

ARTIFICIAL INTELLIGENCE IN TRAFFIC CONGESTION PREDICTION

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DARS – Slovenian
motorway company

Hosted by

ICA

YAVUZ SULTAN SELIM BRIDGE
AND
NORTHERN RING MOTORWAY



Traffic calendar

SWITCH TO THE MONTHLY LIST

← August 2023 TODAY →

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

forecast for 11. 8. 2023

before noon

High traffic intensity increased HGV traffic.

afternoon

Very high traffic intensity increased HGV traffic.

Development of traffic congestion prediction in Slovenia

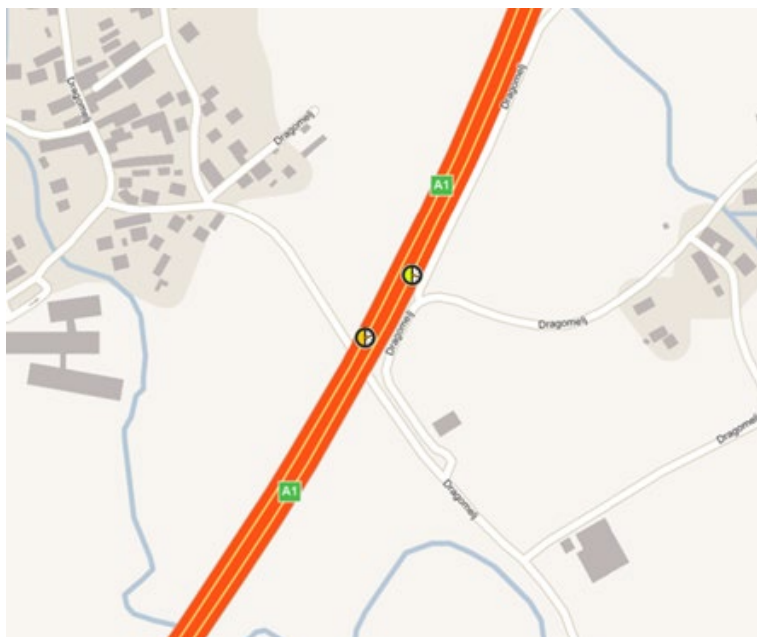


I. Statistical prediction

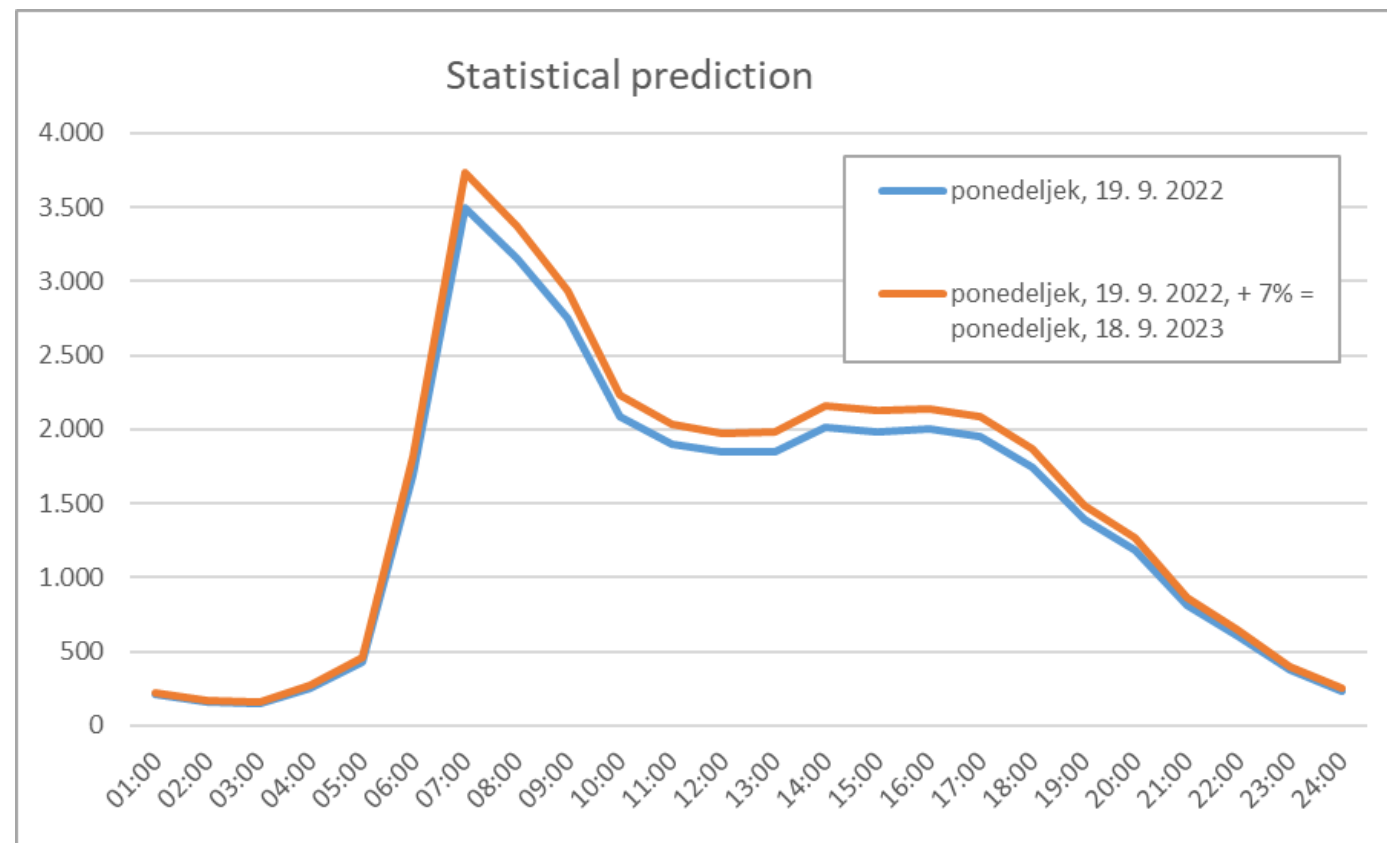
II. Traffic modeling

III. Predictions with machine learning (AI) algorithms

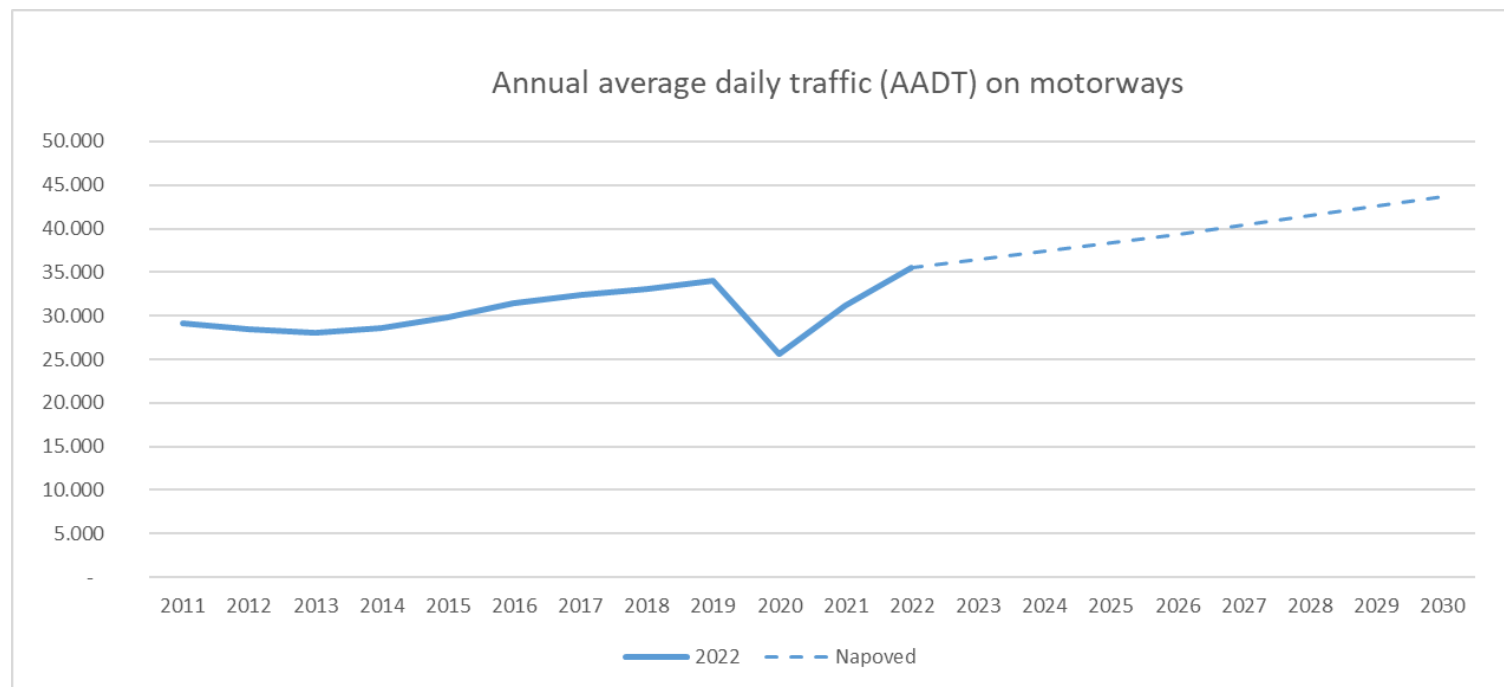
Statistical prediction



How many vehicles will be on specific motorway section on specific day?

