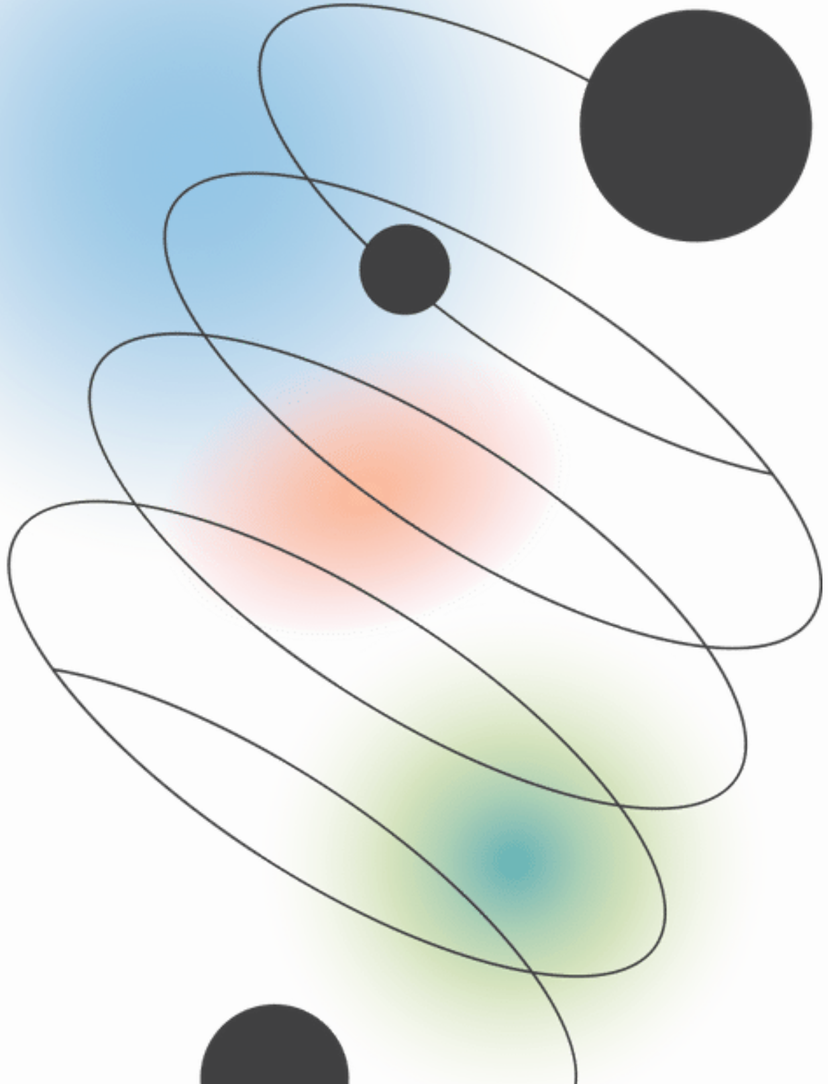
Augmentation comparison in Motion Prediction



HUAWEI & SIRIUS 2021

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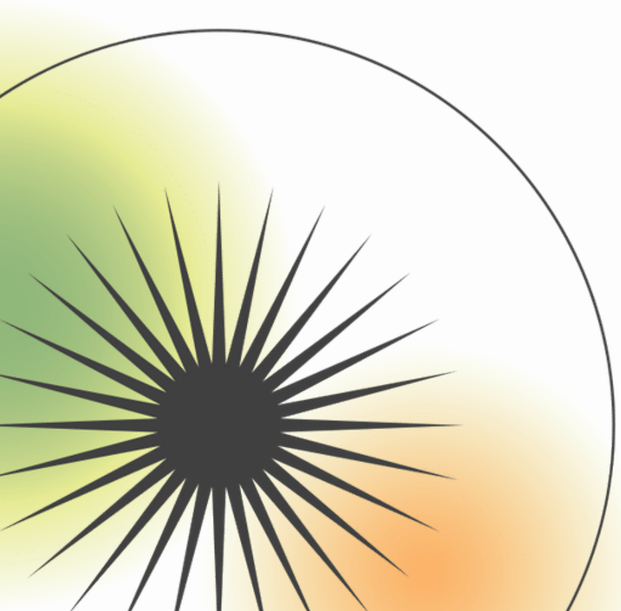
Problem

A small variety of trajectories in the input data.

