



LOOC

Localize Overlapping Objects with Count supervision



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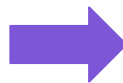


The problem

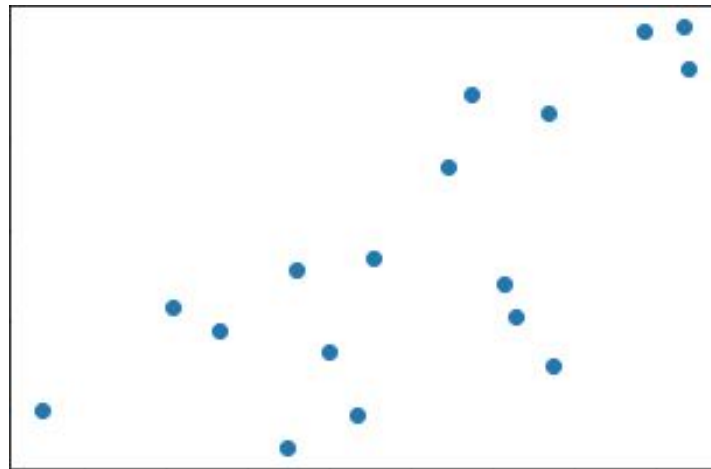
Object Localization and Counting



Input image: Scene



Count: 17



Goal: Count and localize the objects

The problem

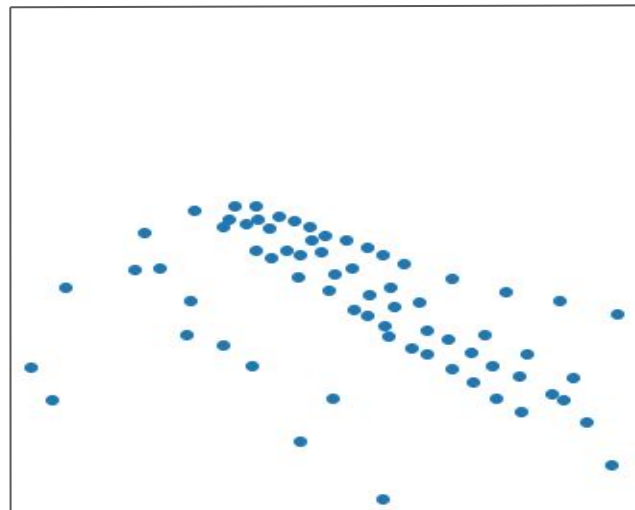
Object Localization and Counting in Crowded Scenes



