

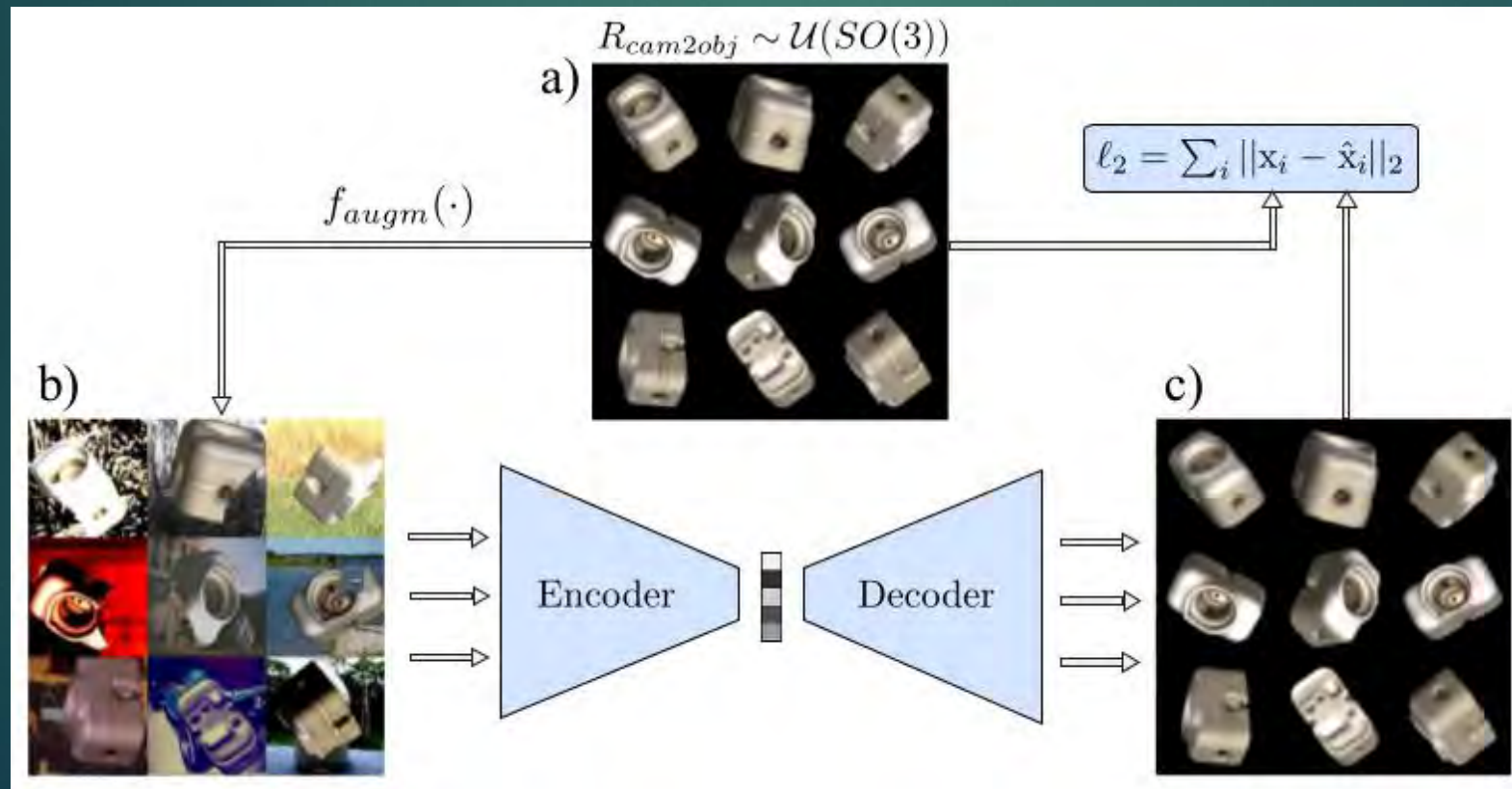
5. Positionnement global

5.3 LOCALISATION BASÉE OBJETS

Utilisation d'une architecture E/D

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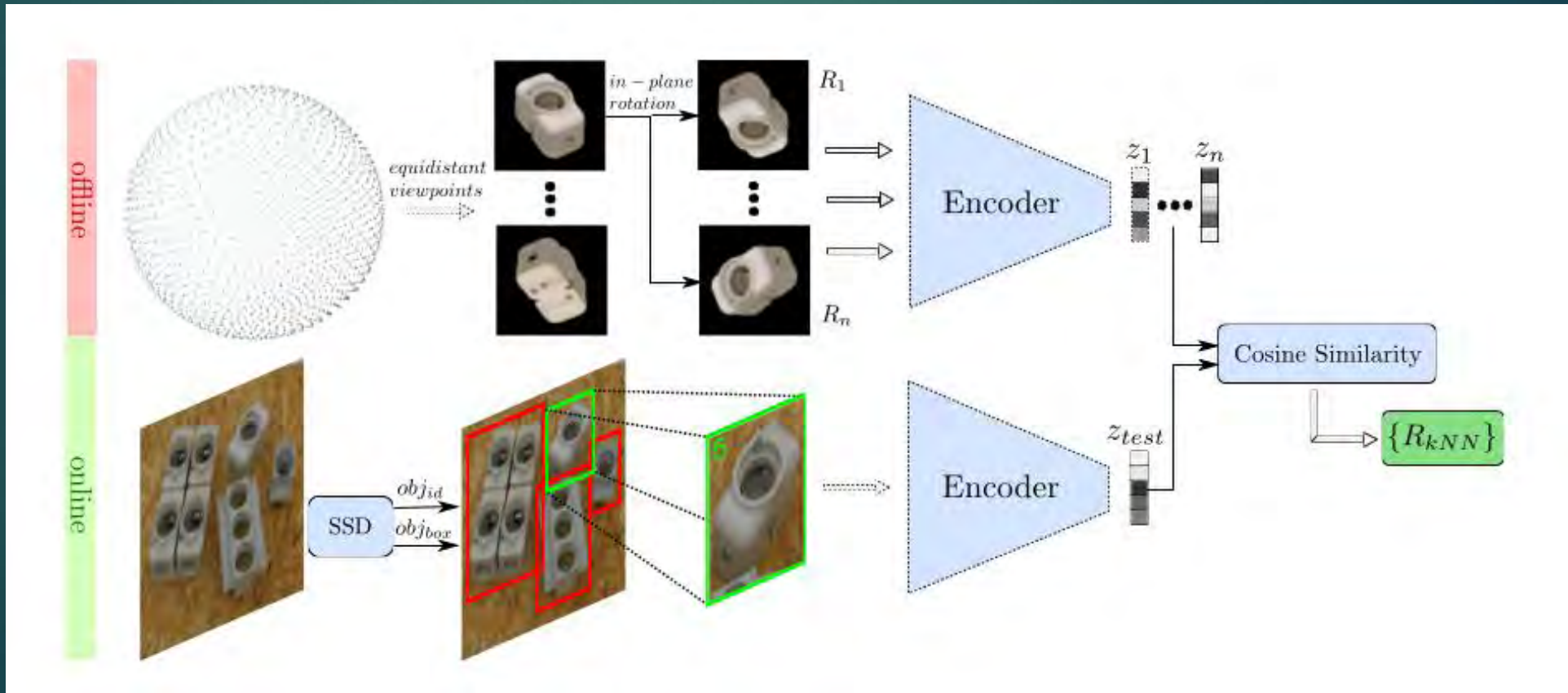
- Utilisation d'une architecture E/D pour rendre la méthode robuste aux conditions d'acquisition (occultations, illumination, arrière-plan, ...)



