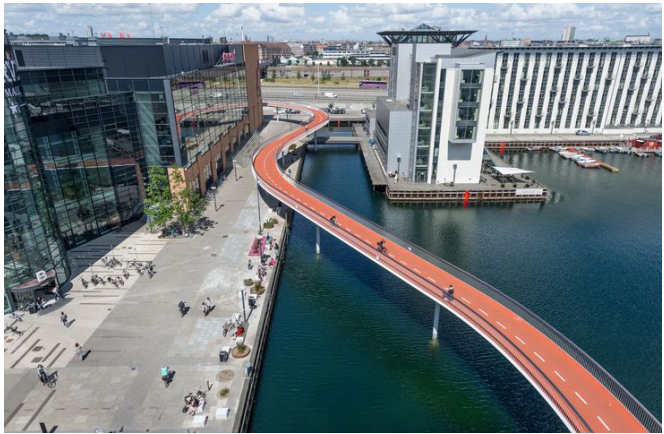
adfc Mannheim

MACHINE LEARNING
UNIVERSITY OF MANNHEIM

MANNHEIM

Motivation: Bike infrastructure in Mannheim . . .

. . . vs. bike infrastructure in Copenhagen



Motivation

THE PROBLEM

1

Too little, hard-to-access data

Existing data on bicycle infrastructure is incomplete and hard to access.

2

Poor usability for those who need it

This makes it hard for policymakers, NGOs, cyclists, etc. to make well-informed (policy) decisions.

OUR VISION

Make bicycle infrastructure data easy to access and ready to use.

For everyone who plans and uses cycling infrastructure.

Integrated into pre-existing sources, using data collected for this project.

Tasks

Mandatory:

- **Benchmark** methods for automatic detection (e.g., road surface, obstacles, traffic) using state-of-the-art **computer vision** methods for videos (and images)
- Find correspondences between videos to **track change over time**
- Integrate **external data** (e.g., OpenStreetMap or Mapillary)
- Create a user-facing **map tool** (e.g., with OpenStreetMap)
- Set up infrastructure and use standard tooling for **geographical work**
- Work collaboratively with the **ADFC Mannheim** and the city of Mannheim

Optional:

- Develop a **navigation tool** with configurable preferences for routing, e.g., smoothest surface
- Deal with **image/video corruptions** (e.g., weather such as rain, fog, snow)

Organization

Structure:

- Write a **project proposal** with clear goals and timeline
- Present and discuss your work in **bi-weekly meetings**
- **Report** your findings in a scientific conference format

Prerequisites:

- Strong **organizational** skills
- Strong **coding** skills / willingness to learn
- Empirical research skills

Organizational details:

Language	English
Duration	1 semester
MMDS & Social Data Science	Welcome!
Participants	3–6
Online Attendance	Possible, in-person preferred

Questions?

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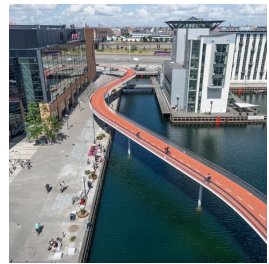
Outcome

\+ **BikeMap** \+ *(lots of effort by NGOs)* =



your tool!