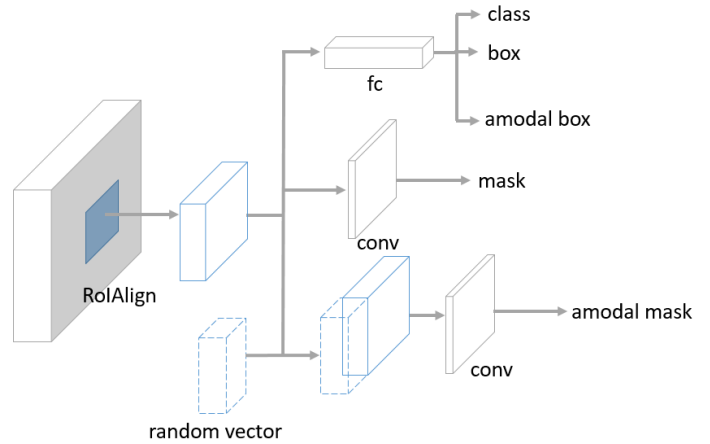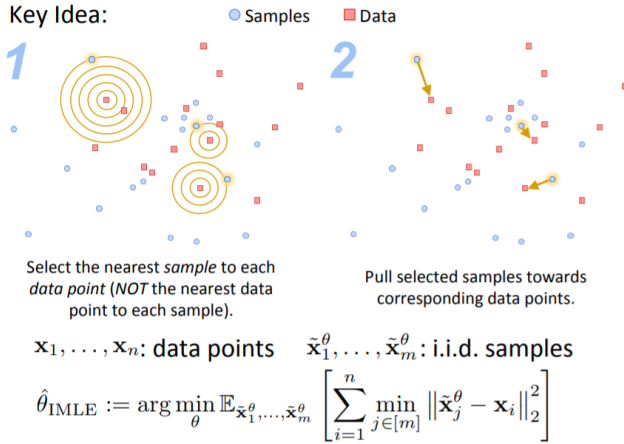**Topic**: Amodal Instance Segmentation via Conditional Implicit Maximum Likelihood Estimation

Affiliation: UC Berkeley

Collaborator: Ke Li, Jitendra Malik

Method:

Key Idea:

● Samples   ■ Data

1 Select the nearest *sample* to each *data point* (NOT the nearest data point to each sample).

$\mathbf{x}_1, \ldots, \mathbf{x}_n$: data points

2 Pull selected samples towards corresponding data points.

$\tilde{\mathbf{x}}_1^\theta, \ldots, \tilde{\mathbf{x}}_m^\theta$: i.i.d. samples

$$\hat{\theta}_{\mathrm{IMLE}} := \arg\min_\theta \mathbb{E}_{\tilde{\mathbf{x}}_1^\theta, \ldots, \tilde{\mathbf{x}}_m^\theta} \left[\sum_{i=1}^n \min_{j \in [m]} \left\| \tilde{\mathbf{x}}_j^\theta - \mathbf{x}_i \right\|_2^2 \right]$$

(a) Illustration of Implicit Maximum Likelihood Estimation[3]   (b) Illustration of Amodal Mask R-CNN

Demo:

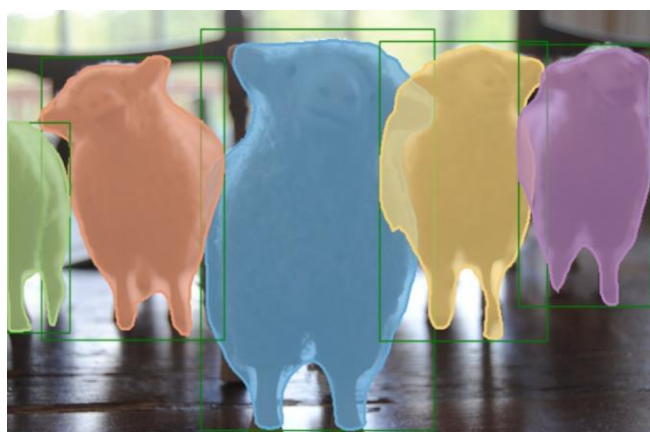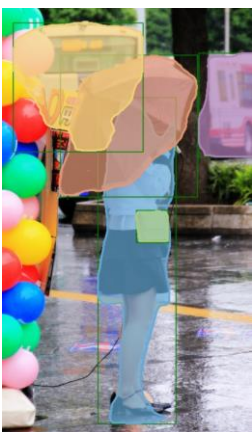(a) Annotation   (b) Amodal annotation[1]   (c) Mask R-CNN[2]   (d) Amodal Mask R-CNN

Future Direction: More realistic and Bigger dataset

Status: Detached

Reference:

[1] Yan Zhu, Yuandong Tian, Dimitris Mexatas, and Piotr Dollár. Semantic Amodal Segmentation. CVPR, 2017.

[2] Kaiming He, Georgia Gkioxari, Piotr Dollár, and Ross Girshick. Mask R-CNN. ICCV, 2017.

[3] Ke Li and Jitendra Malik. Implicit Maximum Likelihood Estimation. arXiv:1809.09087, 2018.