Utilisation d'une architecture E/D

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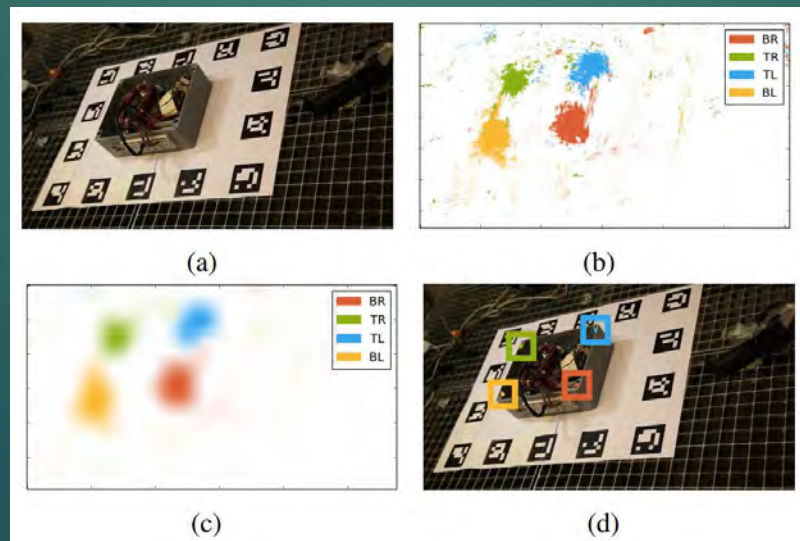
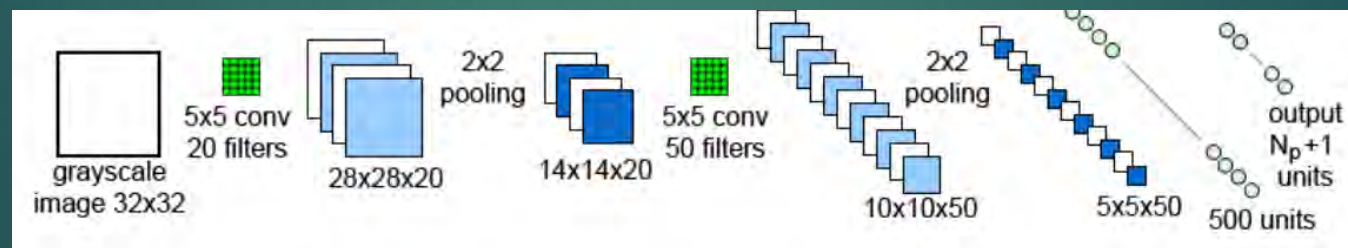
- *Implicit 3D Orientation Learning for 6D Object Detection from RGB Images*, Sundermeyer et al., ECCV 2018



Détection de « points de contrôle »

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- ▶ *A Novel Representation of Parts for Accurate 3D Object Detection and Tracking in Monocular Images*, Crivellaro et al., ICCV 2015

