

Learning from Maps: Visual Common Sense for Autonomous Driving

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Street view image

- Distance to intersection
- Driveable directions
- Heading angle
- Bike lane presence
- Speed limit
- One-way vs. two-way
- Wrong-way vs. right-way
- Number of lanes

Road layout attributes

- ▶ Road layout inference from a single RGB image, without high-definition maps
- ▶ An automatically labelled, large-scale dataset
 - ▶ By matching road vectors and meta-data from navigation maps with Google Street View images
 - ▶ Ground truth road layout attributes
- ▶ Training AlexNet to predict the road layout attributes (a separate network for each task)
- ▶ Comparably to or better than the human baselines except for number of lanes estimation
- ▶ Possibility to extend to recommending safety improvements (e.g., suggesting an alternative speed limit for a street)