Input image: Crowded Scene



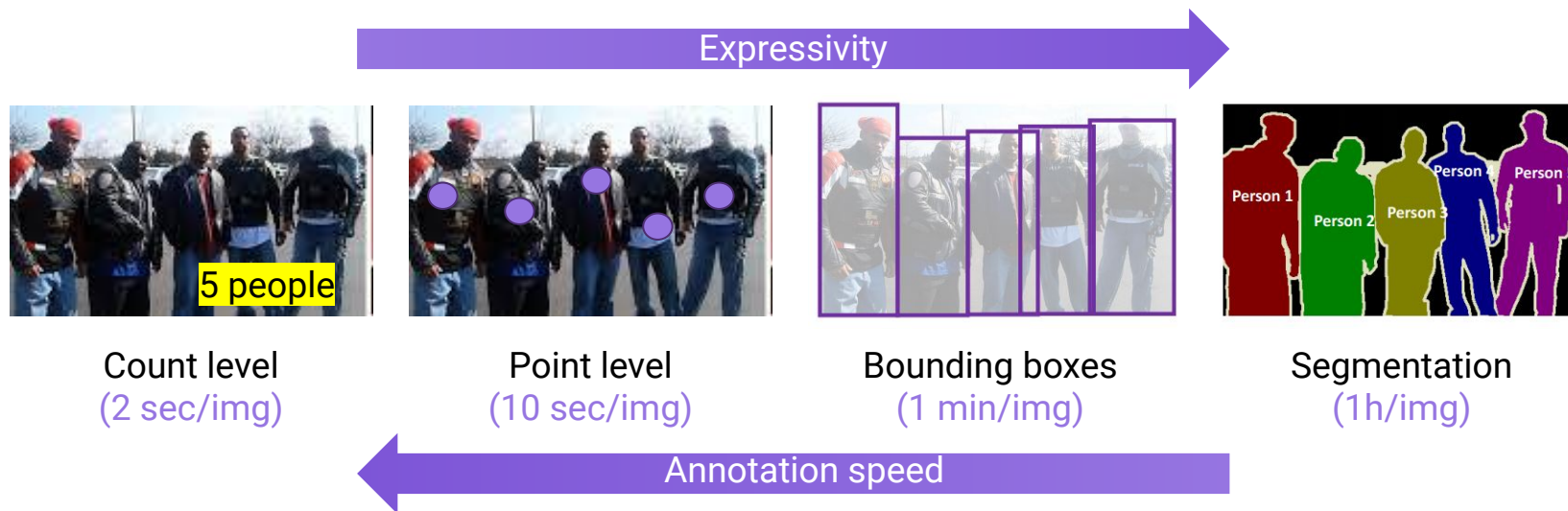
Count: 107



Goal: Count and localize the objects

The Challenge

Train with Weak Supervision



Weak Supervision

We use **count level supervision** for training a localization model

Count supervision Applications



ElementAI/looc



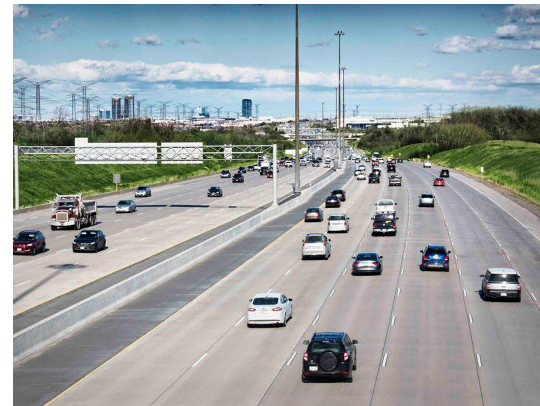
@ILaradji



Supermarket



Auditorium



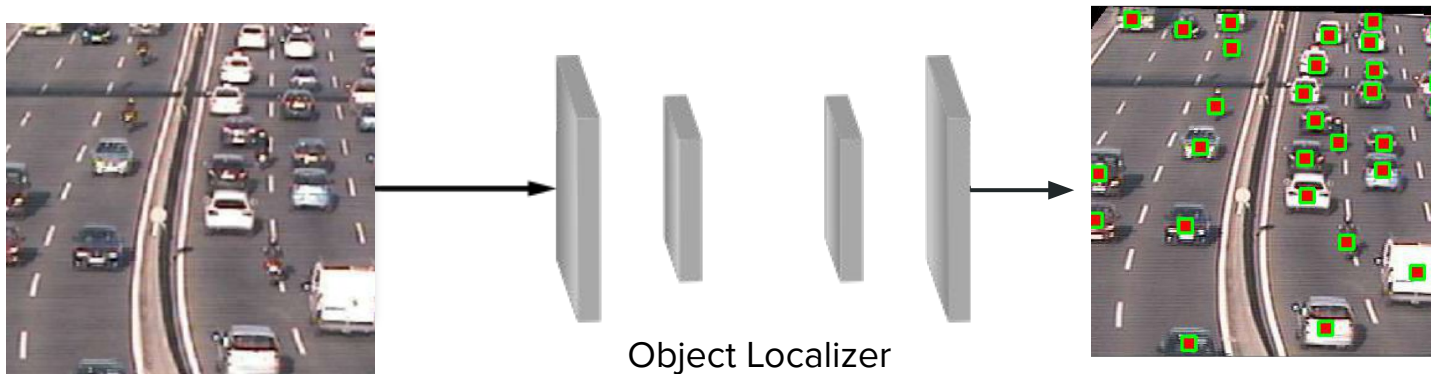
Highway

Zero Annotation Time

In some applications we have count annotations for **free**

Method LOOC

Prediction at test time

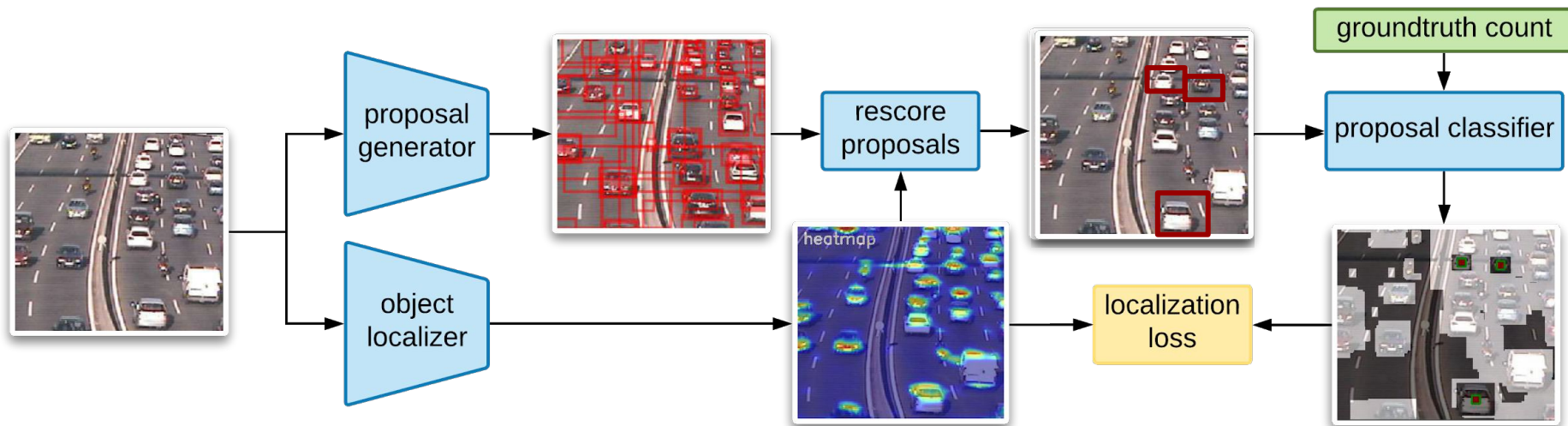


LOOC

The trained object localizer like “LCFCN” [ECCV2018] is used to **count and localize** objects [ECCV2018] **Where are the Blobs: Counting by Localization with Point Supervision**