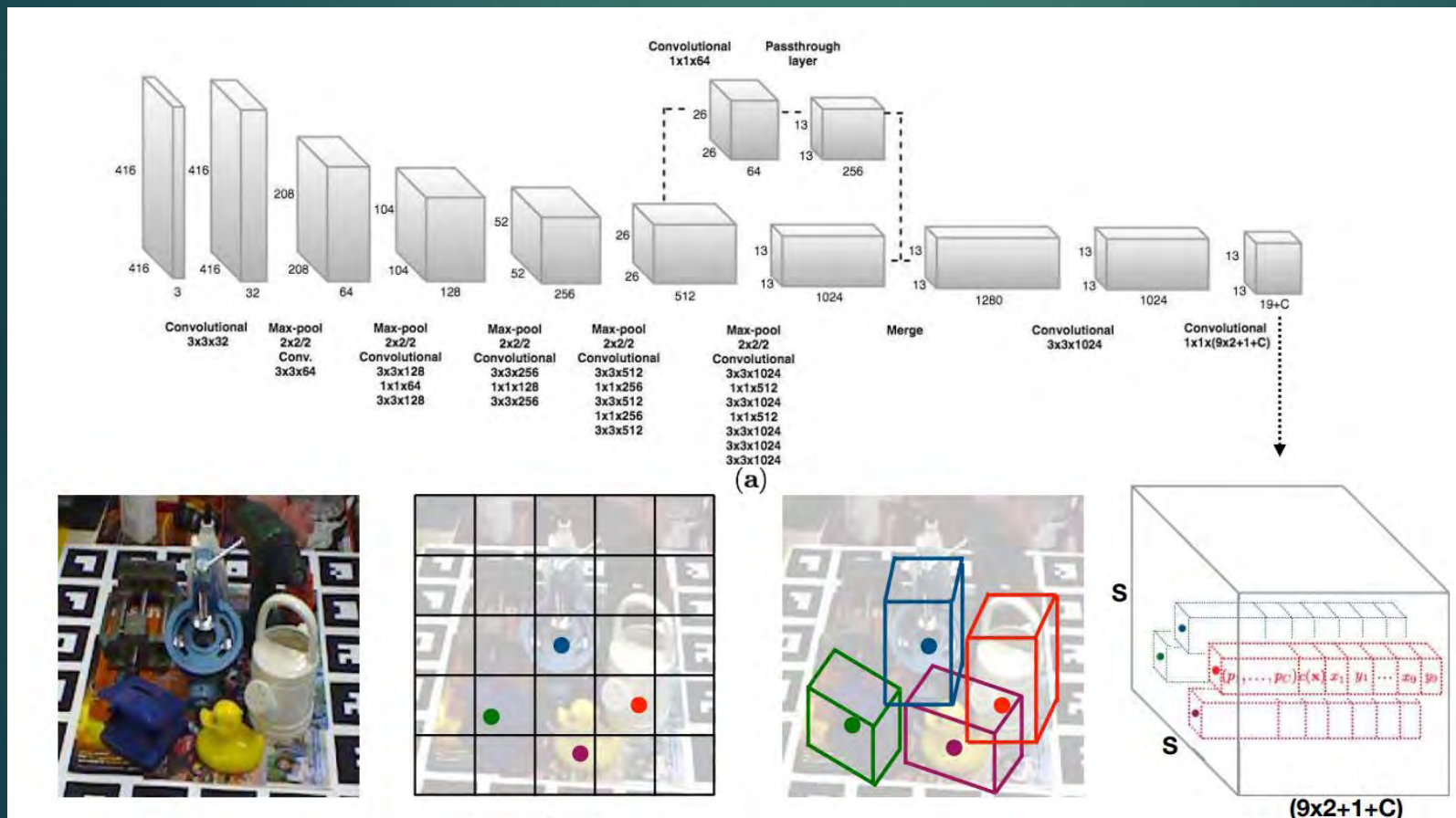


La pose peut alors être calculée par PnP

Problème : ce réseau doit être réappris pour tout nouvel objet

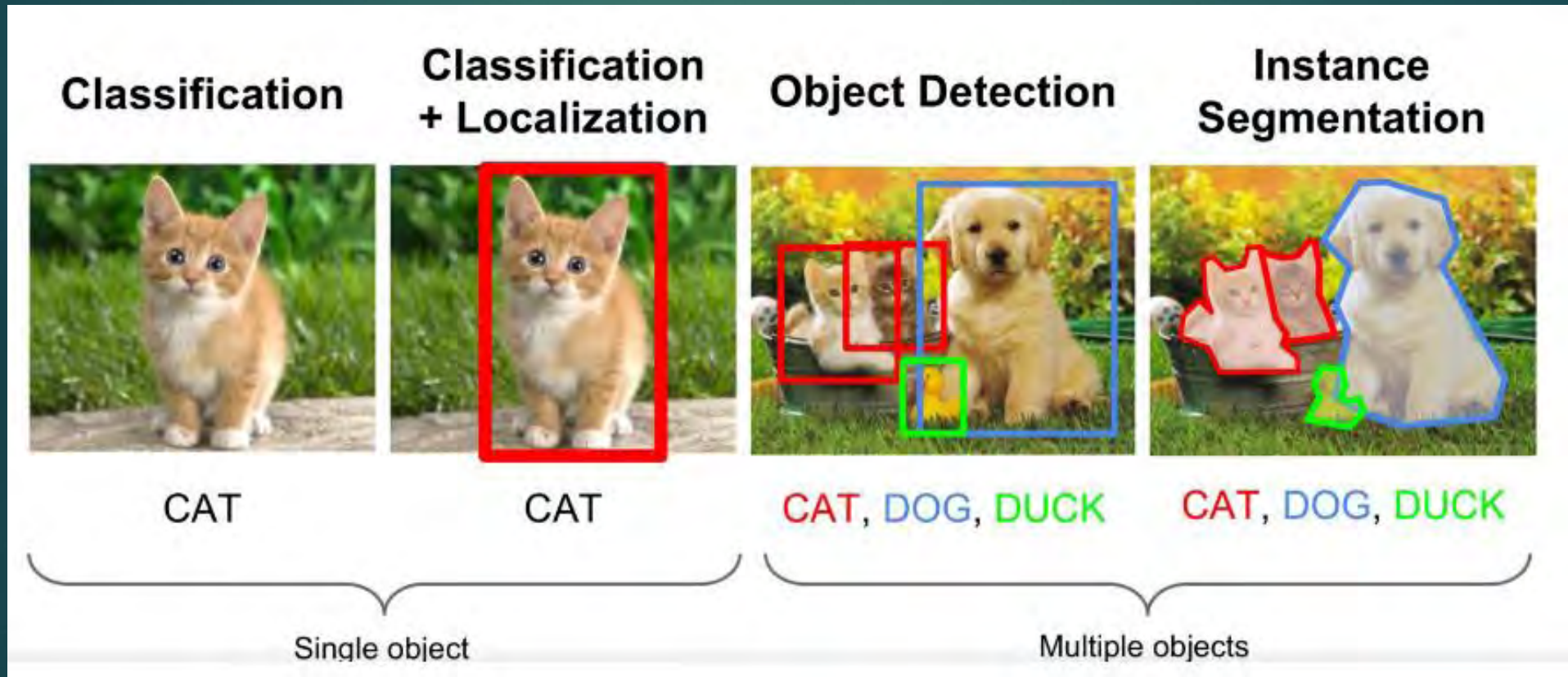
Détection des sommets de boîtes englobantes

- Real-Time Seamless Single Shot 6D Object Pose Prediction [Tekin et al. CVPR 2018]