Solution

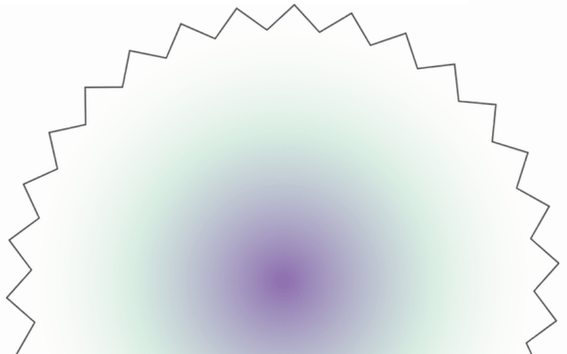
Artificial increase in the training sample by modifying the existing data.



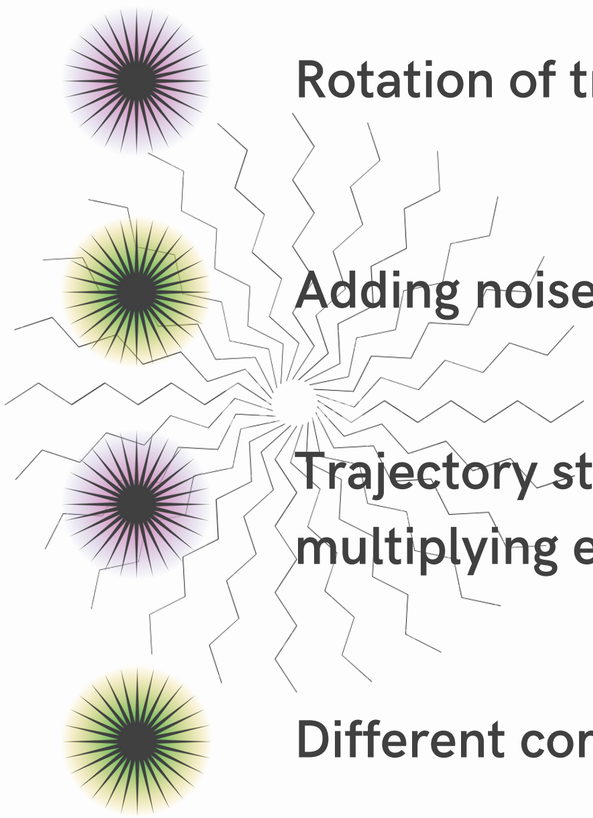
Results

	Short ADE	Short FDE	Medium ADE	Medium FDE	Long ADE	Long FDE
My CNN submission	0.61	1.19	1.37	3.18	3.86	9.84
Baseline	0.72	1.50	1.69	3.93	4.60	11.38

