IDD: A Dataset for exploring problems in Autonomous Navigation in Unconstrained Environments

Girish Varma1, Anbumani Subramanian2, Anoop Namboodiri1, Manmohan Chandraker3, C V Jawahar1

1. IIIT Hyderabad 2. Intel Bangalore 3. University of California, San Diego

http://idd.insaan.iiit.ac.in/

Autonomous Navigation Dataset
➢ Images from road scenes.
➢ Pixel level/Bounding box Annotations.
➢ Semantic/instance segmentation, Detection.
➢ A basic primitive for Autonomous Navigation.

Cityscapes: Structured Traffic

Unstructured Driving Conditions: A Challenge for Cityscapes Trained Model

Our Dataset
Largest dataset with calibrated camera setup.

Unstructured Driving Conditions: A Challenge for Cityscapes Trained Model

We have more pixels of truck, bus, motorcycle, guard rail, and rider. The pixel counts for new labels are also high. For traffic participants, we have almost double the counts compared to CS.

Benchmarking
Trained DRN-D38 Model: Analysis

Mean IoU: 66%
Some most ambiguous classes
• motorcycle and bicycle.
• billboard and traffic sign.
• obs-str-bar-fallback, vegetation & traffic-light.
• building and billboard.
• vegetation and wall, pole, fence.
• drivable, non-drivable, vegetation.

We have more pixels of truck, bus, motorcycle, guard rail, and rider. The pixel counts for new labels are also high. For traffic participants, we have almost double the counts compared to CS.

Domain Discrepancy

Workshop & Challenge
AutoNUE, ECCV ’18, Munich, Germany
http://cvit.iiit.ac.in/scene-understanding-challenge-2018/
http://cvit.iiit.ac.in/autonue2018/

Qualitative Results

Frame Cityscape Model IDD Model GT