Détection de classes d'objets

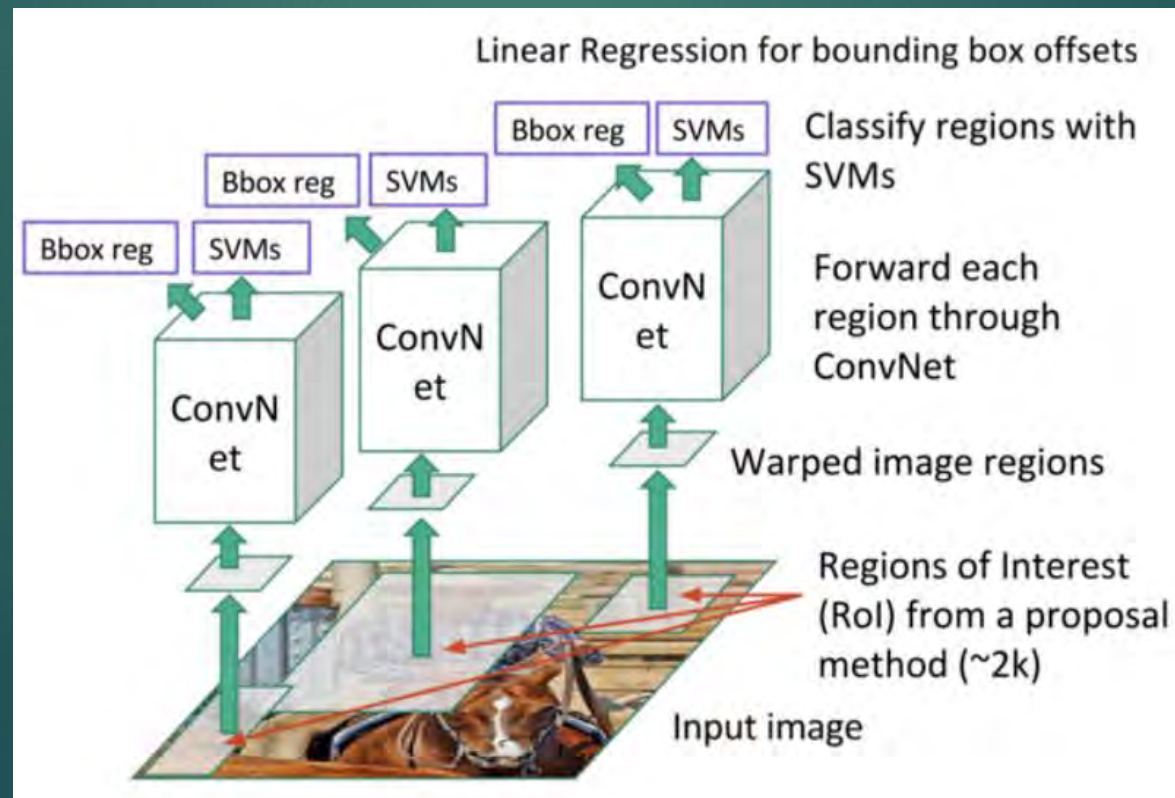
52



Détection de classes d'objets

53

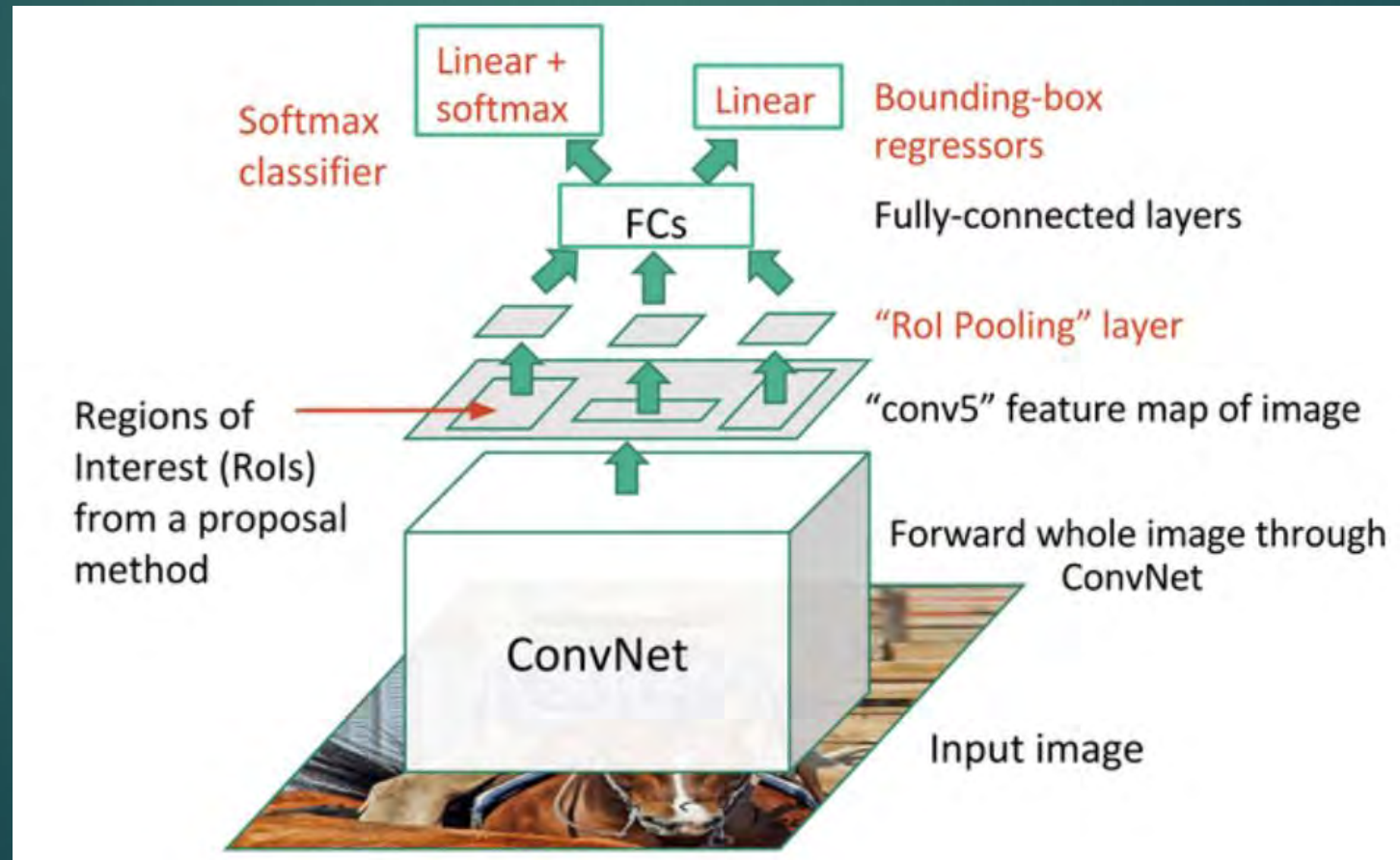
- ▶ R-CNN : Region-based Convolutional Network (R. Girshick et al., 2014)
 - ▶ Proposition de boîtes : selective search [Uijlings et al. 2012]
 - ▶ Application d'un CNN + SVM sur chaque boîte proposée



Détection de classes d'objets

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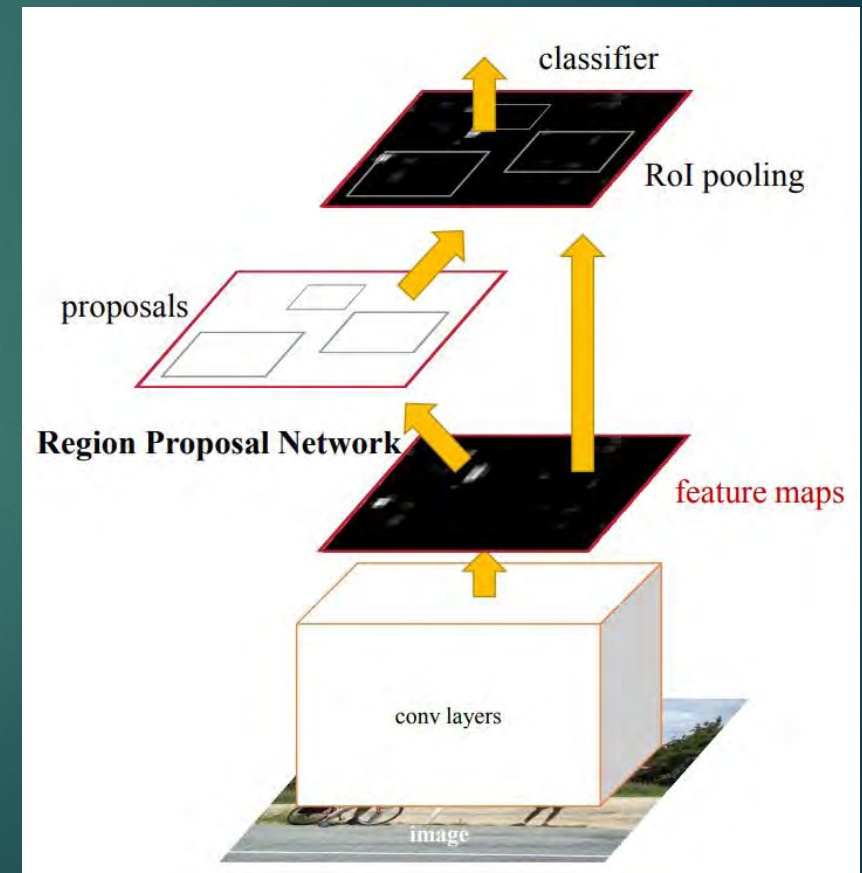
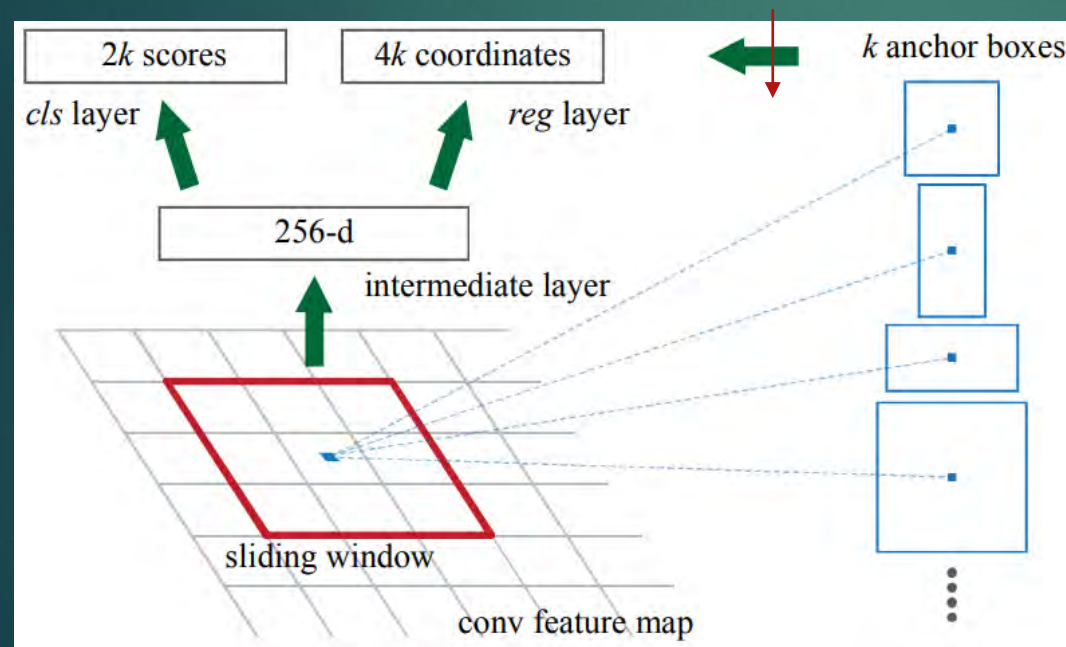
- ▶ Fast R-CNN : Fast Region-based Convolutional Network (Girshick 2015)



