CertaintyLab

Artificial Intelligence for Urban Traffic

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About

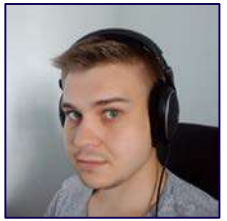
- Berlin company founded in mid 2019 with interdesciplinary team of 6 people

Dr. Hannes Stuke
Co-founder, Math/AI

PD Dr. Pavel Gurevich
Co-founder, Math/AI

Dr. Christoph Mayrhofer
Physics/AI

Dr. Stanislav Chekmenev
Physics/AI



Mike Drepin
DevOps/Architect

Ulrich Overdieck
Software developer

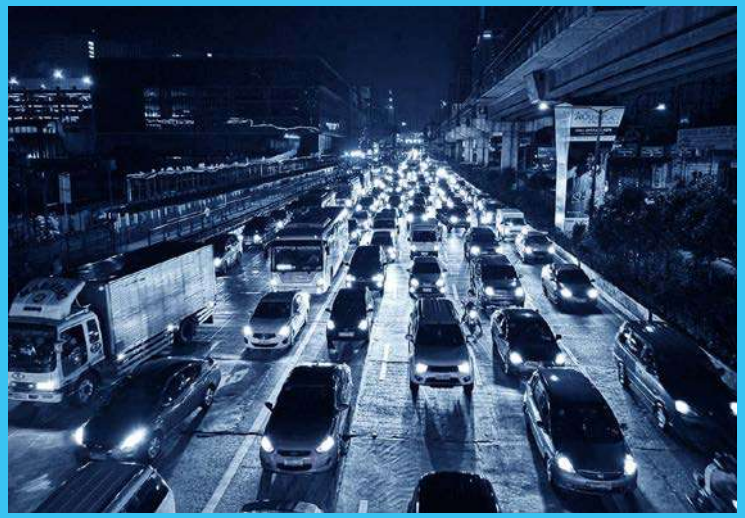
- Originated from research at Free University Berlin
- Develop, implement, and deploy state-of-art AI algorithms for urban traffic
  - traffic light control
  - video based traffic information extraction

Problem:
Inefficient traffic light control

- Long travel times
- High CO_2 emissions
- Complex planning
- Expensive systems

"The average German driver loses 120 hours per year in congestion, yielding a total economical loss of €5.1 billion"

https://inrix.com/scorecard



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Our achievements:
AI based traffic lights control

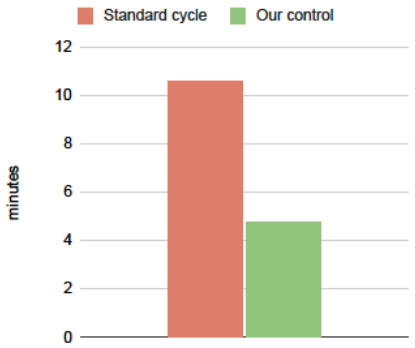
- **Since January 2021:**
  24/7 operation on a network of **seven** real world intersections with **high traffic demand** in a major European city

Improvements at real world intersections:
Both for rush hour and non-rush hour

Rush hour

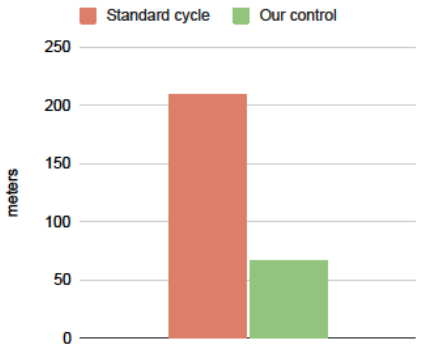
- Time loss (within 1.3 km)

  Improvement: 55%



- Jam length (hence, CO_2)

  Improvement: 68%



Non-rush hour

- Time loss (within 1.3 km)

  Improvement: 33%

- *Time losses and traffic jams based on real world measurements on roads with high traffic demand*

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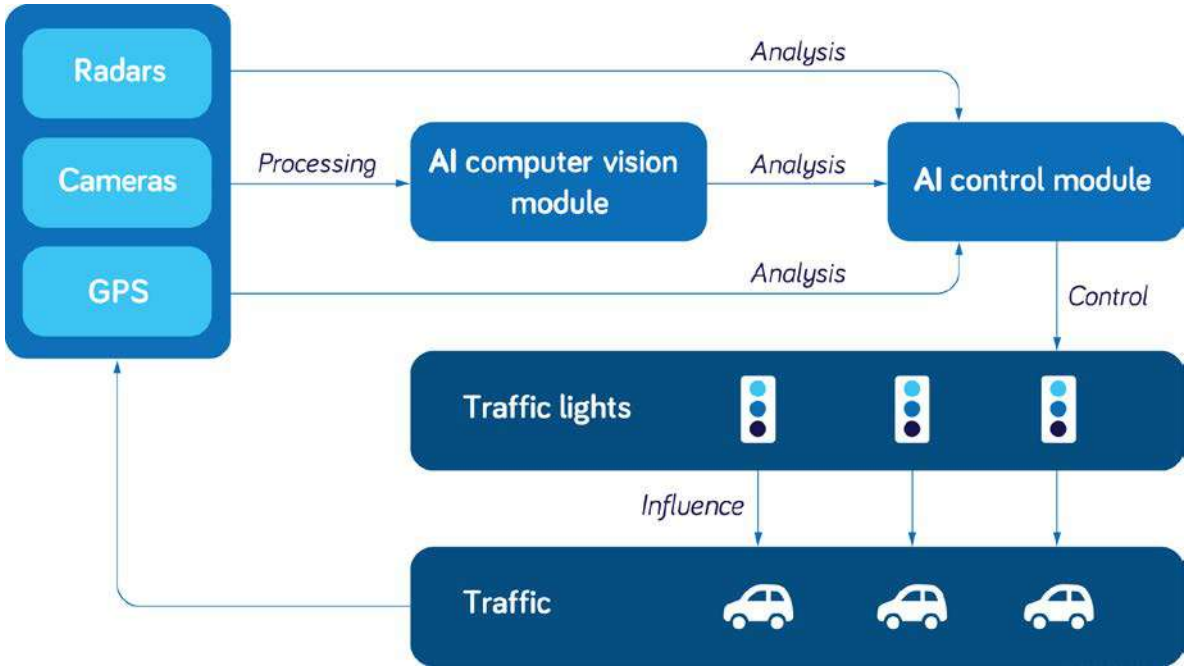
Our technology:
AI for traffic monitoring & control



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Our technology:
AI for traffic control & monitoring

AI Control (*Reinforcement learning*)

- **Control** & **coordination** in real time
- **Balancing needs** of vehicles, public transport, pedestrians, etc.
- **Natural integration** with arbitrary traffic information sources

AI Computer Vision

- **Processing on IoT devices** in real time
- **Extraction of traffic metrics** from video feeds: vehicles' position, speed, trajectory, etc.
- **Sending aggregated anonymized data** to AI Control and storing in a database

Our vision
and prototypes

- **Unified approach to AI based traffic optimization via:**
  - **Coordinated** traffic lights control
  - Optimal **speed recommendations** for individual vehicles
  - **Balancing needs** of vehicles, public transport, pedestrians
  - **Rerouting** of traffic flows

We are interested in

- Contacts to traffic management companies and authorities
- Strategic partners
- Strategic investors
- Pilot projects