

Department of Electronics and Electrical Communication Engineering

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INTELLIGENT SYSTEMS DESIGN LABORATORY
(EC69210)

Experiment - 5
DEEP OPTICAL FLOW ESTIMATION



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Q1. Select a network (pre-trained) to estimate the dense optical flow of the flying chair dataset (any 10 pairs of Images).

FlowNetCorr

Image 1:



Image 2:



Image 3:



Image 4:



Image 5:



Image 6:



Image 7:



Image 8:



Image 9:



Image 10:



Lucas Kanade

Image 1:

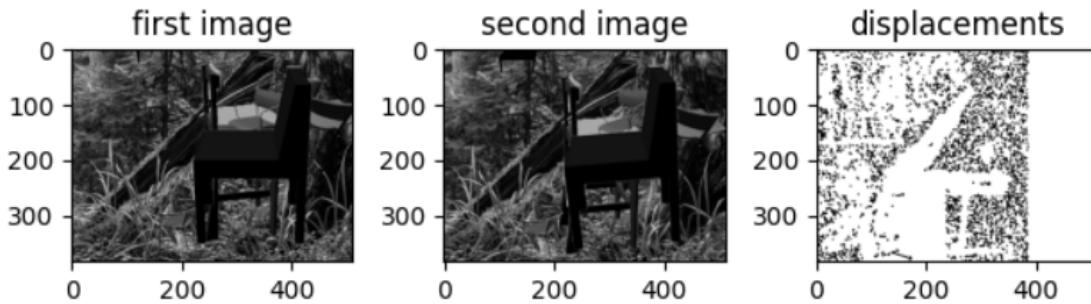


Image 2:

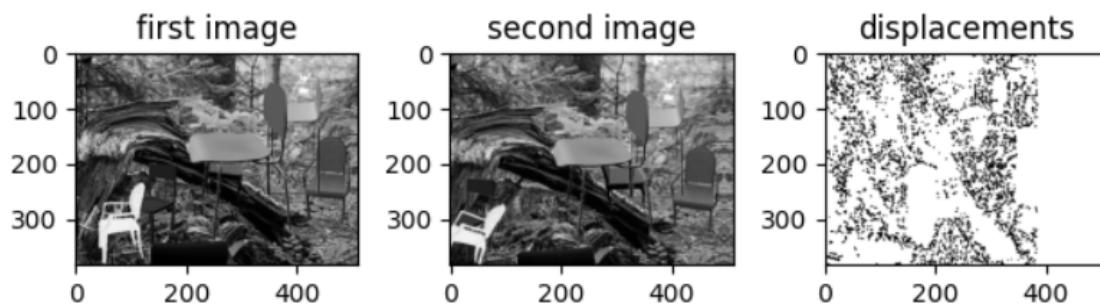


Image 3:

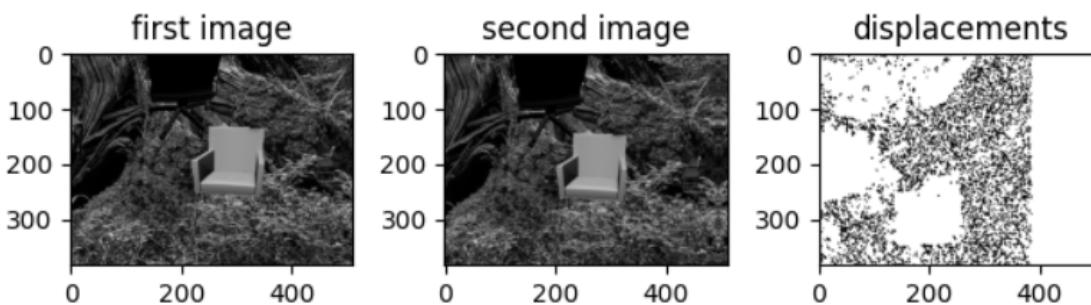


Image 4:

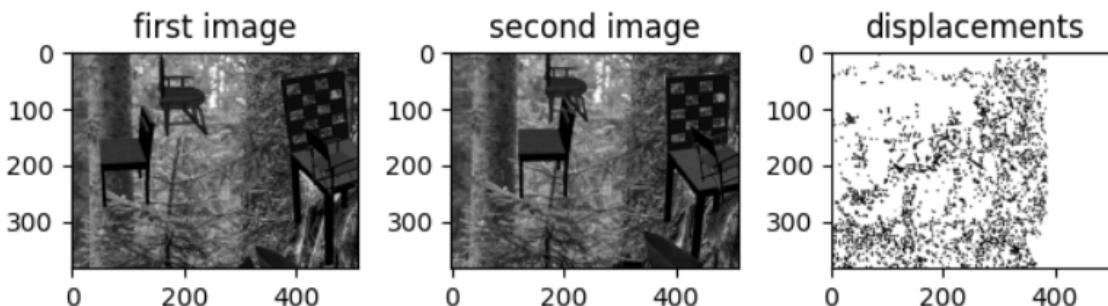


Image 5:

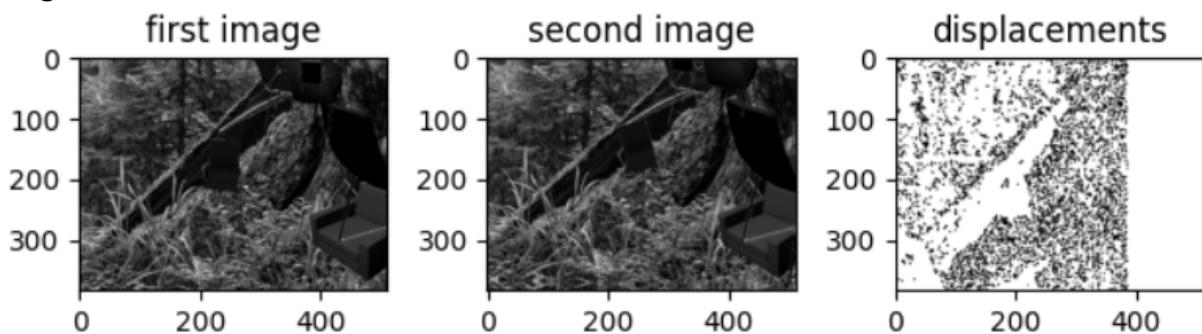


Image 6:

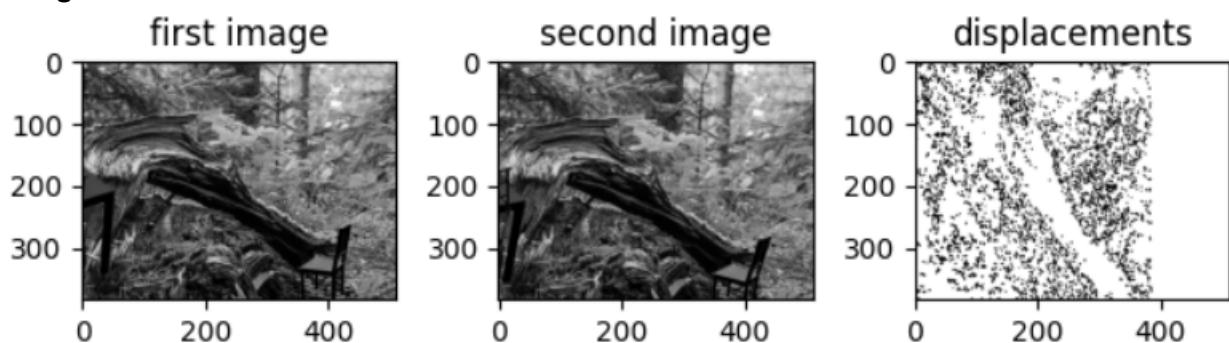


Image 7:

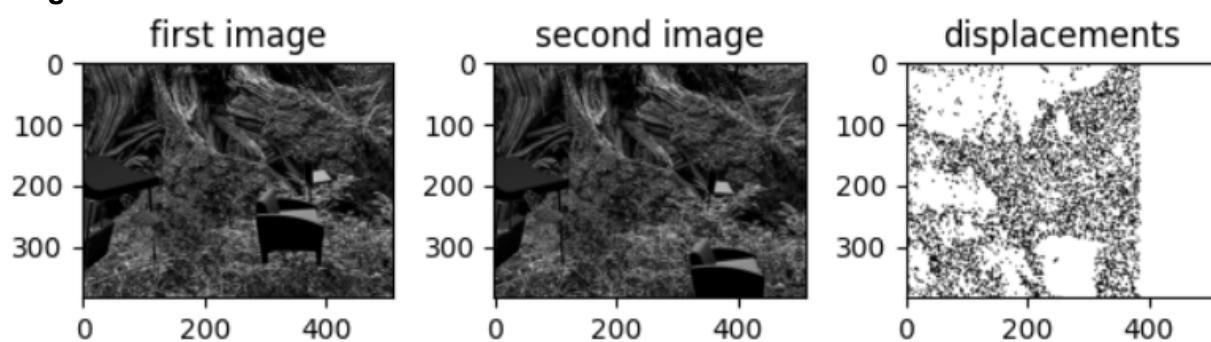


Image 8:

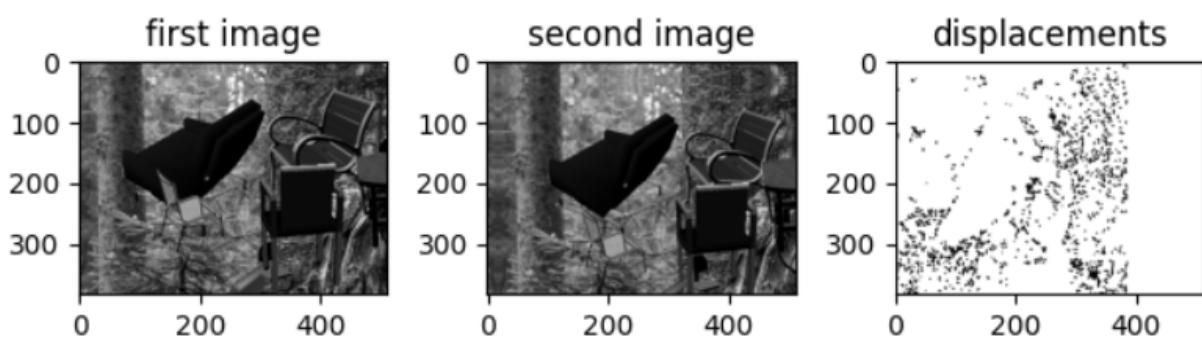


Image 9:

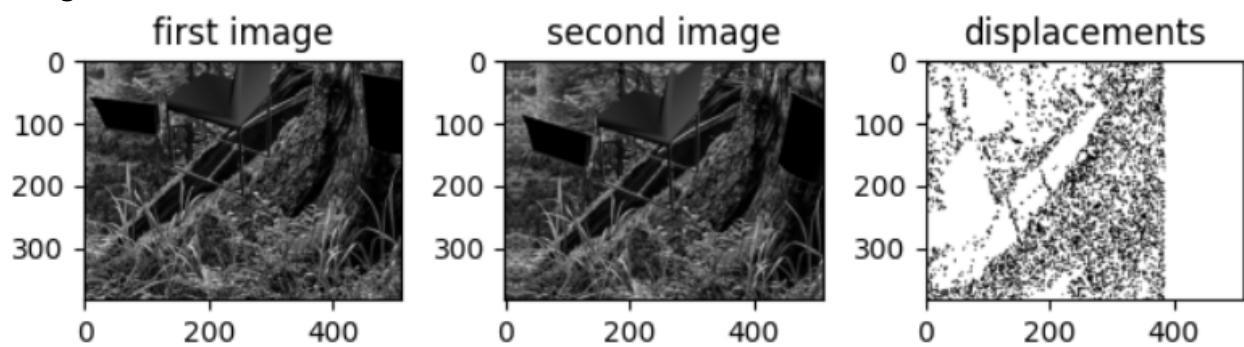
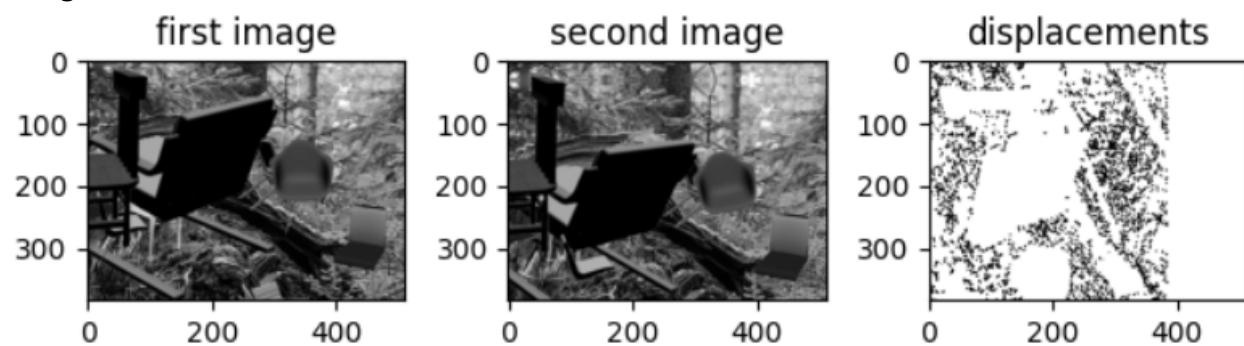


Image 10:



Q2. Flow computation using RAFT:

Flow computation:

```
dtype = torch.float32  
shape = torch.Size([2, 2, 520, 960]) = (N, 2, H, W)  
min = -18.992267608642578, max = 3.853811264038086
```

Flow visualization:



Finetuning:

We prepare the data using the data preparation notebook in the file. It reads the video, calculates the flow between consecutive frames and saves the frames as the images. This is done for both testing and training.

Then we finetune the model using the main.py file given in the github repo using the following command:

```
!python3 main.py '/content/drive/MyDrive/Expt5/train' --epochs 10  
--start-epoch 0 --workers 8 --batch-size 8 --pretrained  
'/content/drive/MyDrive/Expt5/flownetc_EPE1.766.pth.tar'
```