Détection de classes d'objets

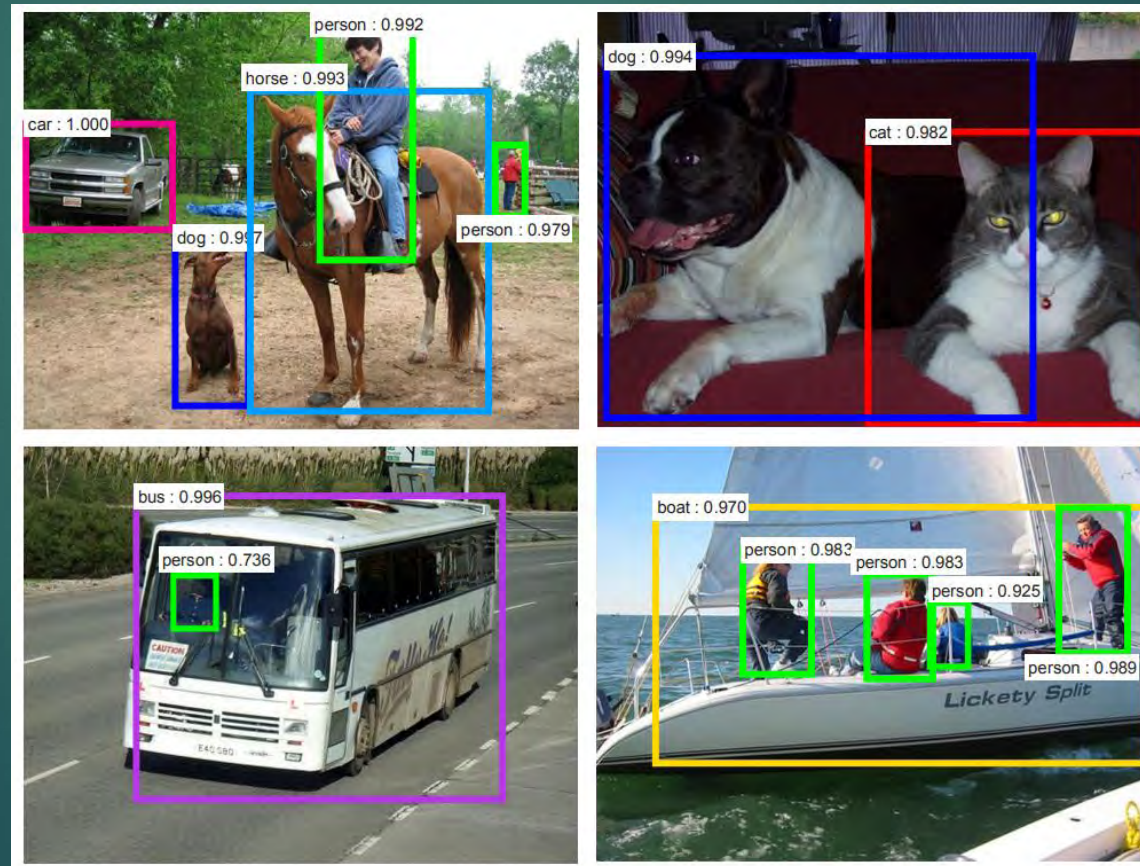
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- ▶ Faster R-CNN : Faster Region-based Convolutional Network (S. Ren and al. 2016) : Region Proposal Network (RPN) + Fast R-CNN



