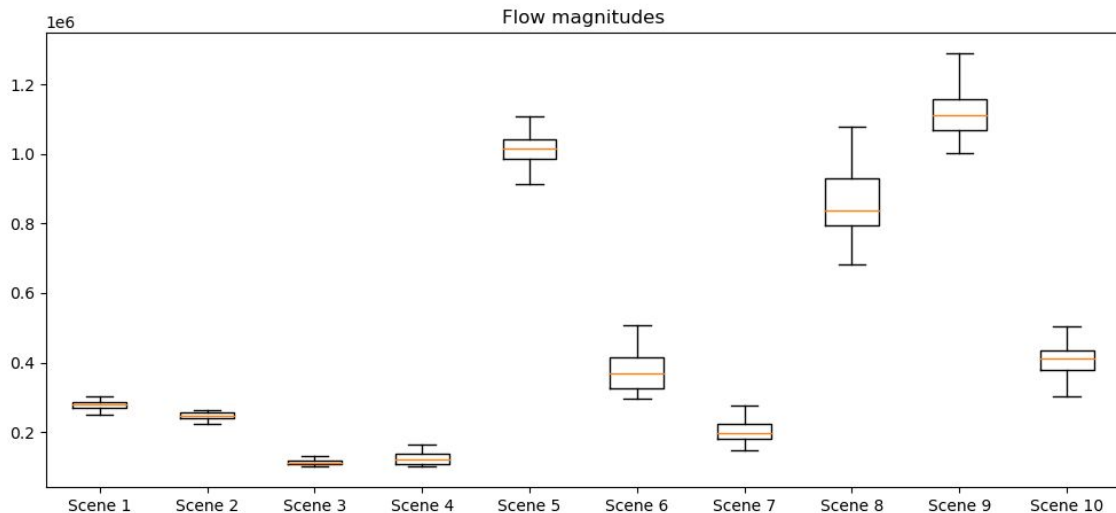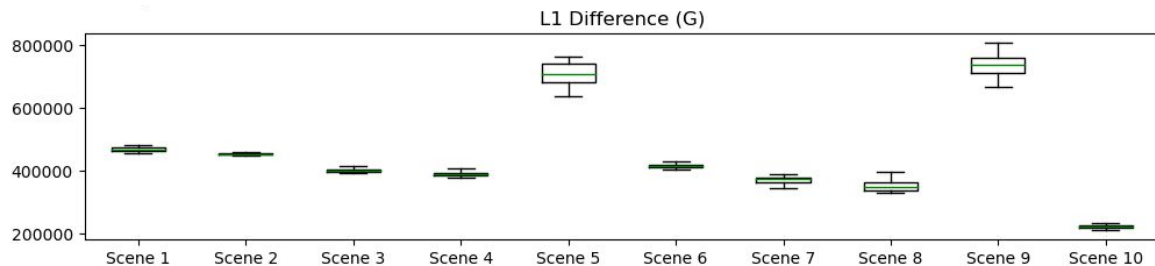# Semester Project - Part 04

