Video Object Segmentation using Deep Learning

Update Presentation, Week 10

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1. Previous Work

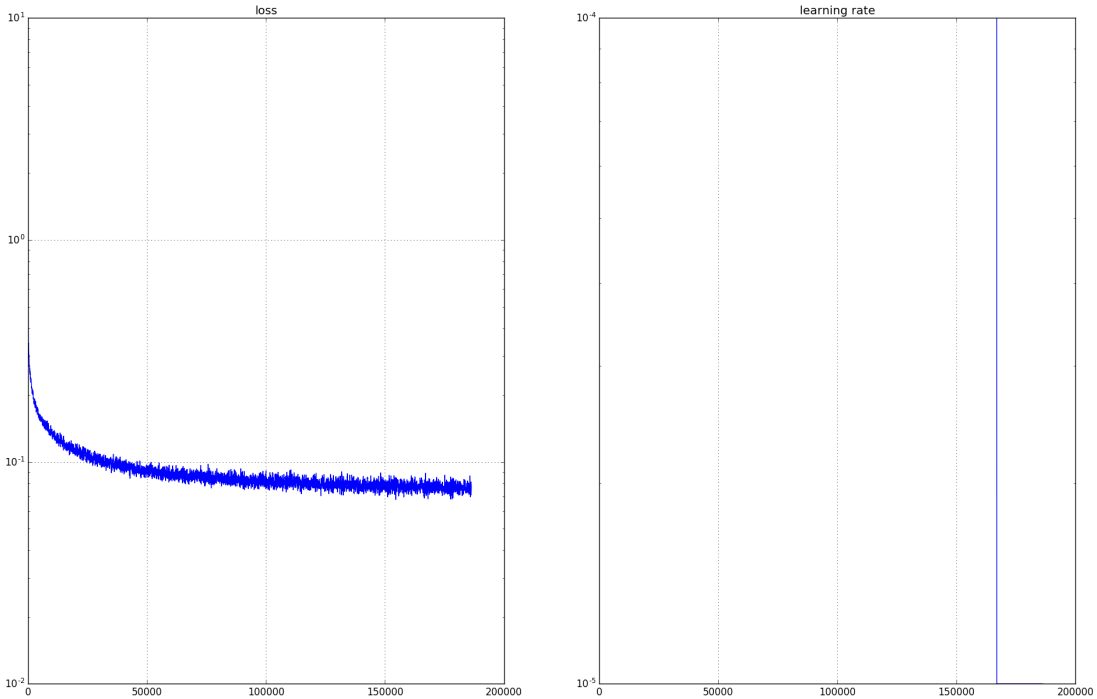
2. Current Work

3. Upcoming Work

Previous Work

Loss Curve

Figure 1: Training Loss Curve after 189,000 Iterations



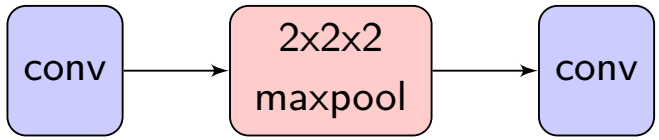
Quantitative Results

Table 1: DAVIS 2016 mIoU Comparison