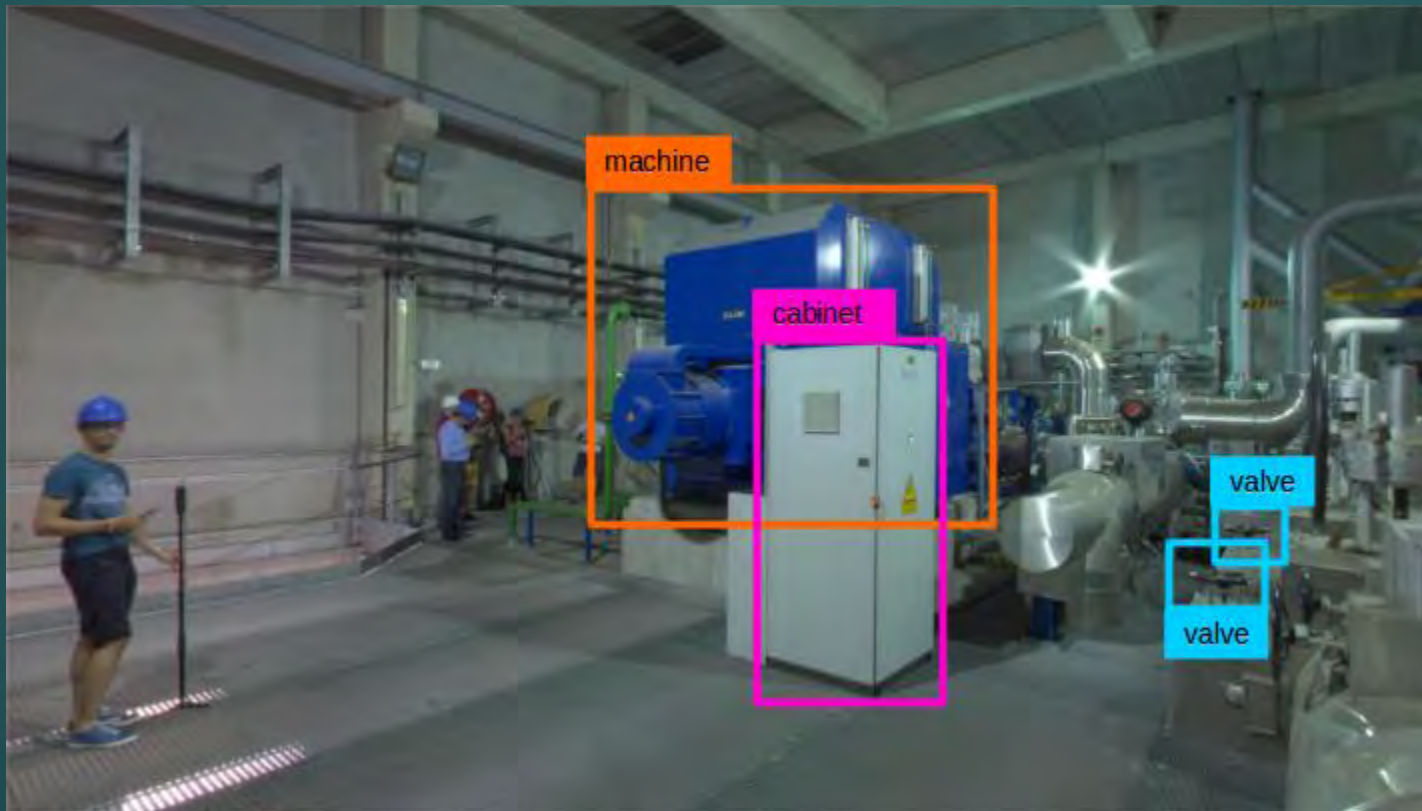
Détection de classes d'objets

- ▶ Faster R-CNN : Faster Region-based Convolutional Network (S. Ren and al. 2016) : Region Proposal Network (RPN) + Fast R-CNN



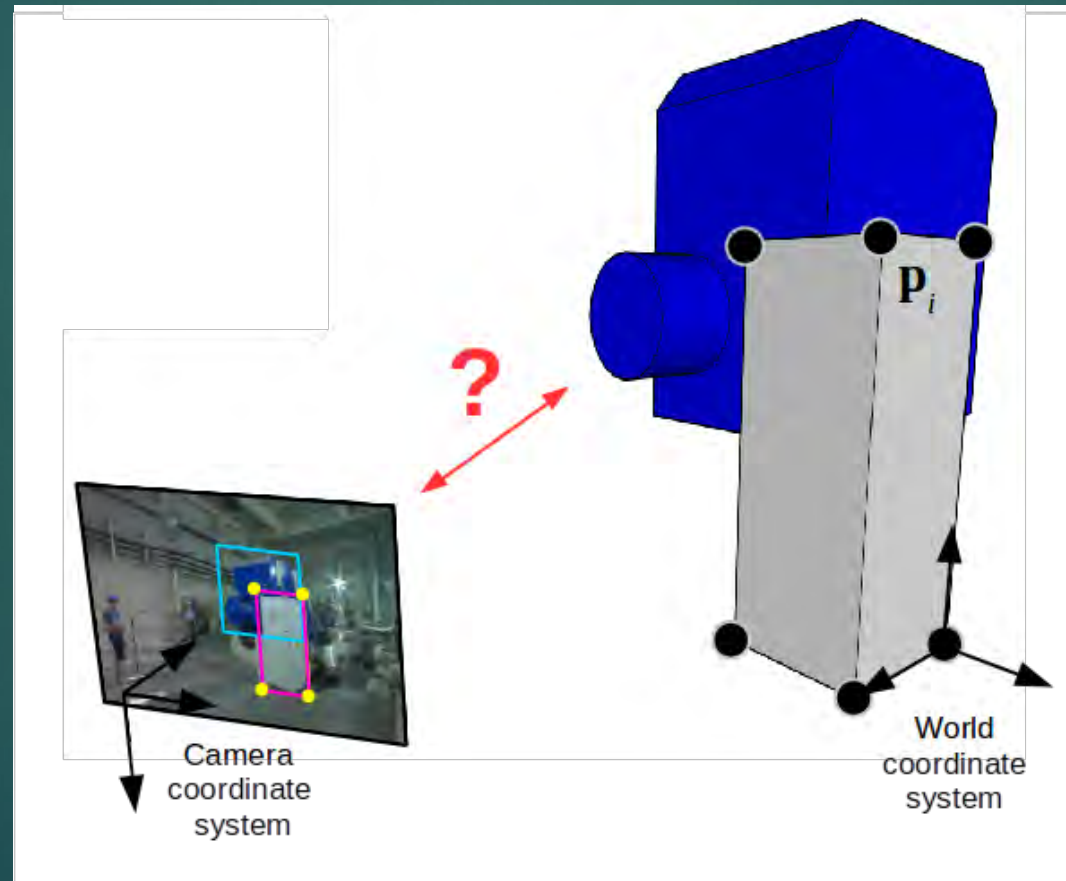
Application au positionnement global

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Application au positionnement global

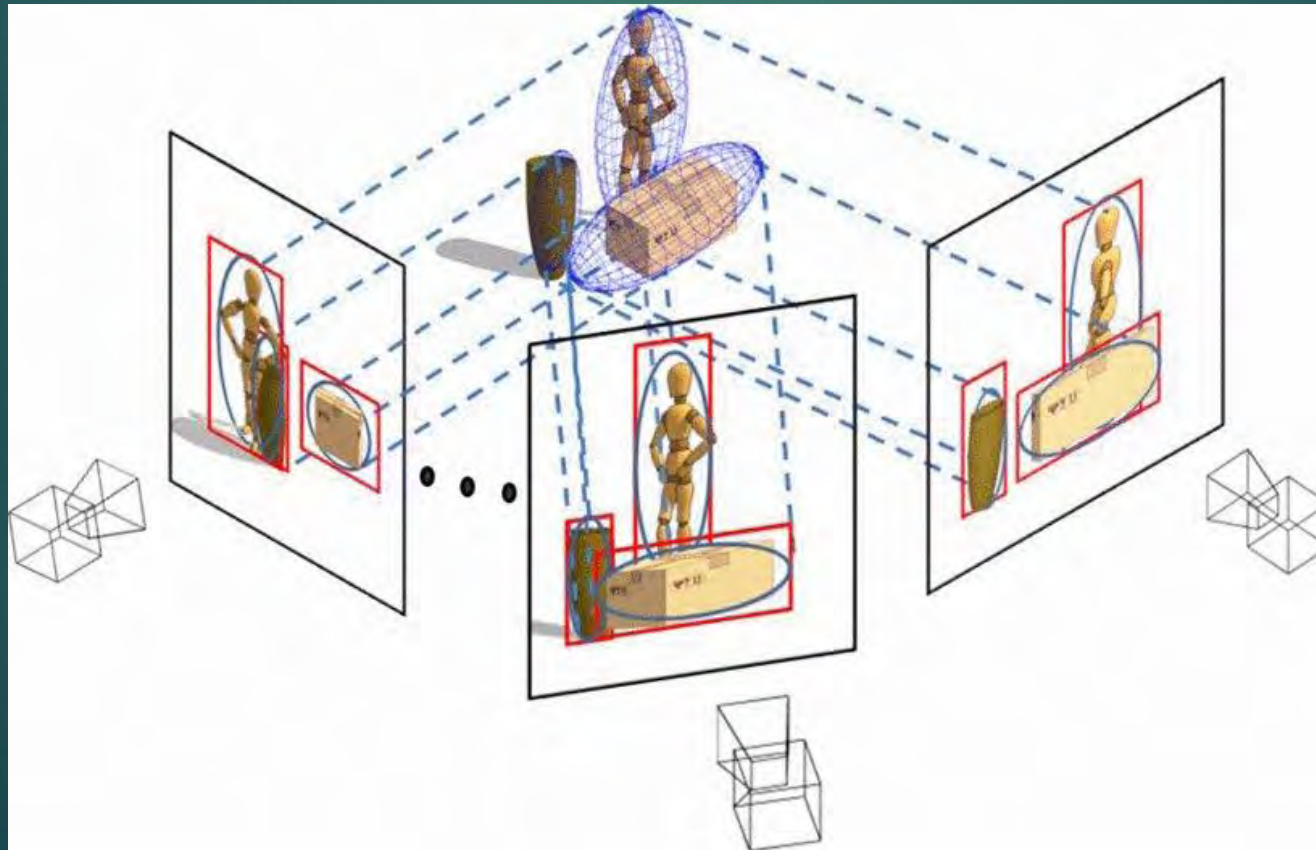
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Application au positionnement global