Table of Contents
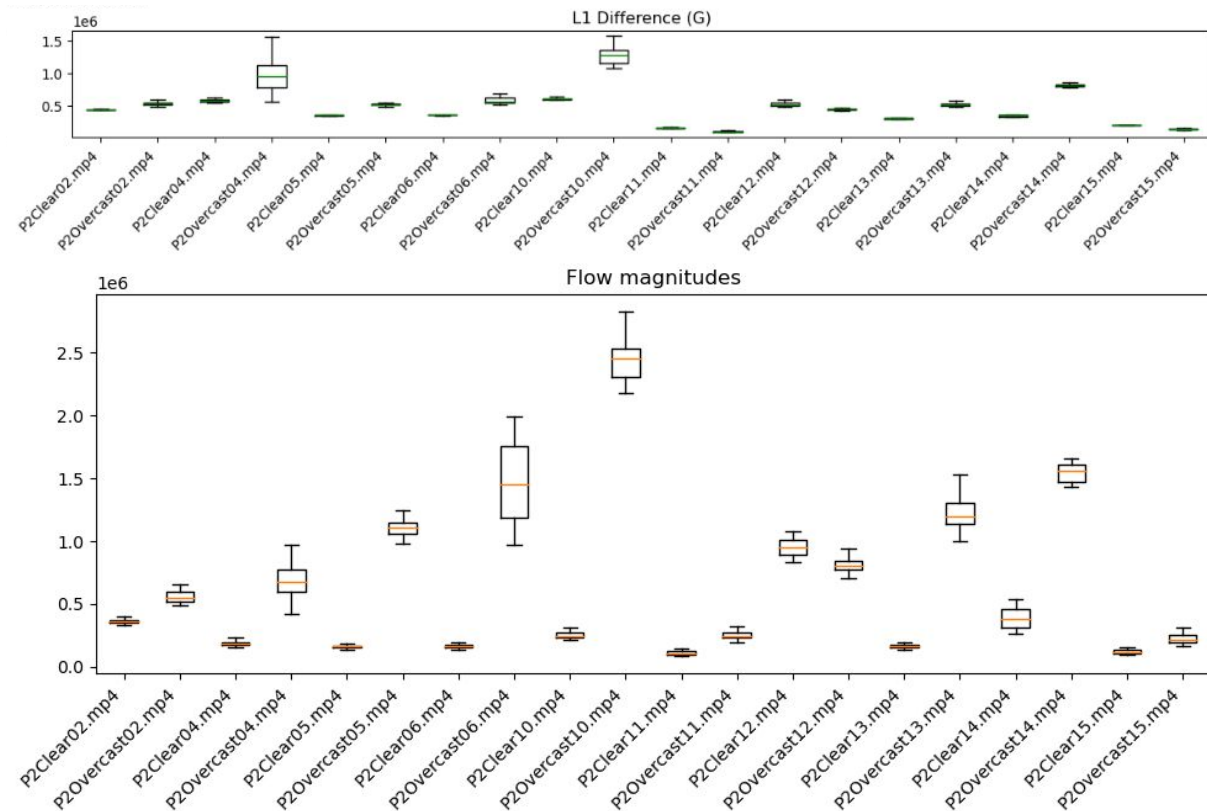
- Farneback
- Equirectangular Projection
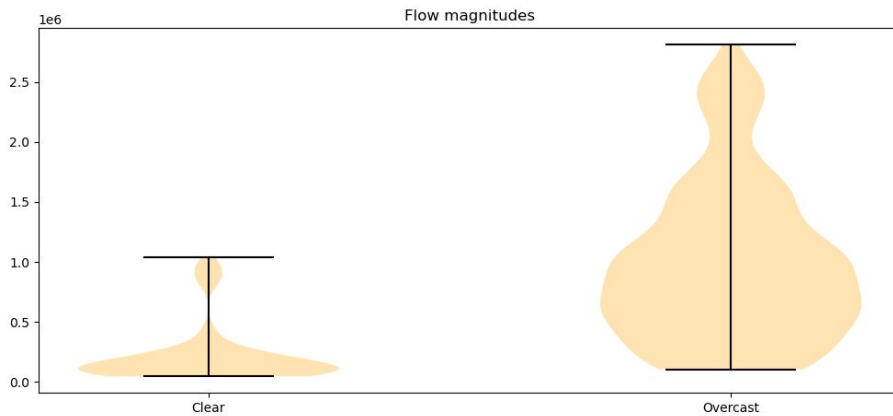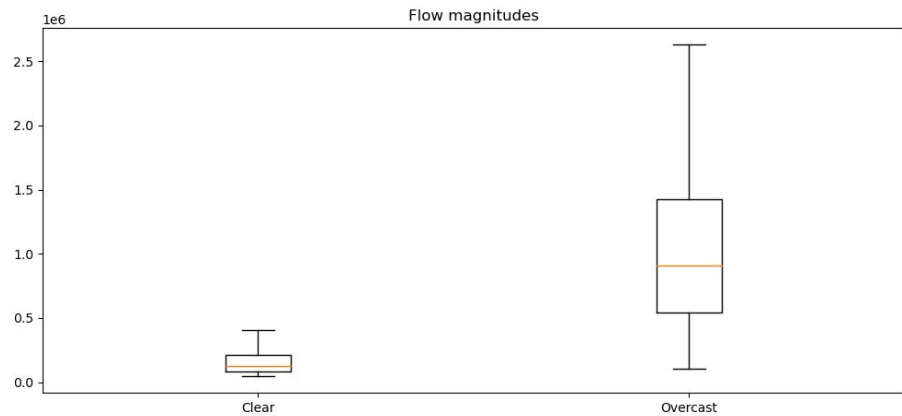- HDR Segmentation
- Ground Segmentation and Optical Flow