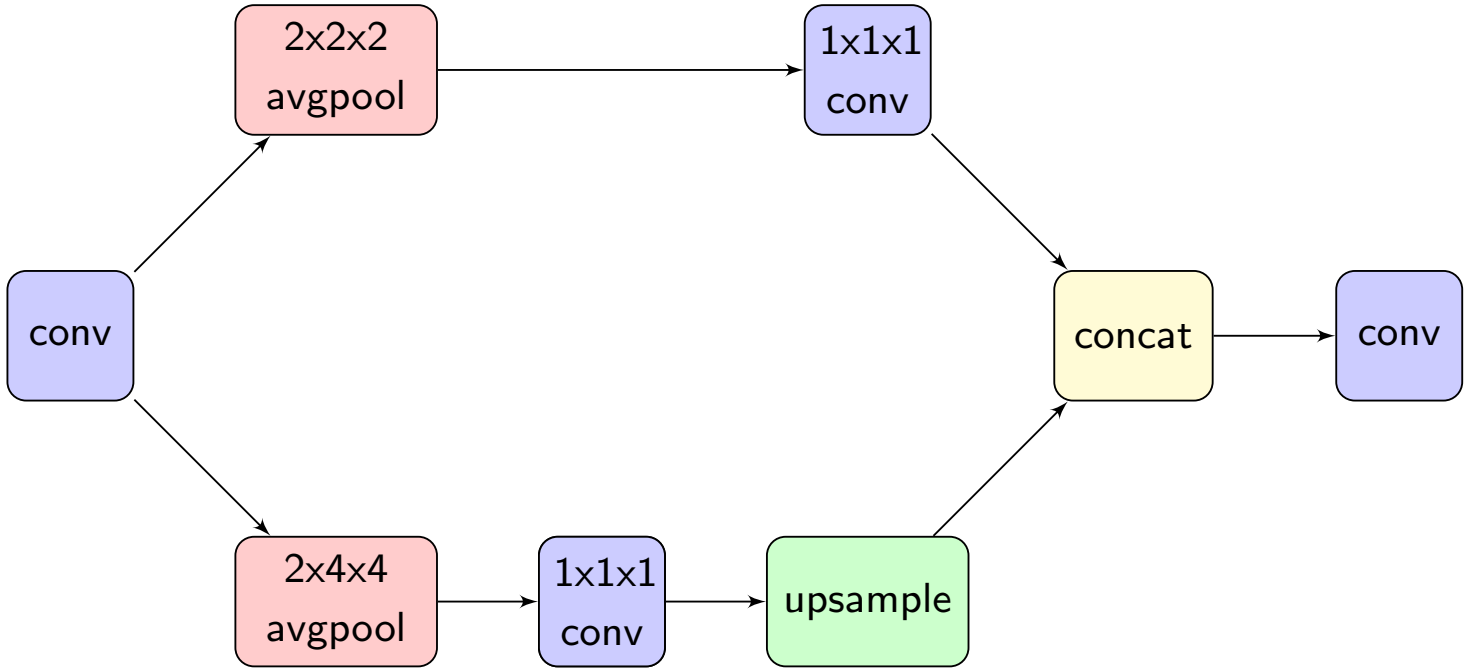
Method	FST	CUT	NLC	MSG	KEY	UCF-C3D	CVOS	TRC	SAL
mIoU	0.558	0.552	0.551	0.533	0.498	0.486	0.482	0.473	0.393

Multi-Scale Maxpooling

- Finishing the addition of the PSPNet module.
  - **Pyramid Scene Parsing Network** by Zhao et al. (arXiv, April 2017)
  - Current version:



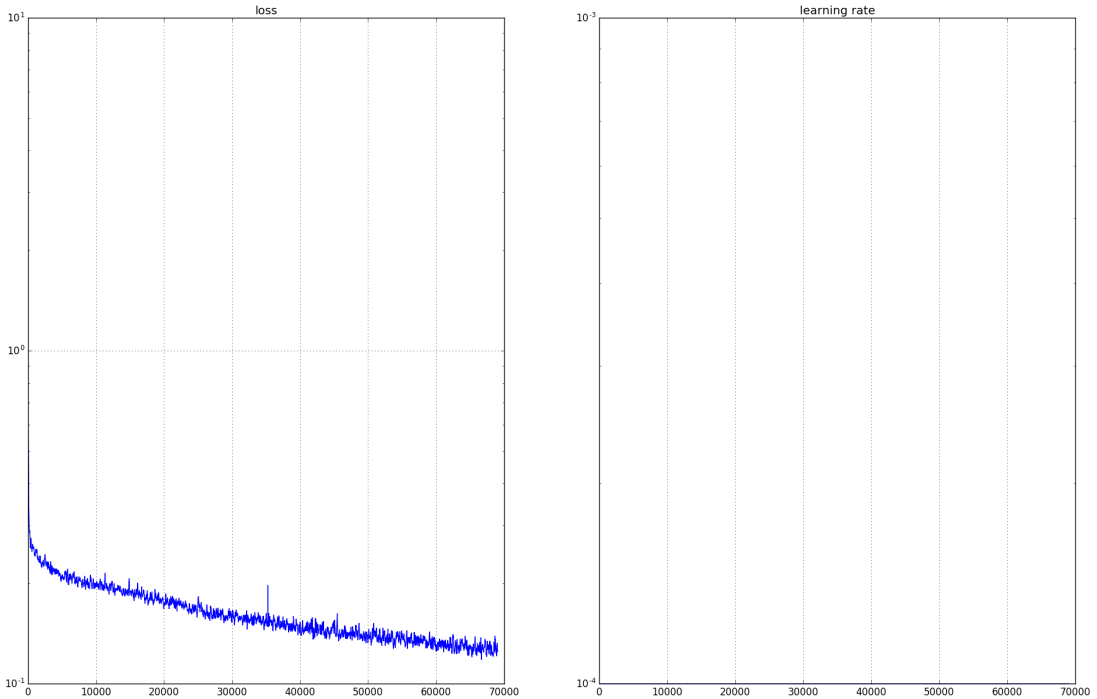
  - Proposed change:



Current Work

Training Loss Curve

Figure 2: Training Loss Curve after 69,000 Iterations



Quantitative Results

Table 2: DAVIS 2016 mIoU Comparison

Method	FST	CUT	NLC	MSG	KEY	CVOS	TRC	SAL	UCF-C3D
mIoU	0.558	0.552	0.551	0.533	0.498	0.482	0.473	0.393	0.306

Comparison data provided by **One-Shot Video Object Segmentation** by Caelles et al. (arXiv, April 2017).

Quantitative Results

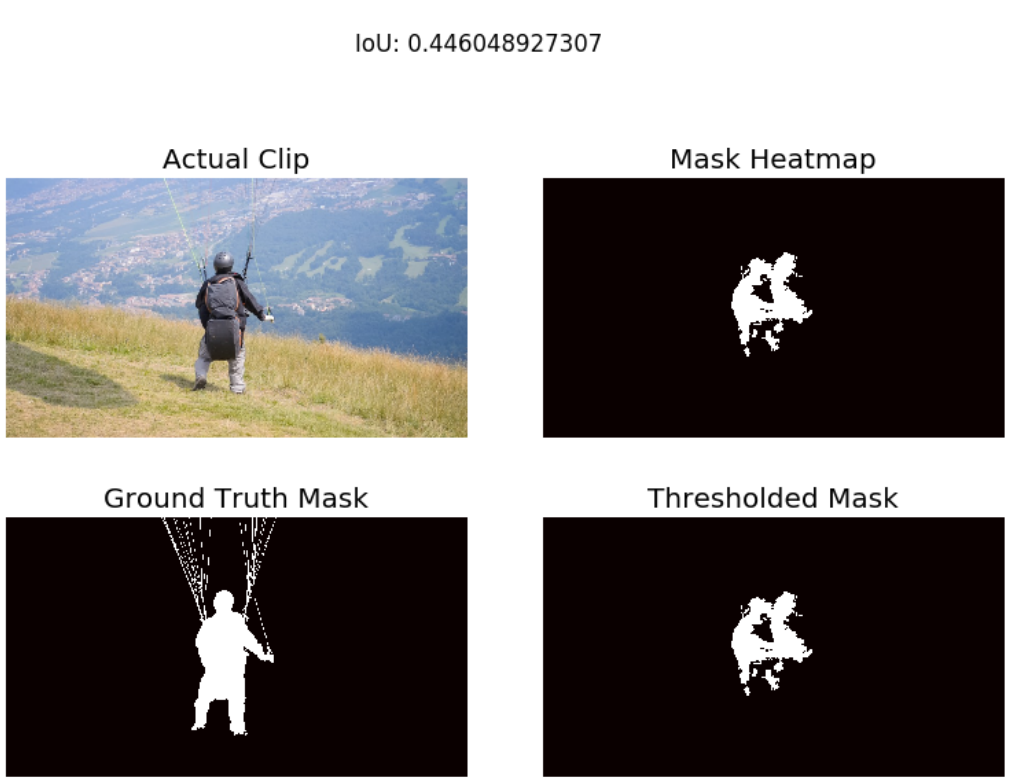
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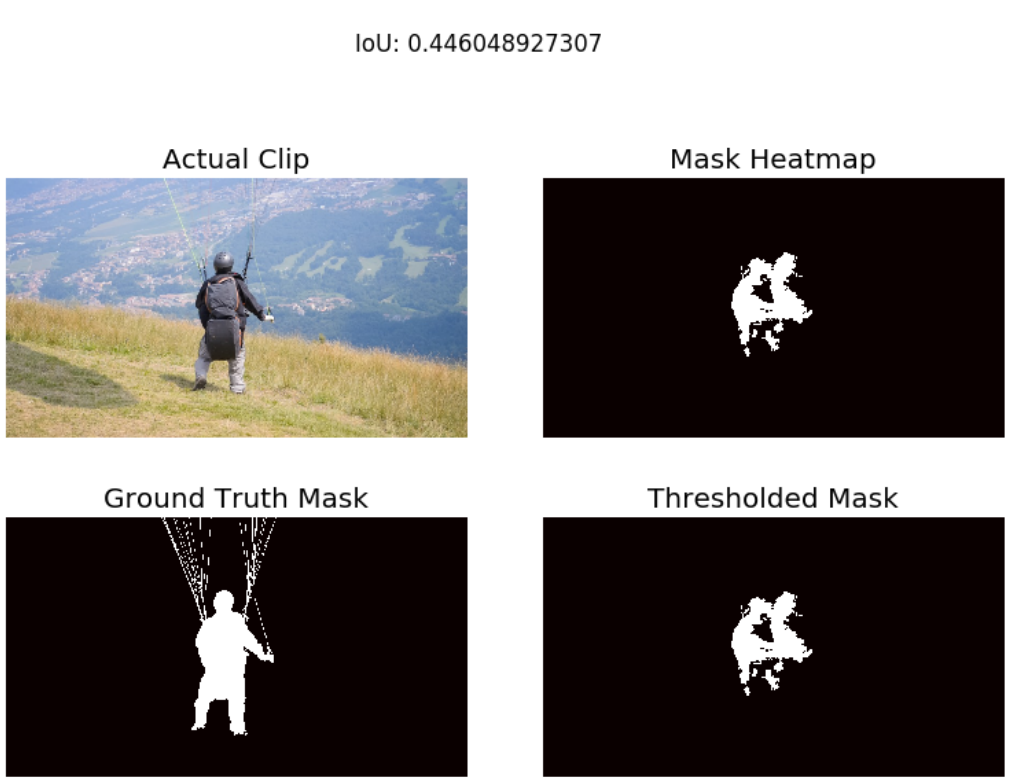
Results (1)

