Multi-View and 3D Deformable Part Models

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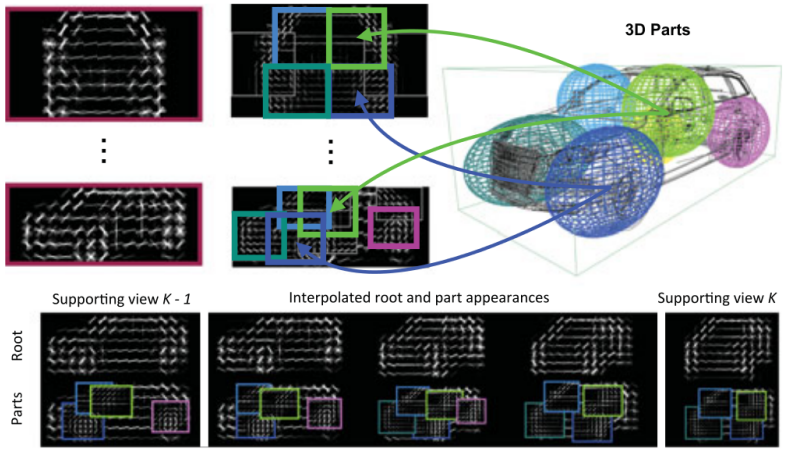

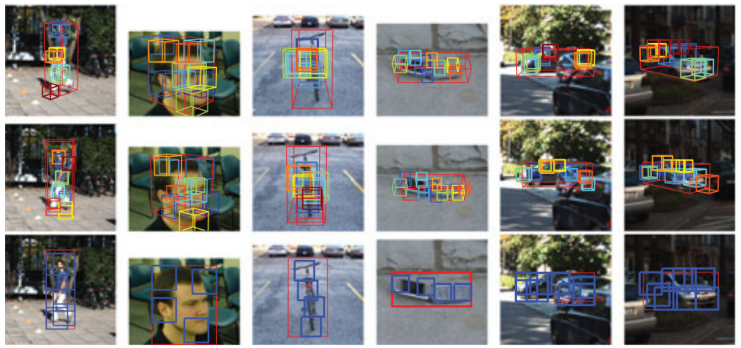

- Joint object localization and viewpoint estimation
- Motivation
  - Limited expressiveness of 2D feature-based models
  - 3D object representations which can be robustly matched to image evidence
- Extension of DPM to include viewpoint information and part-level 3D geometry
  - DPM as a structured output prediction task
  - Consistency between parts across viewpoints
  - Modelling the parts positions and displacement distributions in 3D
  - Continuous appearance model
- Several different models with different level of expressiveness
- Leveraging 3D information from CAD data
- Better than the state-of-the-art multi-view and 3D object detectors on KITTI, 3D object classes, Pascal3D+, Pascal VOC 2007, EPFL multi-view cars