https://eval.ai/web/challenges/challenge-page/1194/overview



What was tried



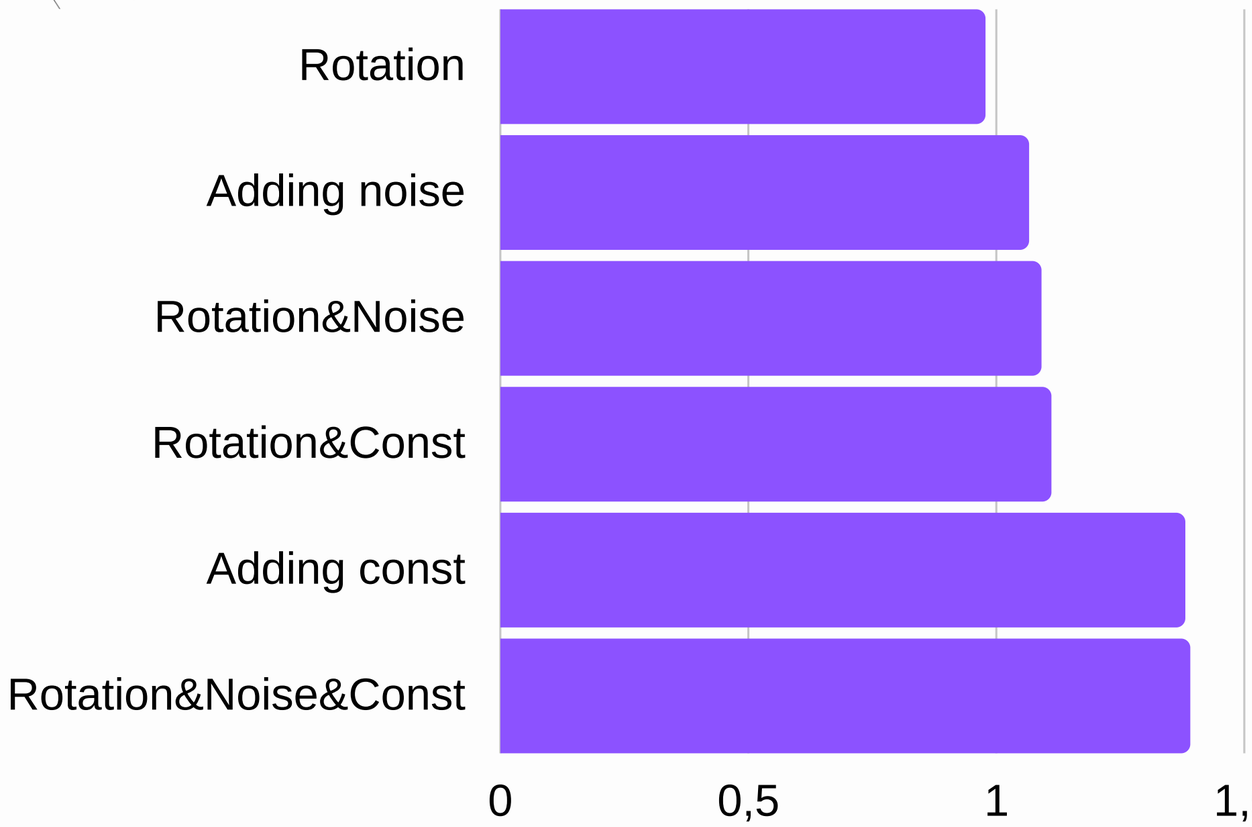
Rotation of trajectory on random angle

Adding noise to each point

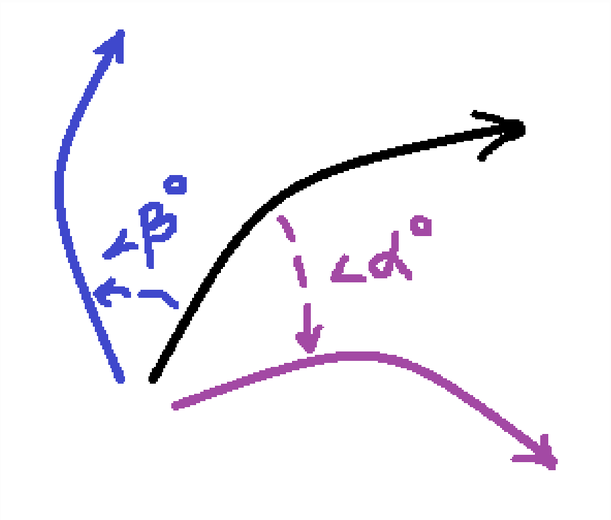
Trajectory stretching and squeezing by multiplying each point by a constant

