



Politechnika
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6DoF Pose estimation using synthetic data and RGB camera

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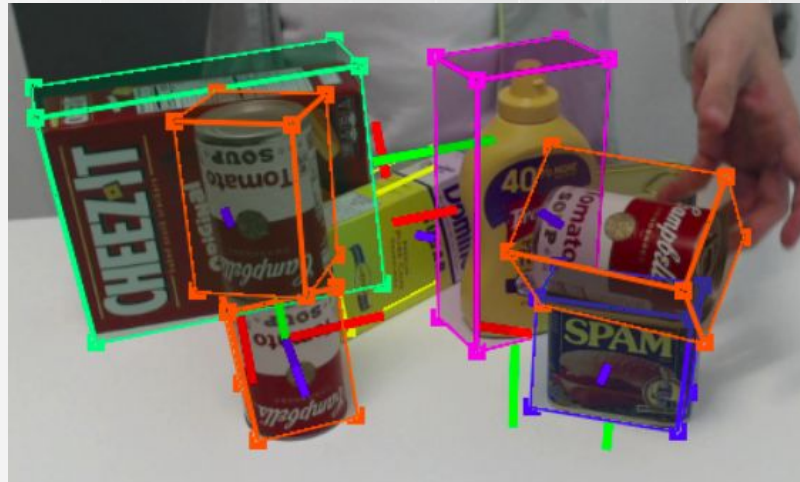
HR EXCELLENCE IN RESEARCH

Concept

- 6DoF pose estimation using only 3D model
- Runtime environment -> low computational power devices
- Multiple instances estimation simultaneously

Baselines

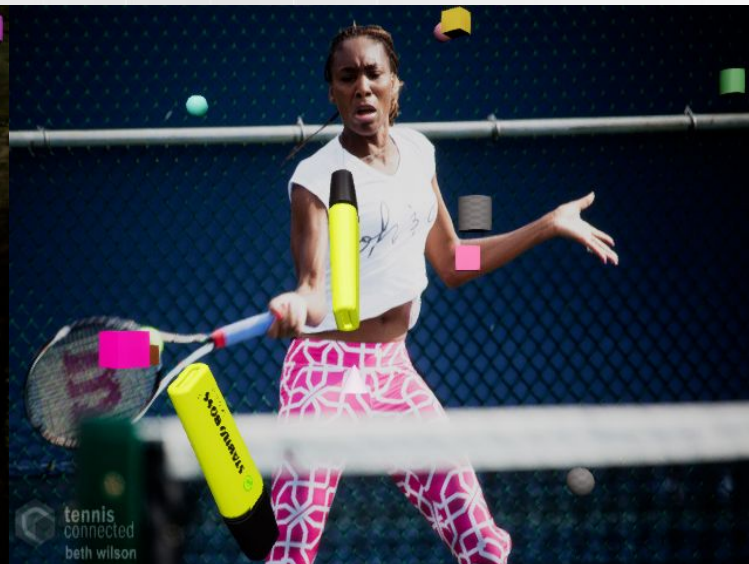
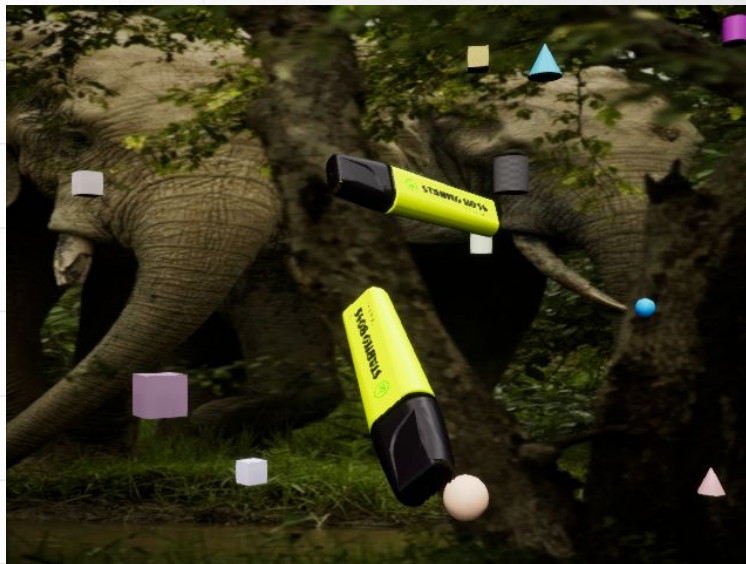
- Deep Object Pose Estimation (DOPE) by Jonathan Tremblay et.al
- NVIDIA Deep learning Dataset Synthesizer (NDDS) by Thang To et.al