Farneback

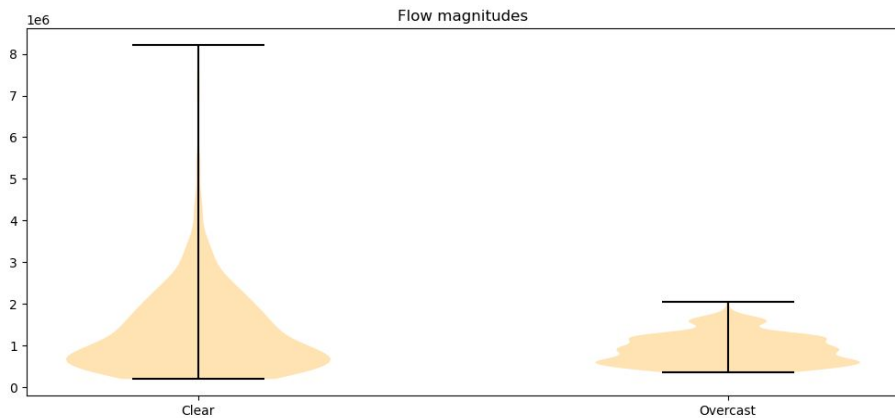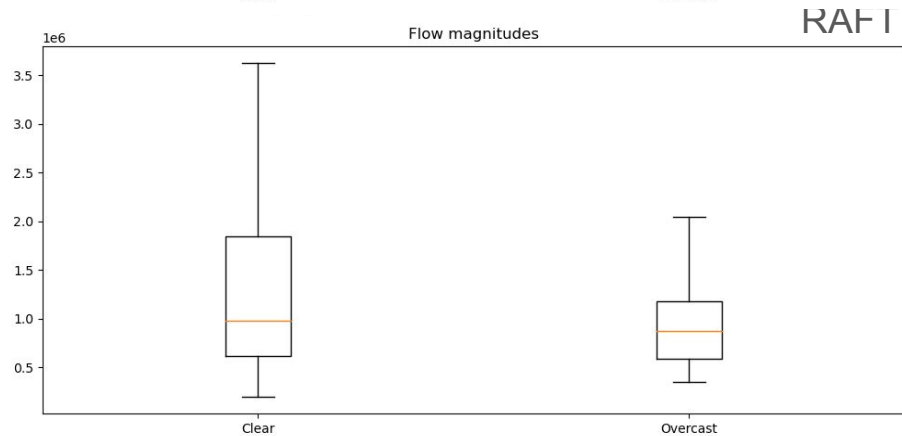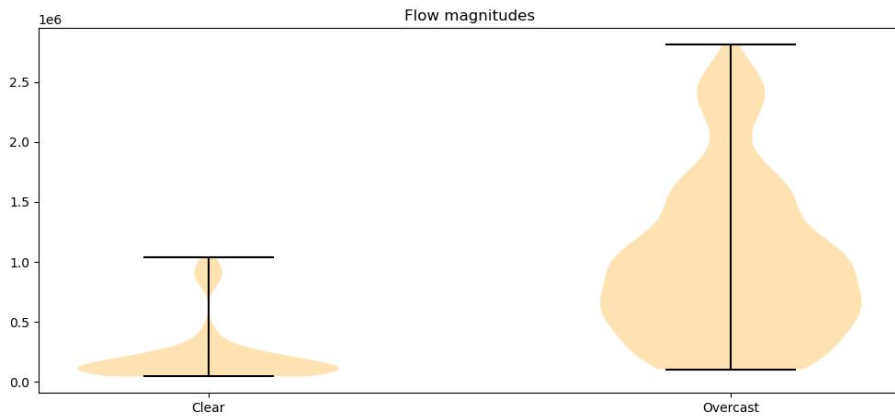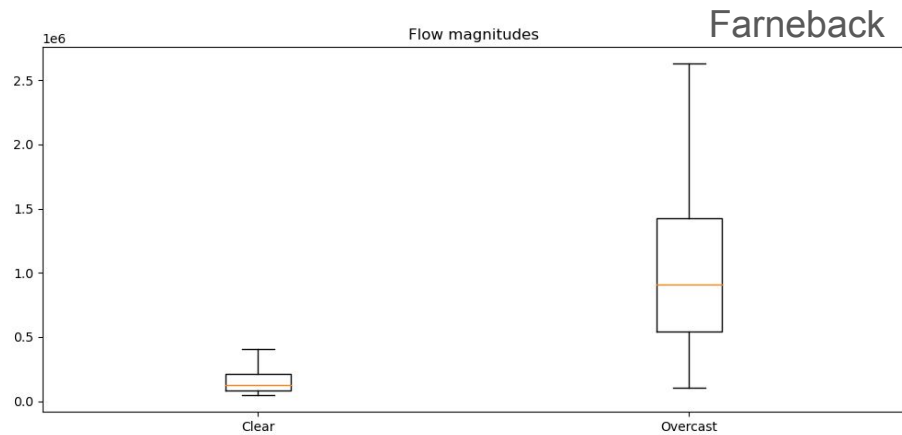# Farneback - Part 01 L1 Differences vs Flow magnitudes