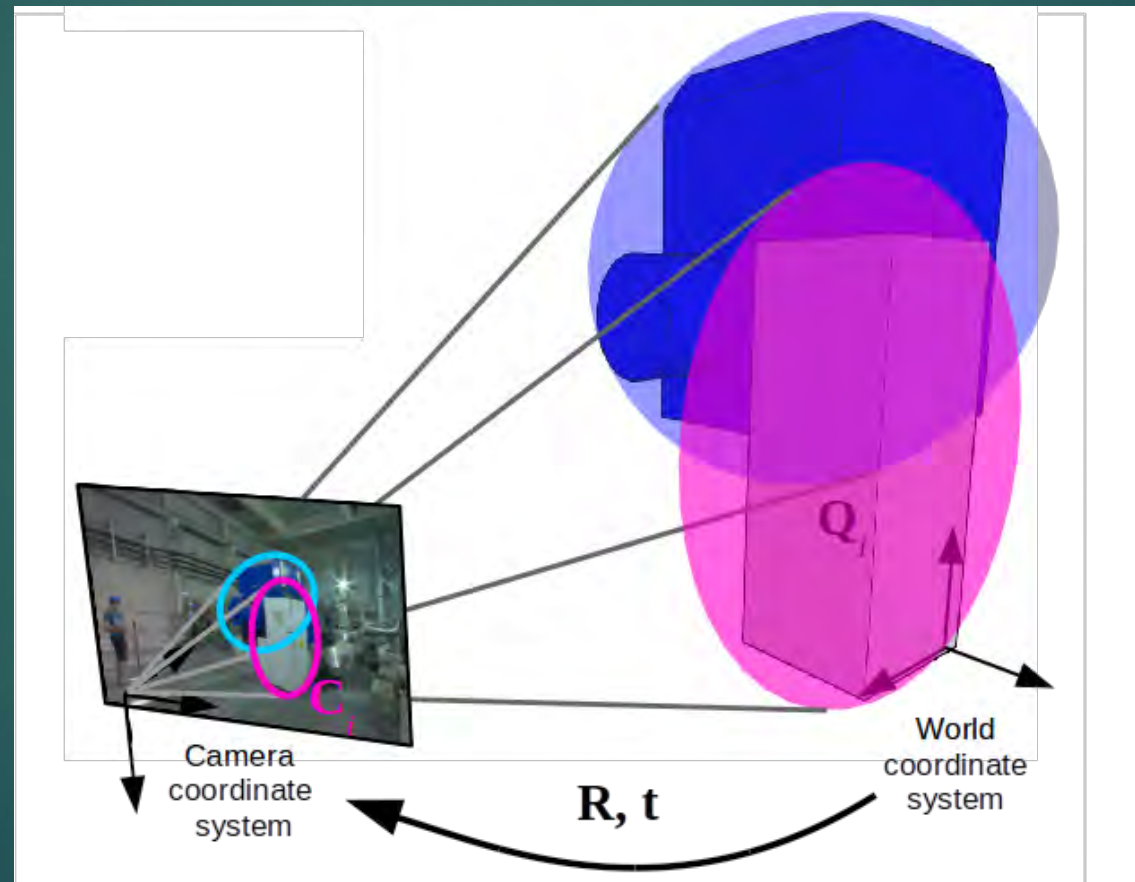
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- ▶ [Rubino et al., 2018]



Application au positionnement global

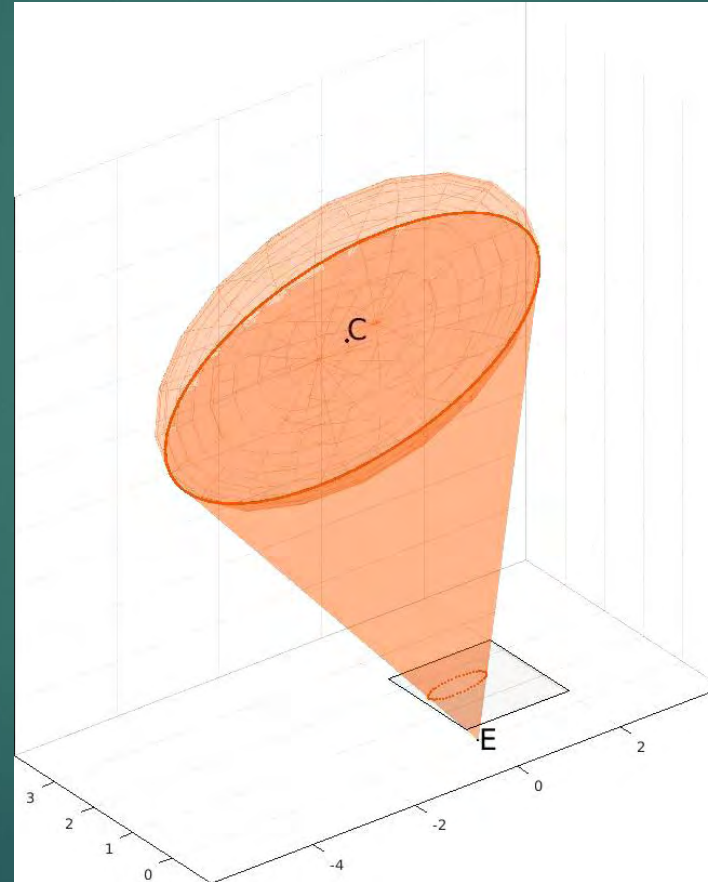
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[Gaudillère et al., IROS 2019]

