Omni-directional stereo for 360° 3D virtual reality video

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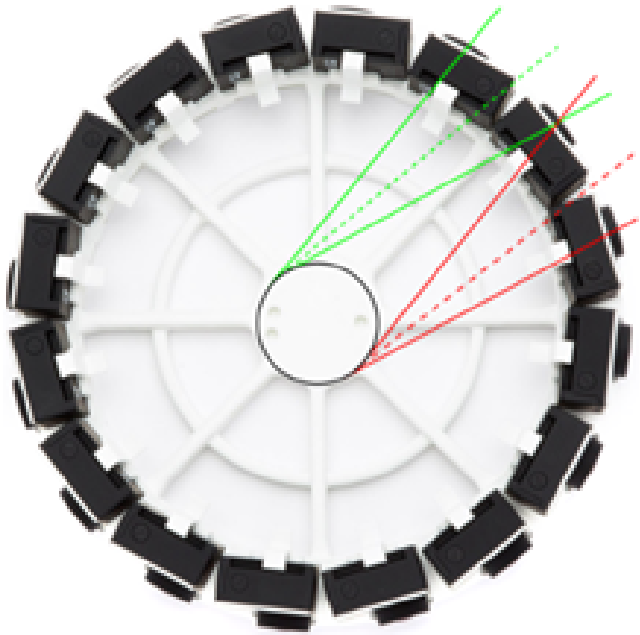
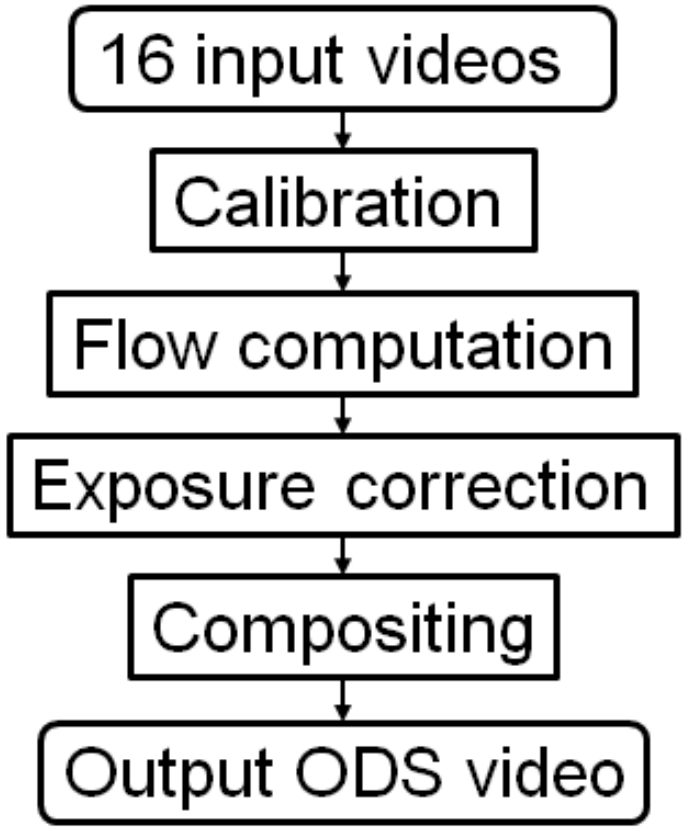
Recap: motivational paper (Jump, Google)

- Hardware and software framework
- Hardware: virtual reality headset (i.e. Google cardboard), rig of 16 GoPro cameras
- Software: ODS capture (projection on the cylindrical panorama), stitching pipeline
- Output: omni-directional stereo (ODS) videos
- Our goal: achieve visually pleasing videos