Farneback - Part 02 L1 Differences vs Flow magnitudes

Farneback - Part 02 Merged

Farneback - Part 02 Merged vs RAFT

Equirectangular Projection
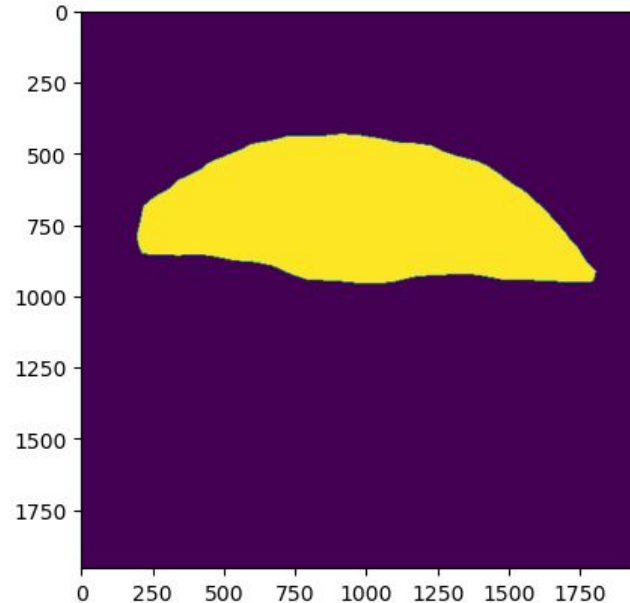