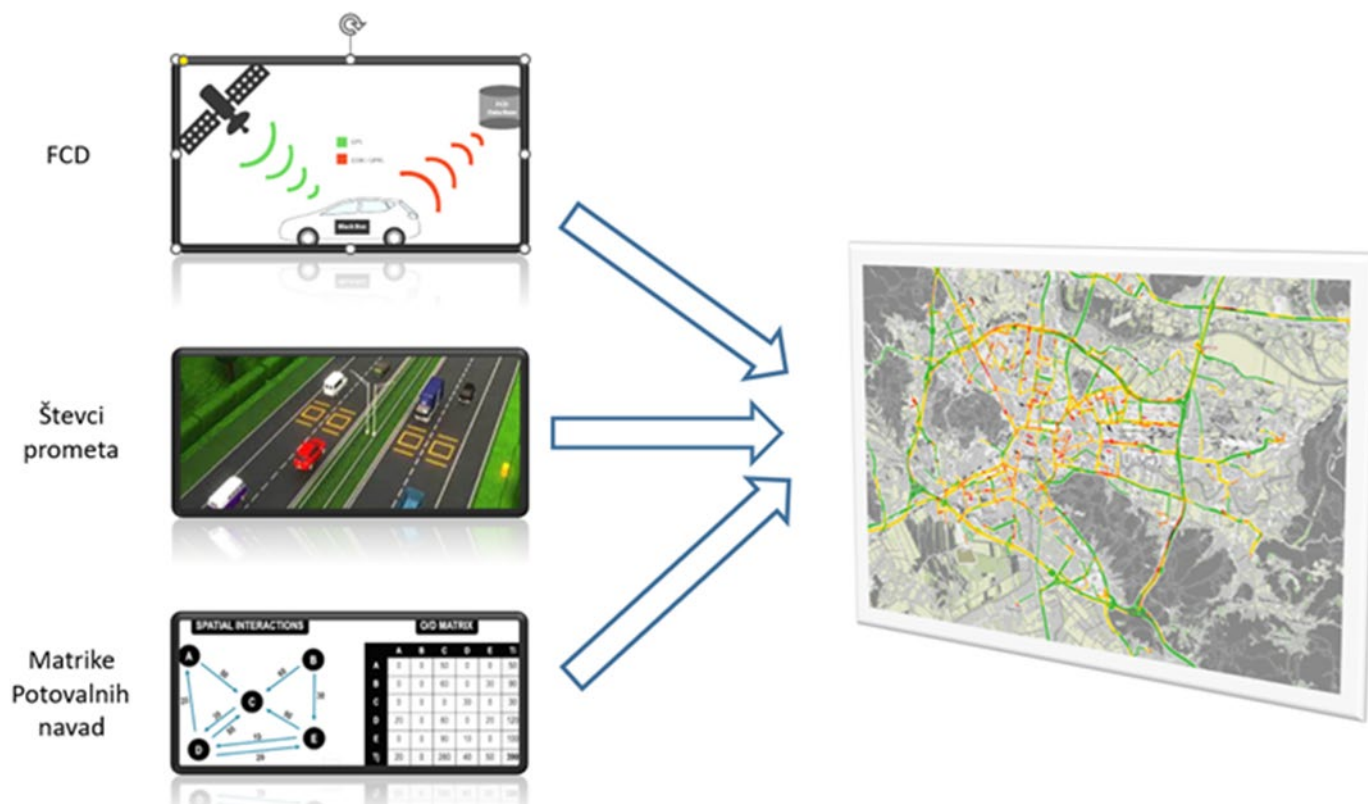


Statistical prediction



- Prediction of traffic based on historical data.

Traffic modeling



Traffic models include different types of data:

- traffic volume
- travel times
- travel habits
- weather data
- holidays
- public transport
- road incidents
- etc.

Predictions with machine learning (AI) algorithms



Why statistical prediction and traffic modeling isn't enough?

Predictions with machine learning (AI) algorithms

For good prediction we add:

- prediction of queue length,
- vehicle distribution (% of HGV),
- economic factors,
- administrative measures (occasional border control etc.),
- structural reasons for changes of traffic flow.