Method LOOC

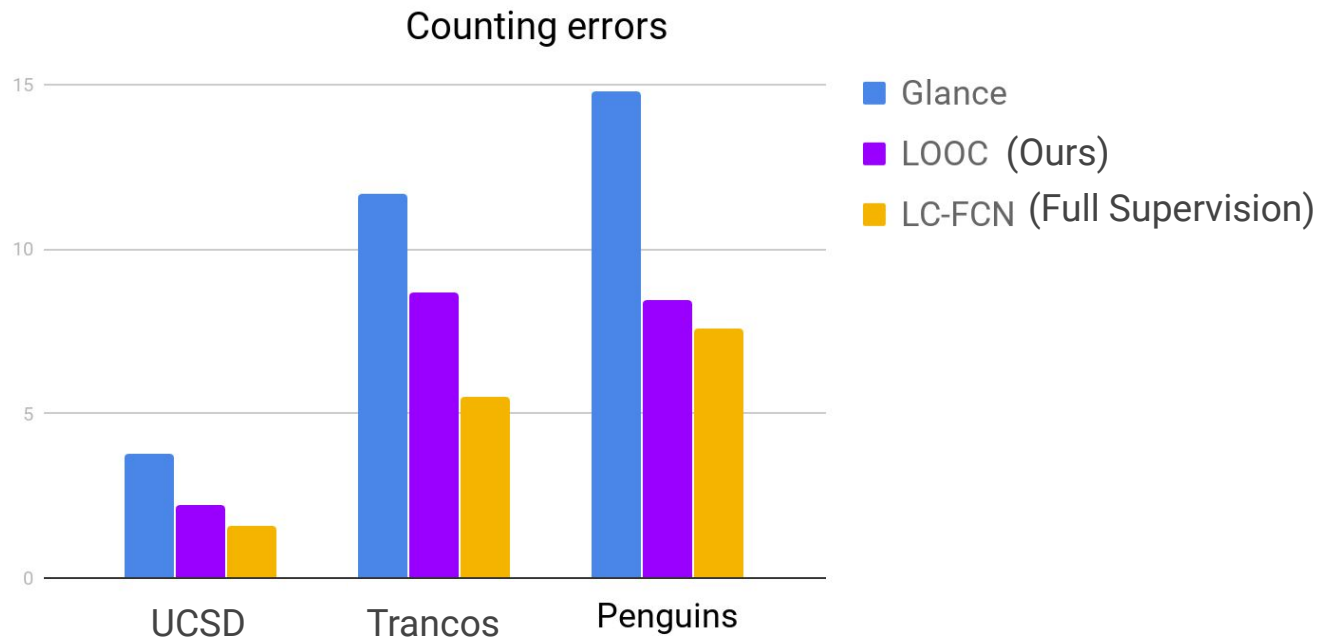
Training procedure



LOOC

Proposal generator and classifier: Generate **pseudo** point-level **annotations**
Object localizer: Trained on pseudo annotations to **count and localize** objects


Results



Conclusions

Take Home Message

Count annotations are **free** in some cases and **LOOC** can leverage them to count and localize objects

Code is available at:  ElementAI/looc

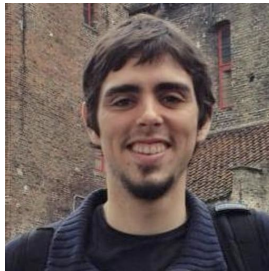


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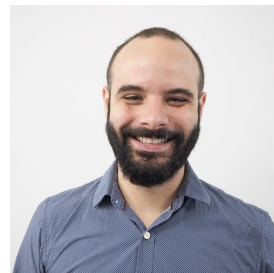
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