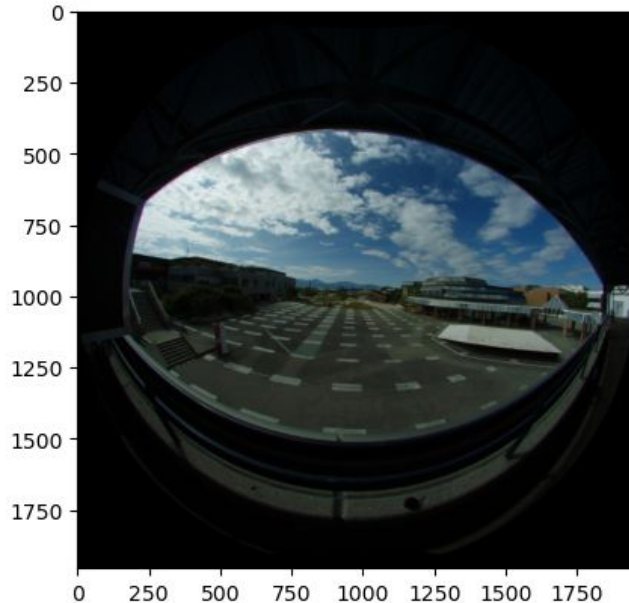
Equirectangular Projection - Example
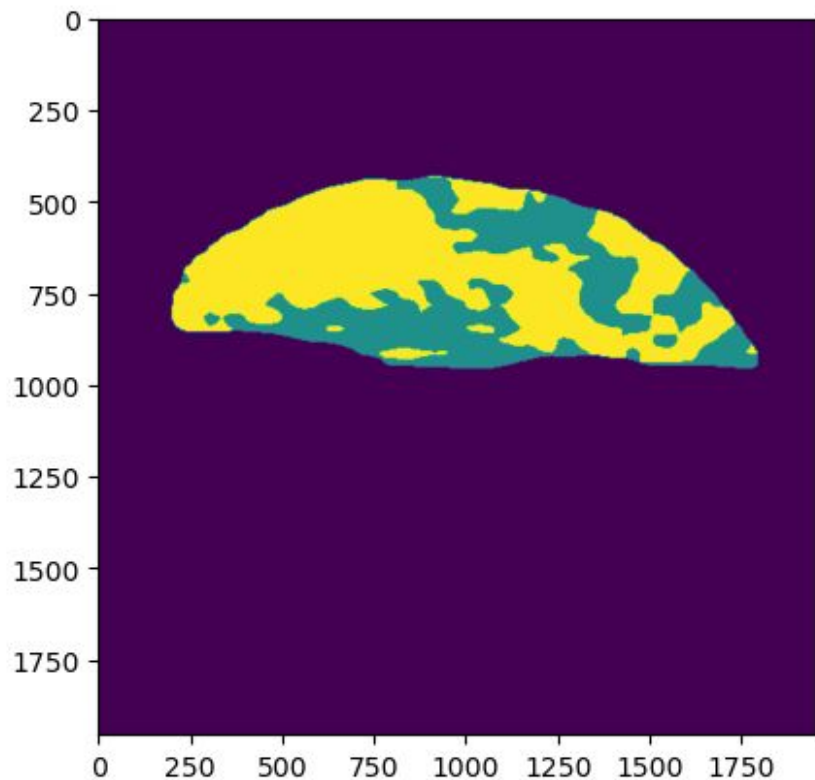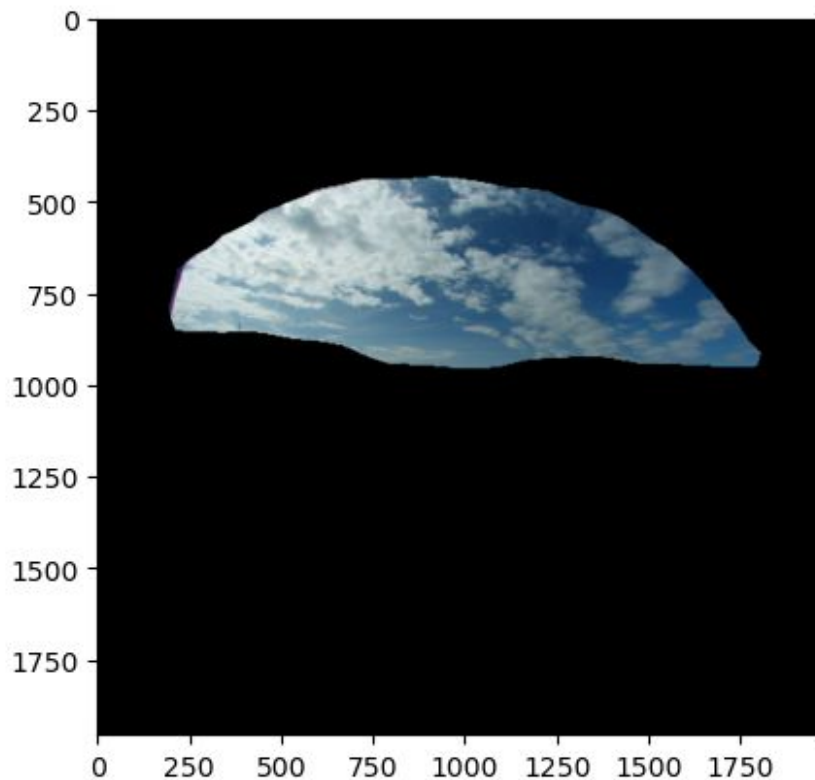
Equirectangular Projection - Scene 01