Different combinations of above

Methods comparison



A turn on a random angle proved to be the best

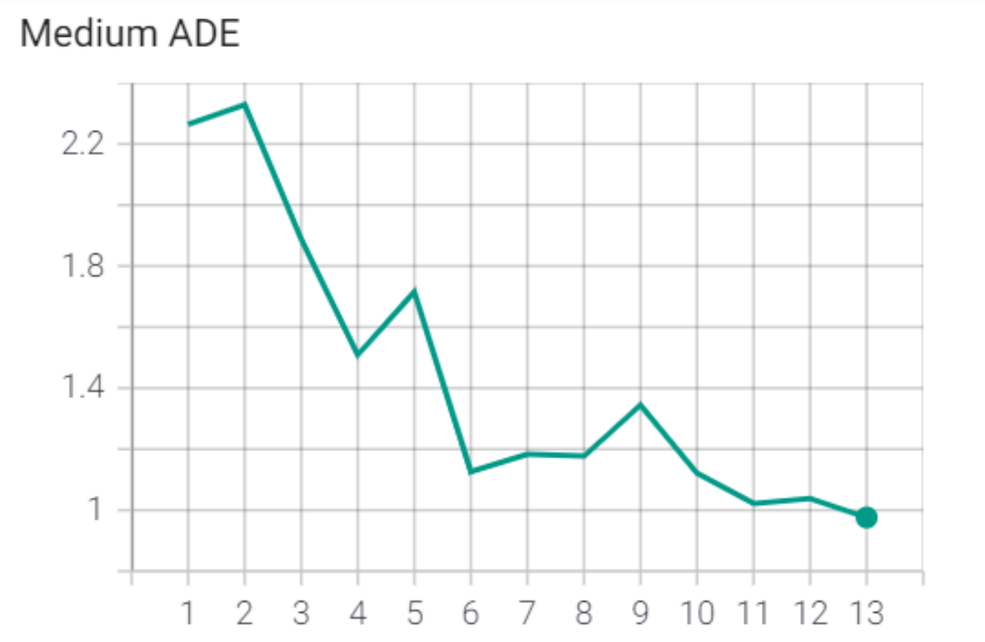


The smaller the ADE, the better

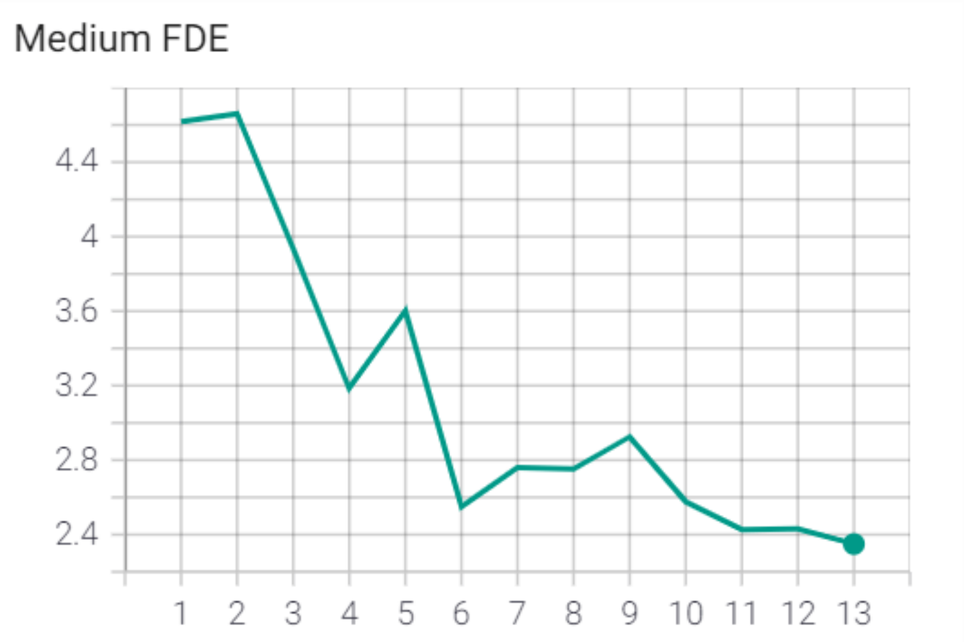
Best solution

Score on validation

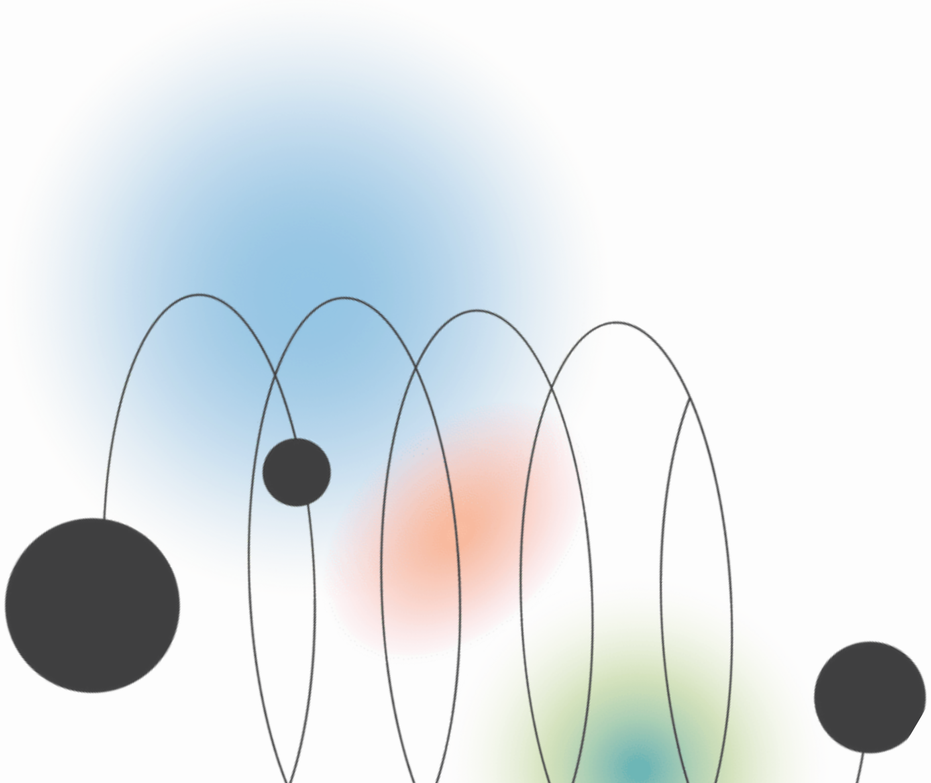
Name	Smoothed	Value	Step
Trajectory rotation	0.9761	0.9761	13



Name	Smoothed	Value	Step
Trajectory rotation	2.349	2.349	13



What's Next



- Study of special augmentation methods for trajectories
- Deep analysis of the dataset and the use of other techniques to improve the result
- Research of information on motion planning on top of motion prediction

Thank you
for your attention!