How to include it
to AI?

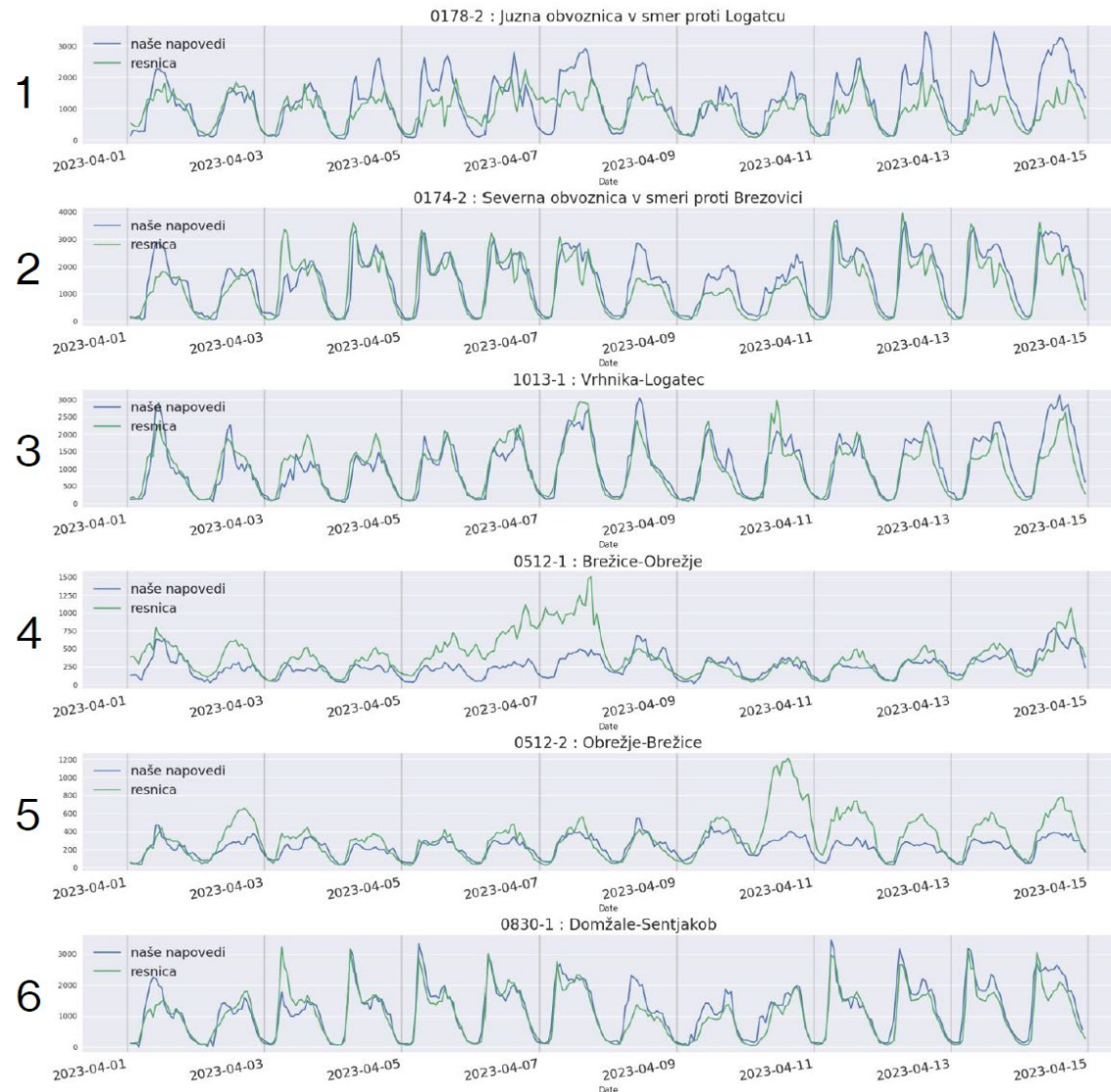
Predictions with machine learning (AI) algorithms

Baselines:

- AI operate with probability, not reality,
- less frequent occurrences are insignificant,
- they need to learn what is important (human factor) or what is irrelevant,
- we must avoid too much data - they need to learn on their own
- it lacks intuition, and it is not guaranteed that the results are good, even if they appear so.

Predictions with machine learning (AI) algorithms

- First results



Predictions with machine learning (AI) algorithms

Best benefits:

- creation of better user interfaces for quicker analyses,
- valuation of parameters that other predictions cannot consider,
- replacing part of work which has to be done by employees.

THANK YOU

DARS, d. d.

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