HDR Segmentation

HDR - Sky/Ground Segmentation

- Used **Reinhard Tone Mapping**
- Can achieve **"good enough"** results
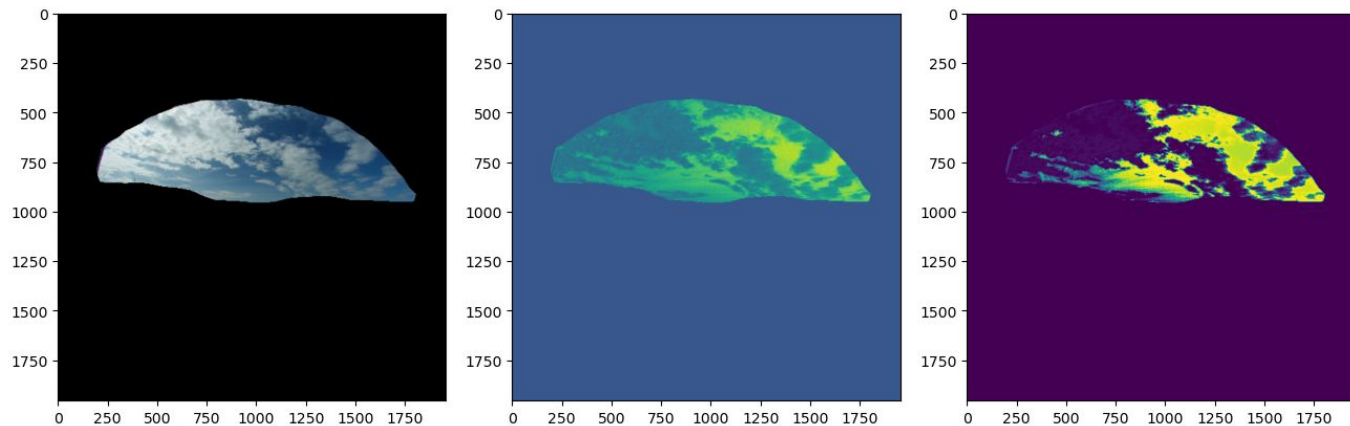
HDR - Sky/Cloud Segmentation