Figure 3: GOAT



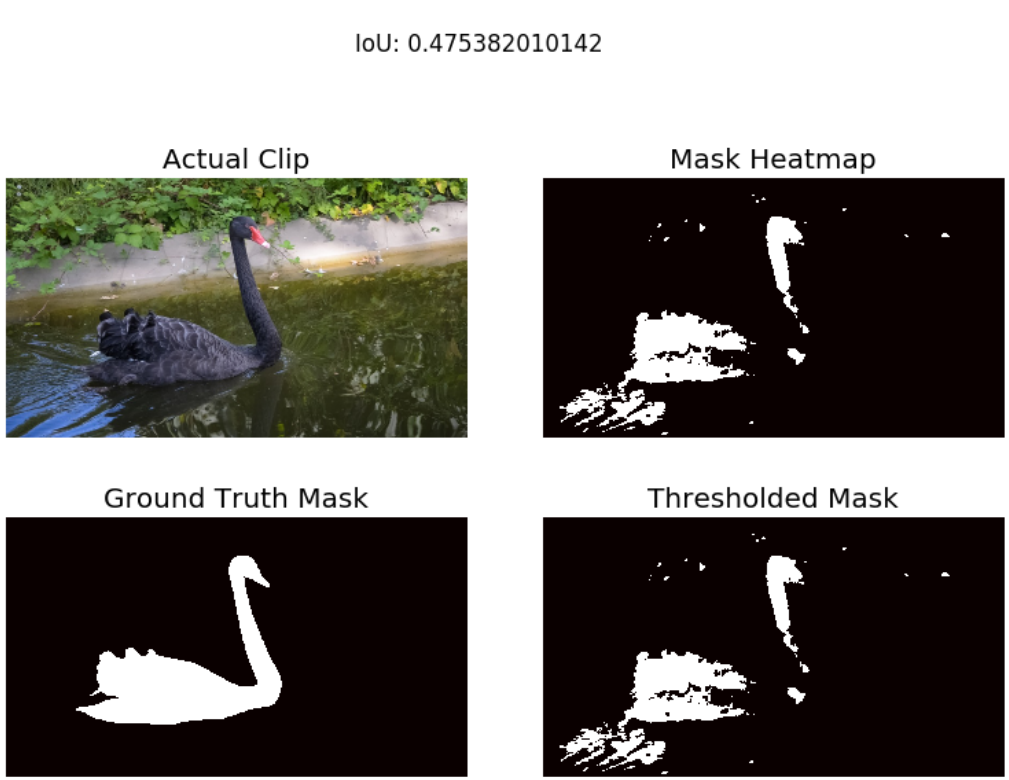
Results (1)