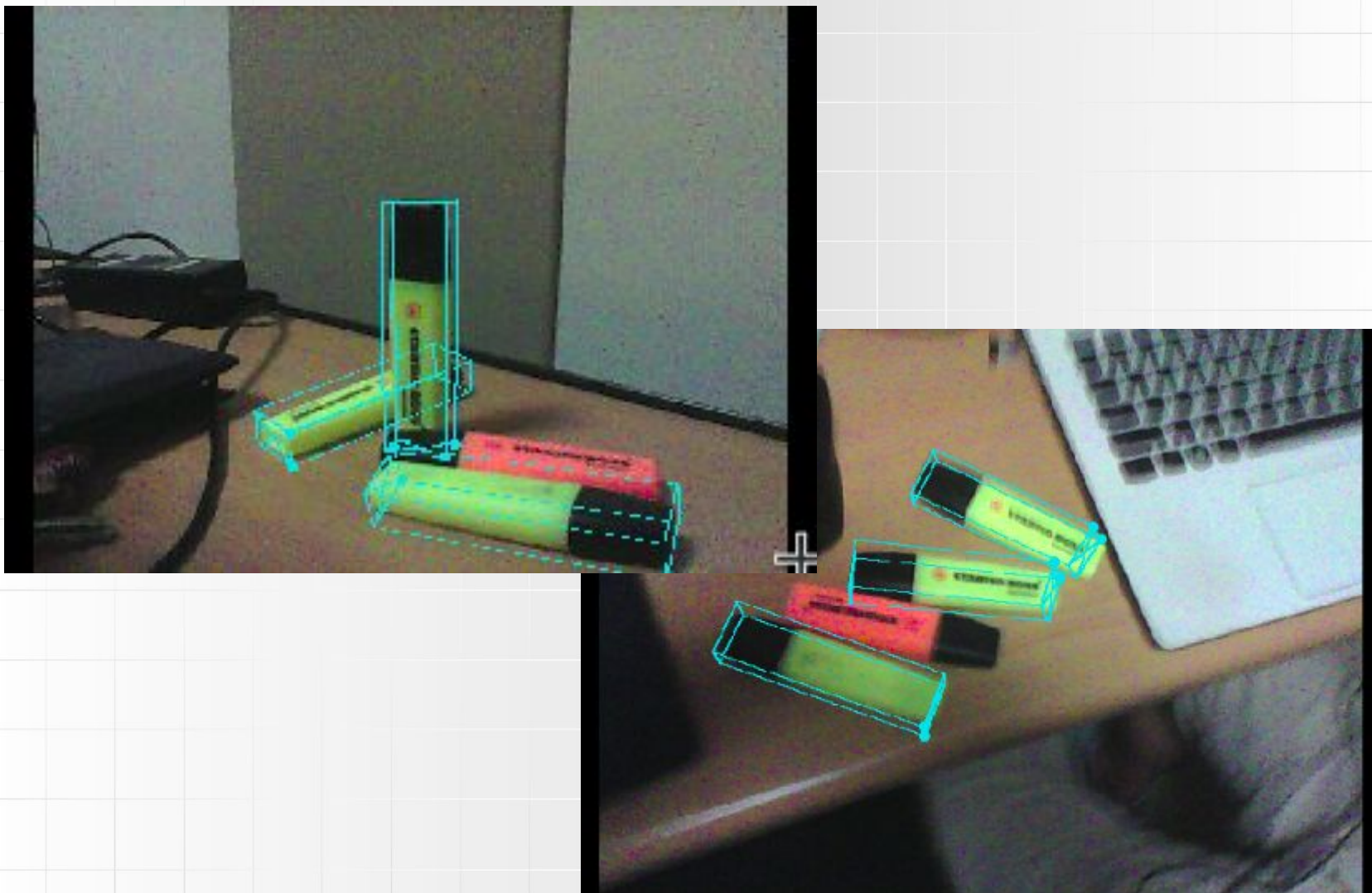
Baselines - explanations

- Highly textured objects
- Additional photorealistic renders
- Runtime device -> Titan V (11FPS)

Generated Data



Runtime presentation



Downsides

- Occlusion not included
- 0.2 FPS in our runtime
- 336 Wall time training

References

- J. Tremblay, T. To, S. Birchfield. Falling Things: A Synthetic Dataset for 3D Object Detection and Pose Estimation. CVPR Workshop on Real World Challenges and New Benchmarks for Deep Learning in Robotic Vision, 2018.
- Deep Object Pose Estimation for Semantic Robotic Grasping of Household Objects
Jonathan Tremblay, Thang To, Balakumar Sundaralingam, Yu Xiang, Dieter Fox, Stan Birchfield, 2018