HDR - SHWIMSEG Dataset

- https://amt.copernicus.org/articles/11/2041/2018/amt-11-2041-2018.pdf
- HDR radiance map
- HDR tonemapped
- LDR high-, medium-, low-exposure
- LDR Fisheye
- Binary segmentation mask

HDR - SHWIMSEG Paper

- **Graph-based** segmentation algorithm
- **Fuzzy clustering** on **(B-R)/(B+R)** channel from HDR radiance map
- Cloud seeds have probability **> α**, Sky seeds **< (1-α)**
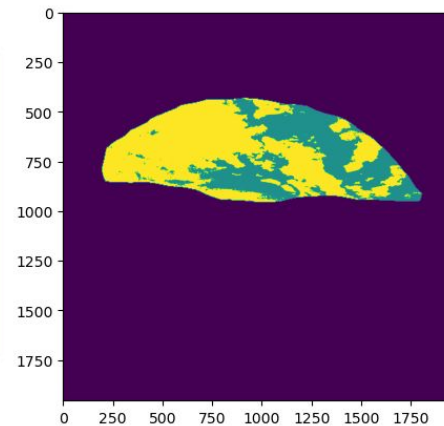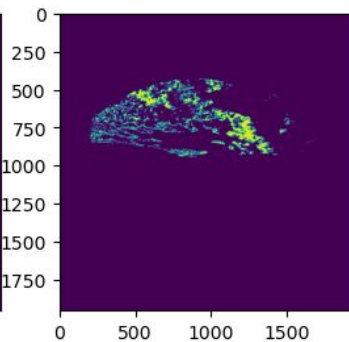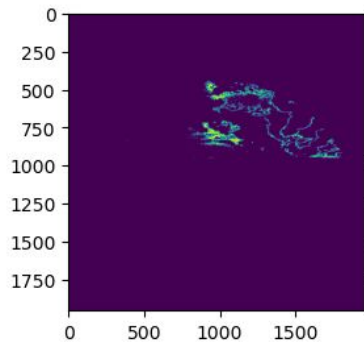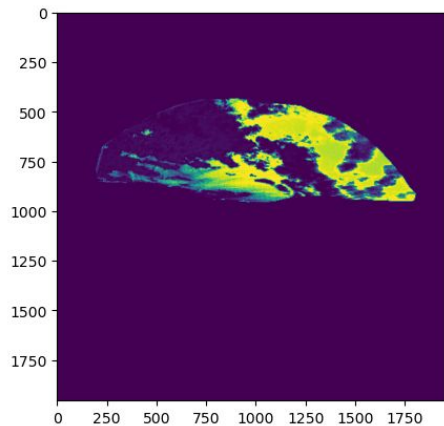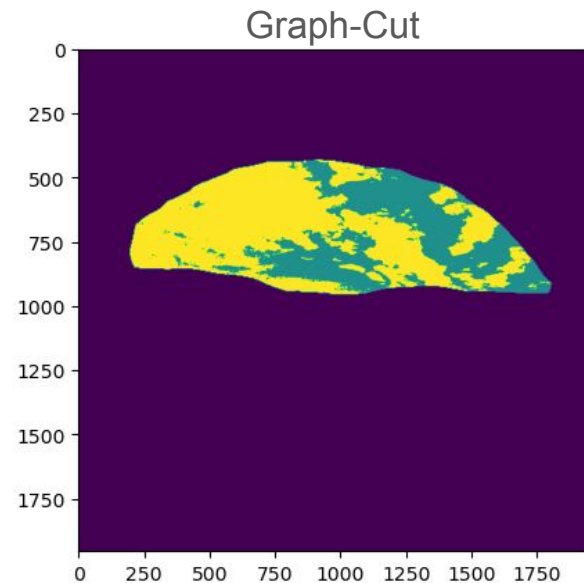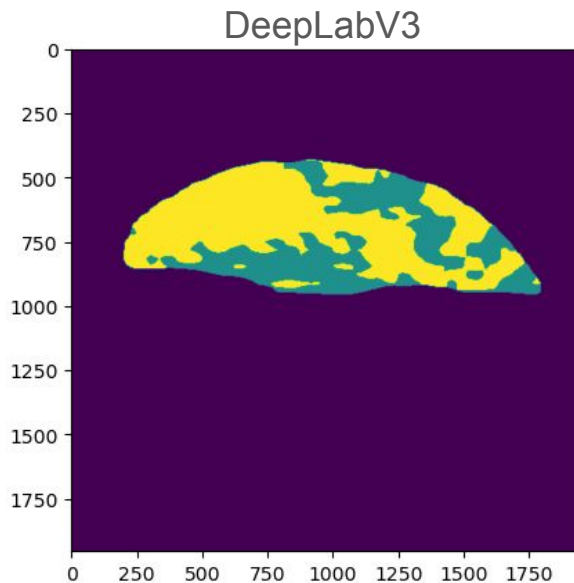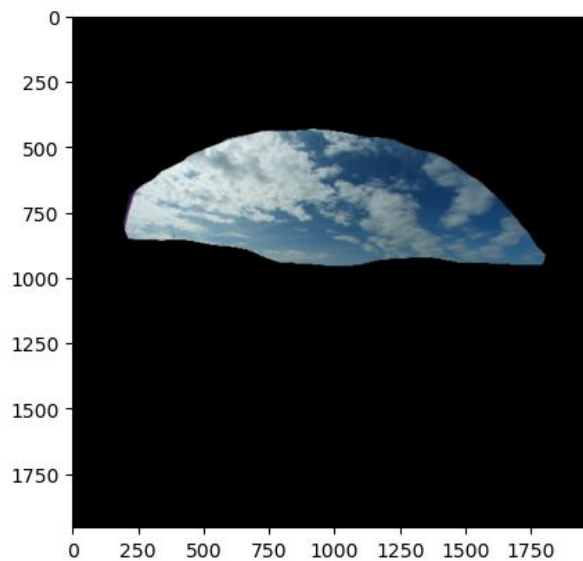- Partition channel into two subgraphs