Figure 3: GOAT



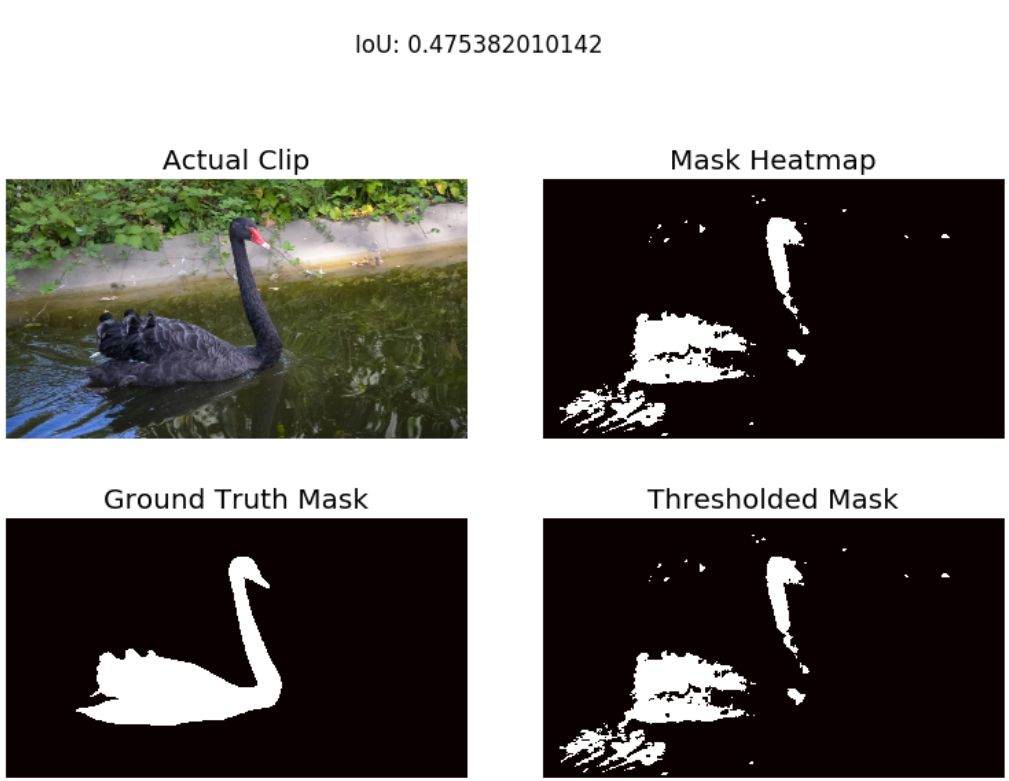
Results (2)

Figure 4: BLACKSWAN



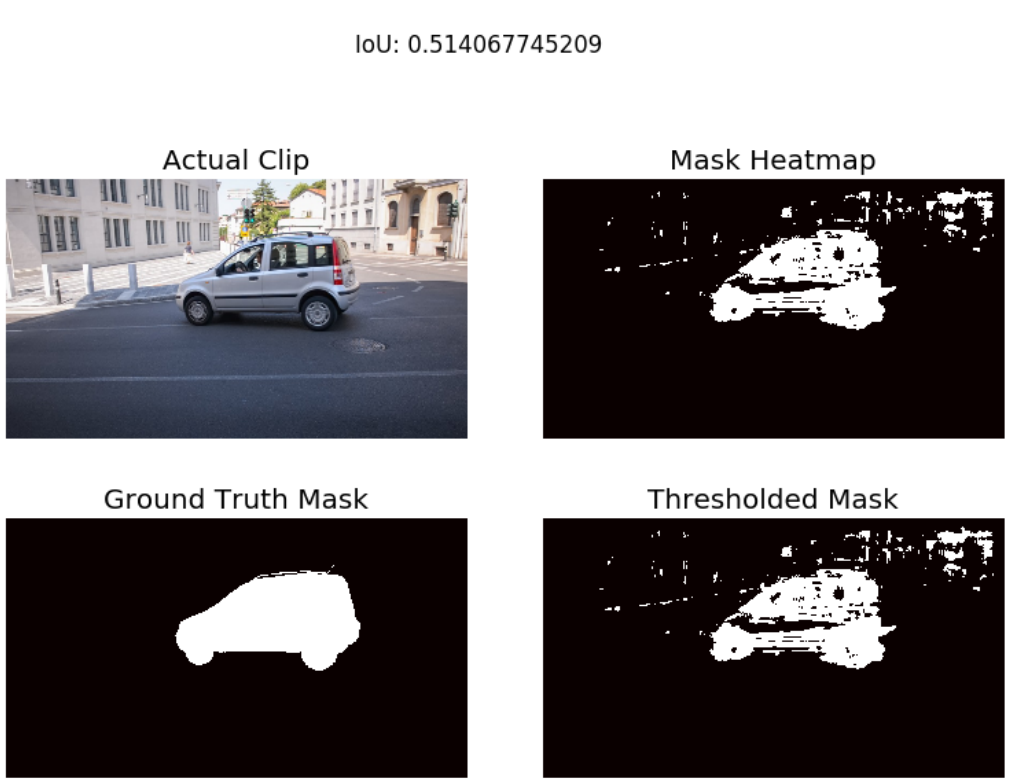
Results (2)