Recap: stitching pipeline

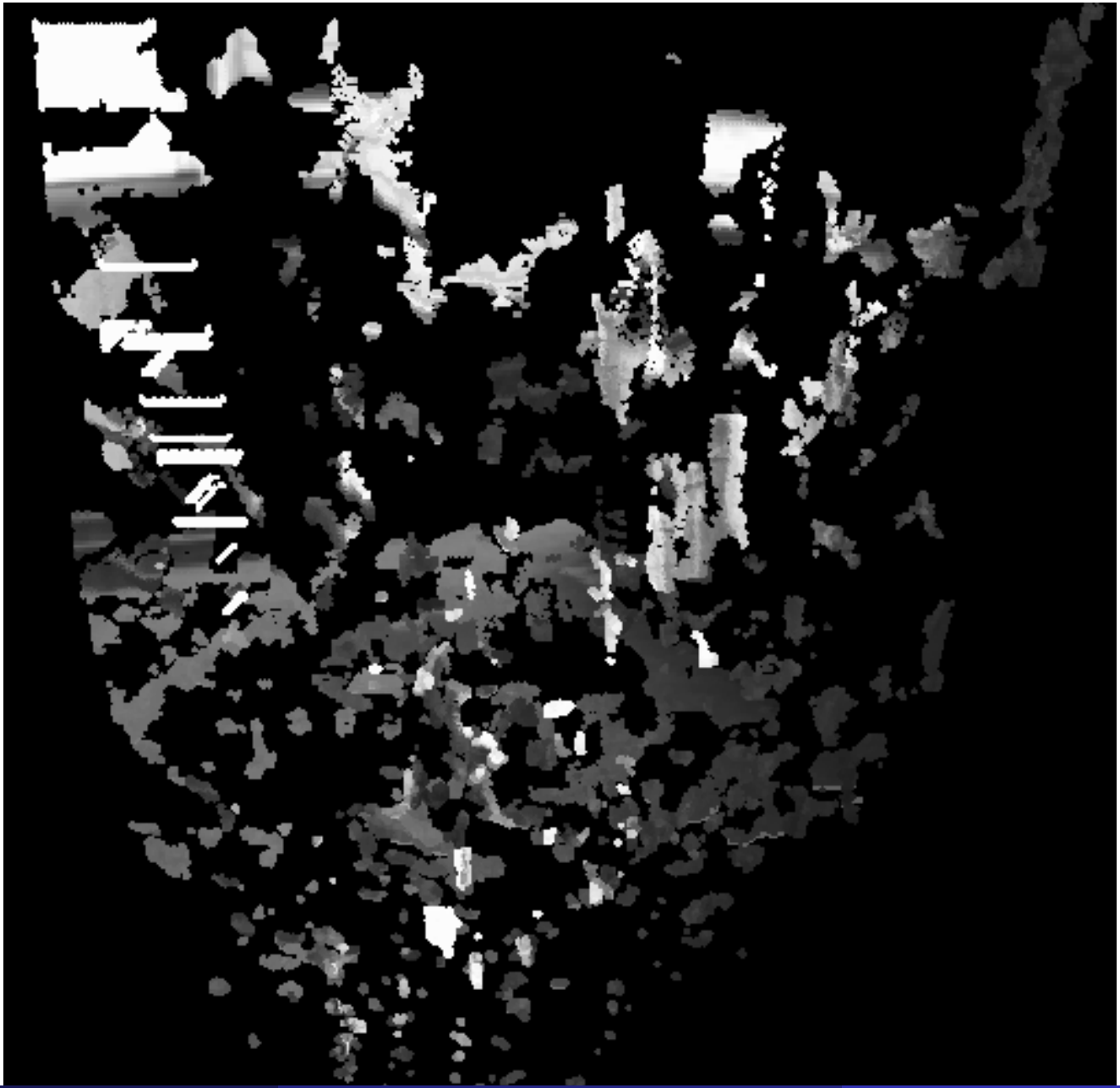
- Camera calibration
  - Standard structure from motion approach
  - Already calibrated dataset
- Flow computation
  - Find per-pixel correspondences of neighbouring cameras (Optical Flow)
  - OpenCV used
- Exposure correction
- Compositing
  - Projection into ODS: linear interpolation
  - 3D point cloud for verification
  - Occlusions have to be taken into account



