

In The Name of God.  
The Merciful, The Compassionate.

# Extracting 3D Scene-consistent Object Proposals and Depth from Stereo Images

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## 1 Abstract and Introduction

- The goal is to jointly extract objects and estimate depths from stereo images
- Main contribution is to introduce the concept of 3D scene consistency in stereo matching
- Few works on 3D reasoning with respect to stereo images
- Object stereo [1]: the goal was to improve depth estimation by object extraction.
- This work: main focus is on object extraction.
- Inspired by the work of [12]. Proposed the following 3-step pipeline for object extraction:
  1. generate large pool of object proposals
  2. rank object proposals by learning objectness score
  3. perform object recognition on top ranked proposals
- This work differs in the case that it takes an stereo image as input and generates a pool of scene proposals which consist:
  1. disparity map
  2. object map: each pixel  $\longrightarrow$  an object
- Object stereo [1]: did not introduce the concept of computing a pool of object maps.
- Key difference is objects in [1] were approximated by flat 2D planes. We enclose them by using a 3D bounding box  $\implies$  we can exploit physical constraints.