Figure 4: PARAGLIDING-LAUNCH



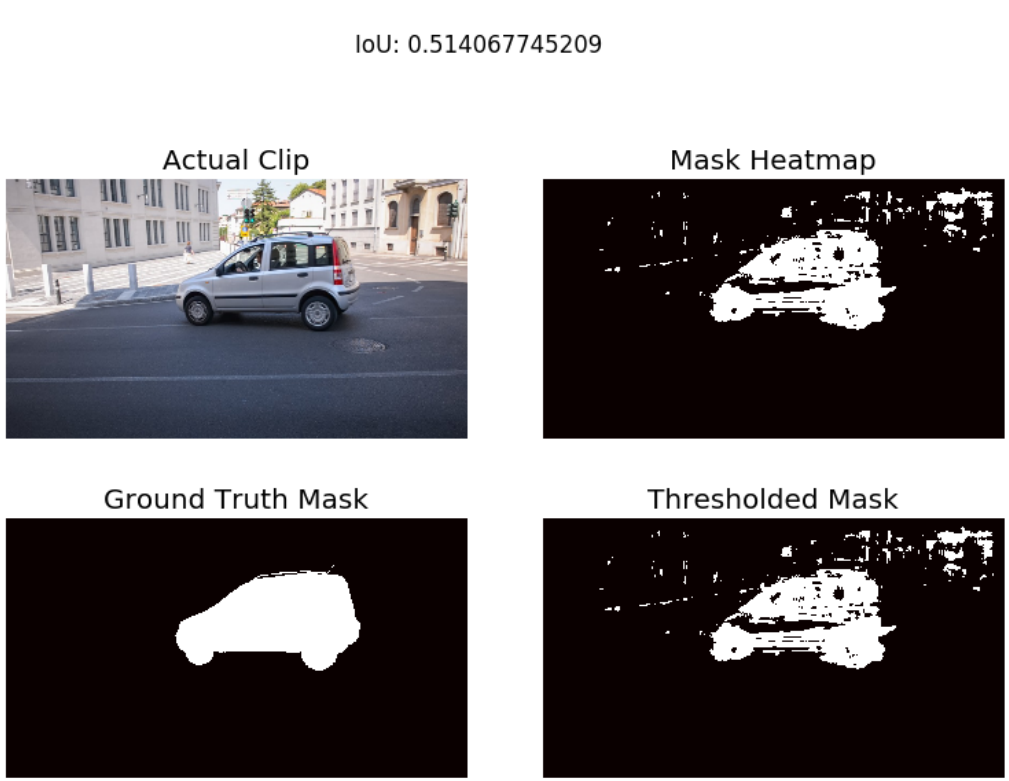
Results (3)

Figure 5: CAR-SHADOW



Results (3)

Figure 5: CAR-SHADOW



Upcoming Work

Plan for Next Week

- Going back to the original architecture for now
- Increasing the size of the dataset
  - JumpCut dataset
  - DAVIS 2017 converted to binary masks
- Depending on results with larger dataset, may look into further fixing the multi-scale maxpooling

Long-Term Plans

- Increasing weight values for foreground to balance loss function.
  - **One-Shot Video Object Segmentation** by Caelles et al. (arXiv, April 2017)
  - More difficult implementation-wise due to wanting weight values based each sequence's background/foreground ratio.

Questions?