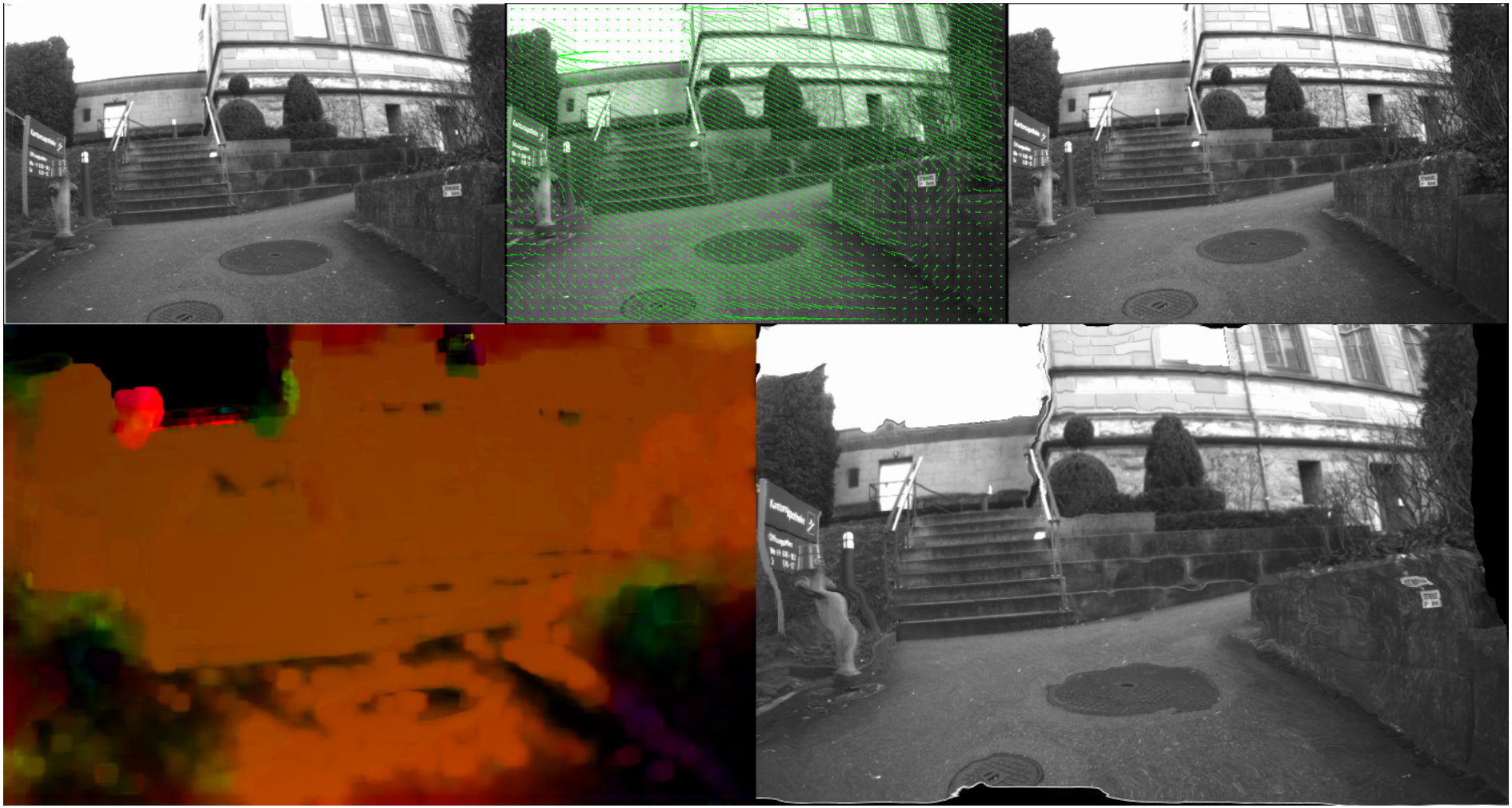
Timeline

Due	Goal
13.3.17	Proposal
27.3.17	Calibration and Flow estimation
3.4.17	Flow estimation and Projection into ODS
10.4.17	Mid-term presentation: Projection resulting in 3D point cloud
1.5.17	Compositing
15.5.17	Verification with Google Cardboard
22.5.17	Resolve some problems and artefacts
29.5.17	Final presentation
16.6.17	Final Report

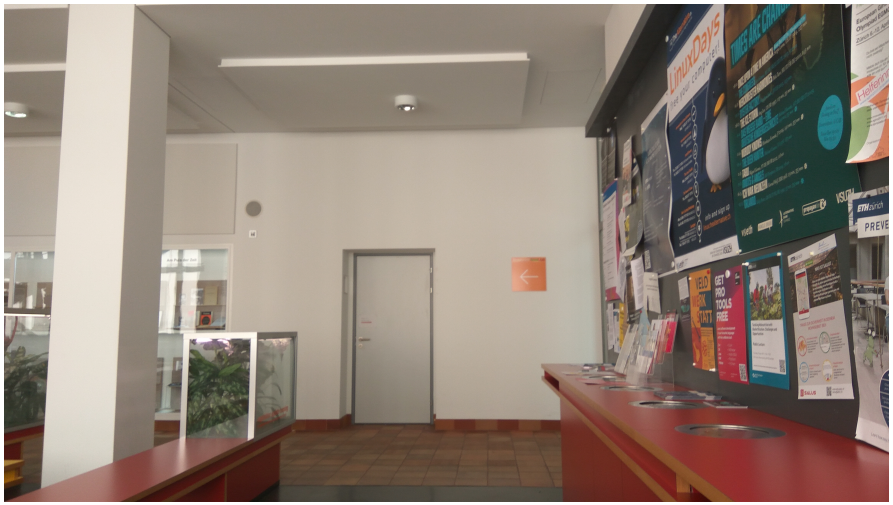
3D point cloud



Demo 1: Optical Flow stereo



Demo 3: Stitching example



Questions?