Application au positionnement global

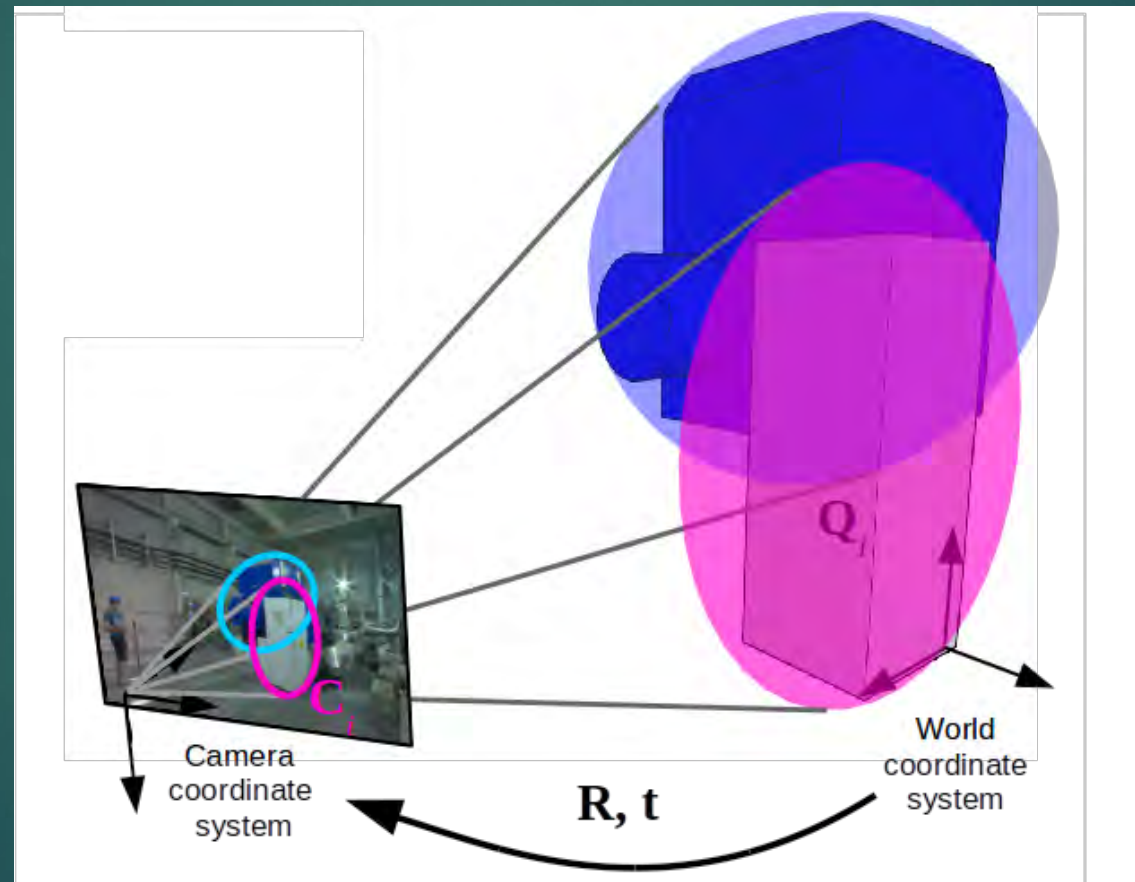
61



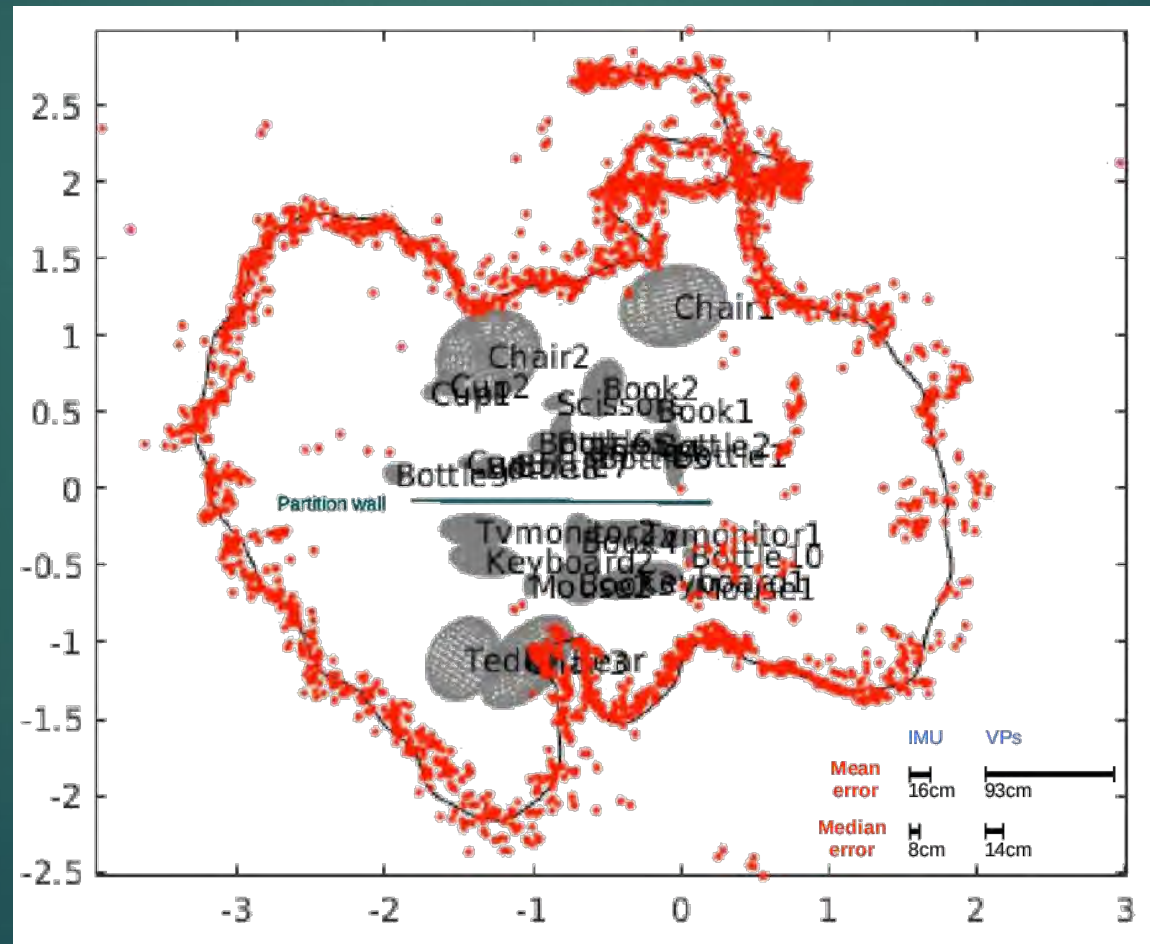
[Gaudillère et al., IROS 2019]

Application au positionnement global

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Application au positionnement global



Application au positionnement global

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- ▶ OA-SLAM [Zins et al., ISMAR 2022] <https://www.youtube.com/watch?v=L1HEL4kJ3g>