HDR - SHWIMSEG Paper

- **Graph-based** segmentation algorithm
- **Fuzzy clustering** on **(B-R)/(B+R)** channel from HDR radiance map
- Cloud seeds have probability **> α**, Sky seeds **< (1-α)**
- Partition channel into two subgraphs

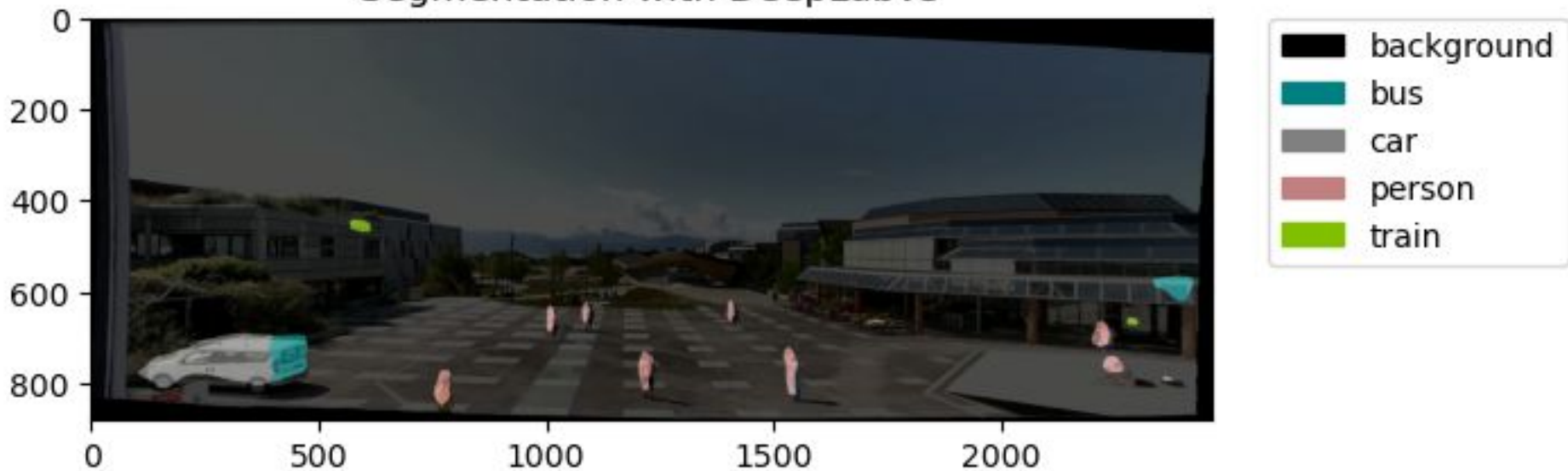# HDR - DeepLabV3 vs Graph-Cut Results

Ground Segmentation and Optical Flow

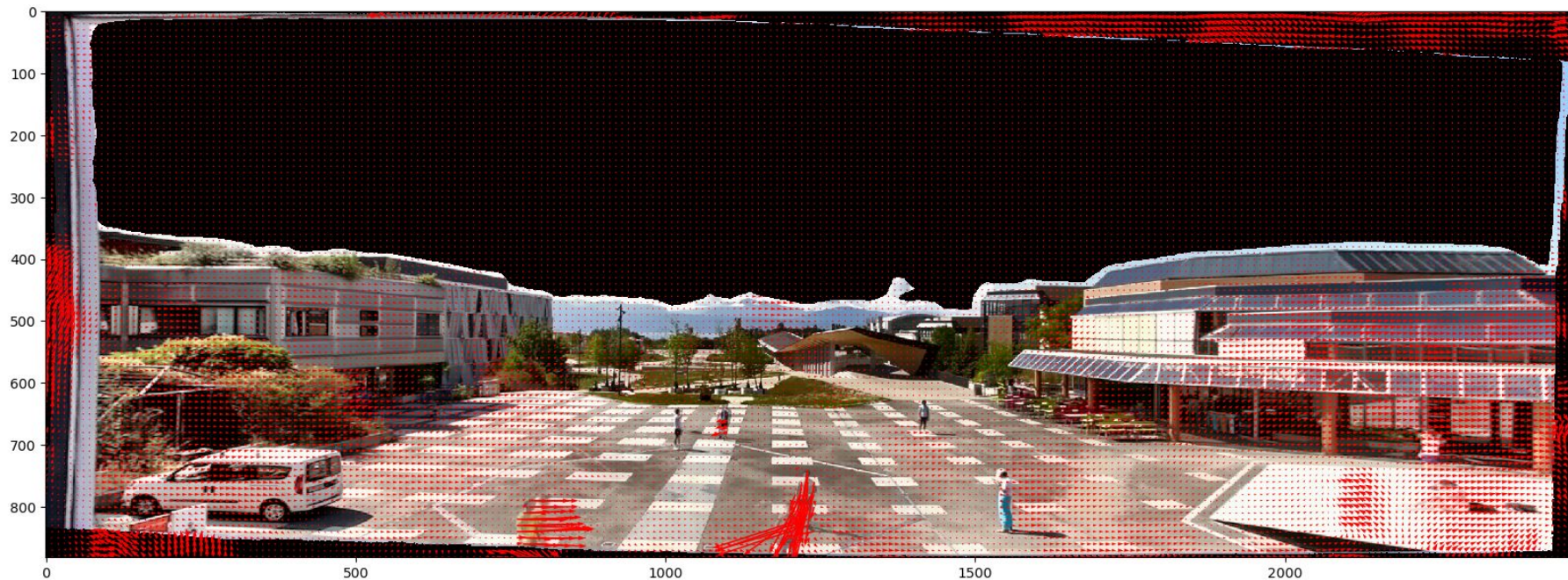# Ground Segmentation - DeepLabV3

- Pretrained on **COCO Dataset**
- With **MobileNetV3-Large** backbone, pretrained on **ImageNet**

Segmentation with DeepLabv3

Ground Optical Flow - RAFT

- **Large** version, pretrained weights **C_T_SKHT_V2**

Ground Optical Flow - RAFT

- **Large** version, pretrained weights **C_T_SKHT_V2**