

# Lab 6 – Stereokamera

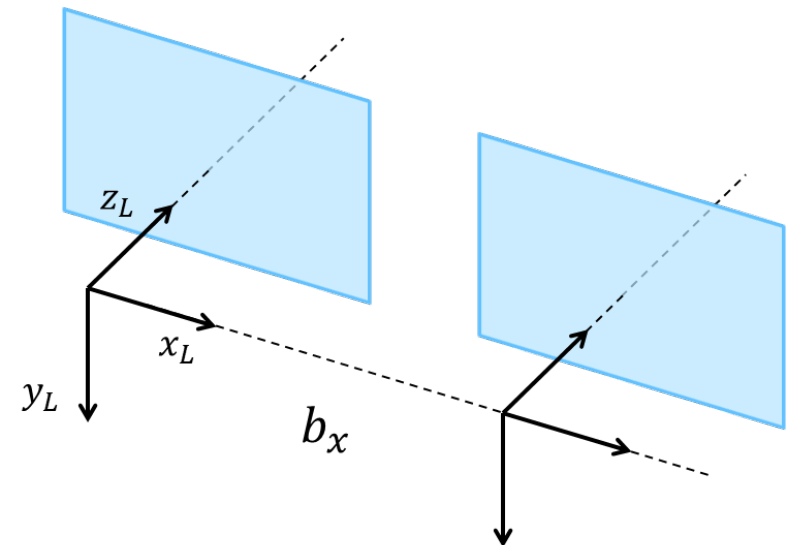
02.03.2016

# Lag og bruk et stereokamera

- Sett opp to kamera
- Kalibrer kameraene som et stereosystem
- Bruk stereokameraet
  - Stereooppretting
  - Glissen stereomatching
  - Disparity
  - Dybde
  - 3D punktsky
- Tett stereo?

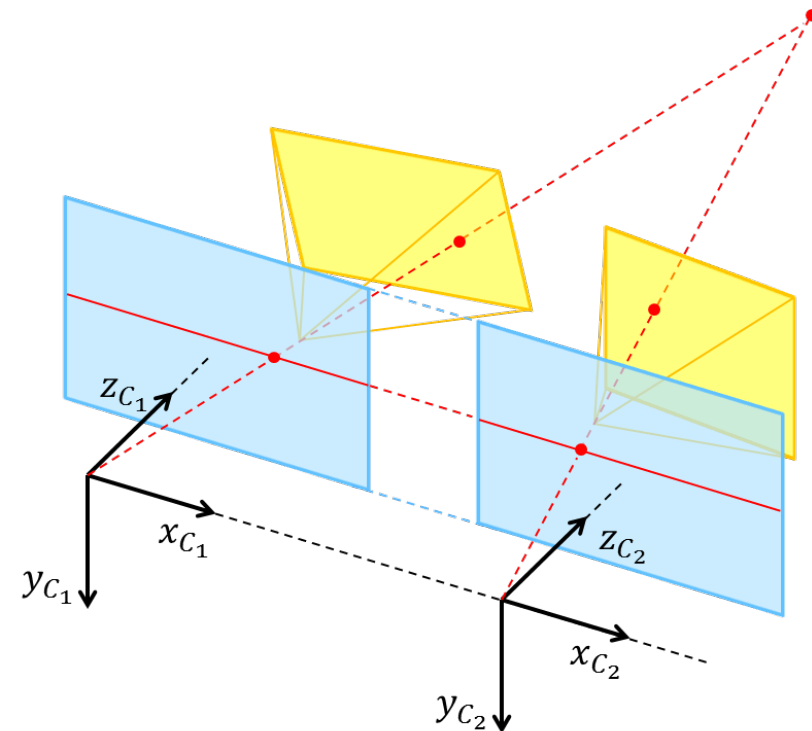
# Oppsett

- To kameraer
  - Sett inn det venstre kameraet først
  - Sjekk kamera-ID
  - La kameraene stå stille
  - Lite bevegelse på sjakkbrettet under kalibrering



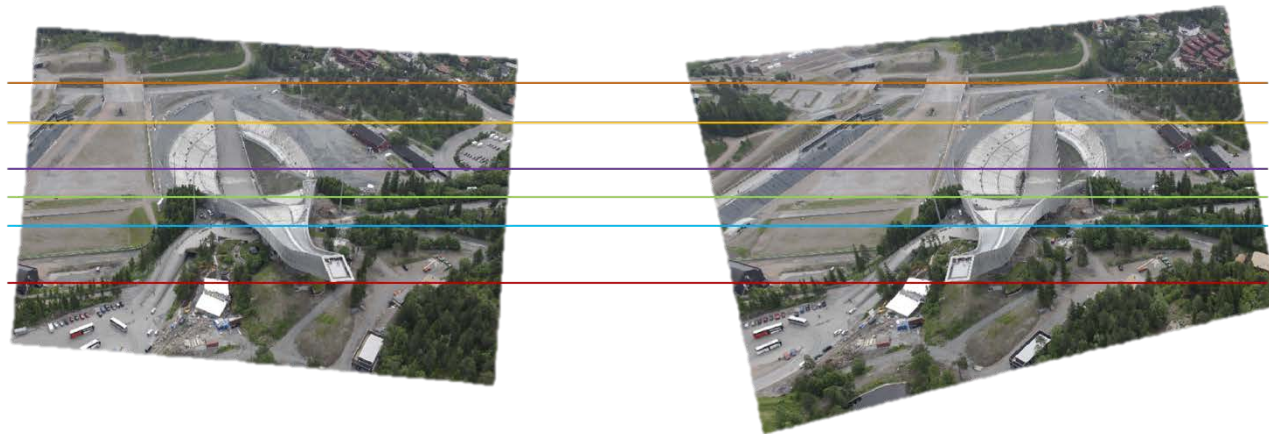
# Steg 1: Stereokalibrering

- OpenCV
  - `cv::stereoCalibrate()`
  - Se (og bruk) [samples/cpp/stereo\\_calib.cpp](#)
- Stereokalibrering i lab 6
  - `lab_6_stereo_camera/stereo_calibration`
- Hvilke parametere må vi finne?



## Steg 2: Glissen stereoprosessering

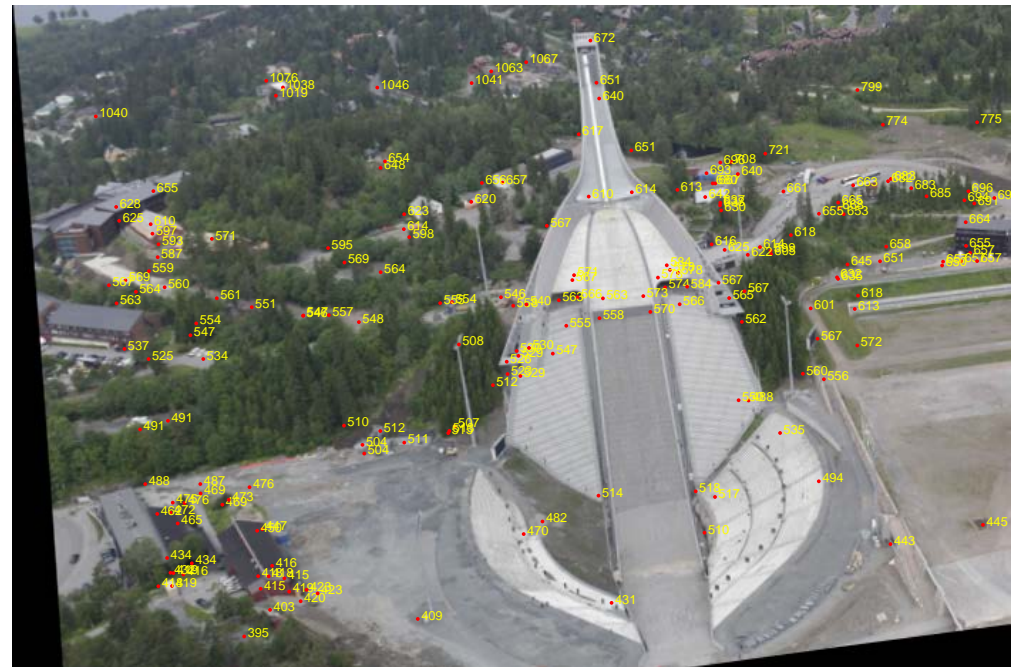
- Stereooppretting
  - `cv::stereoRectify()`
  - `cv::initUndistortRectifyMap()`
  - `cv::remap()`



# Steg 2: Glissen stereoprosessering

- Oppgaver:
  - TODO 1: Forbedre matchingen ved å utnytte epipolargeometrien
  - TODO 2: Beregn disparity fra matchene
  - TODO 3: Beregn dybde fra disparity
  - TODO 4: Beregn 3D punktsky

- Leking!



# Videre: Tett stereomatching

Ta gjerne en titt på

- `cv::StereoBM()`, `cv::stereo::StereoBinaryBM()`
- `cv::StereoSGBM()`, `cv::stereo::StereoBinarySGBM()`
- `cv::reprojectImageTo3D ()`
- Se for eksempel  
[https://github.com/opencv/opencv/blob/master/samples/cpp/stereo\\_match.cpp](https://github.com/opencv/opencv/blob/master/samples/cpp/stereo_match.cpp)