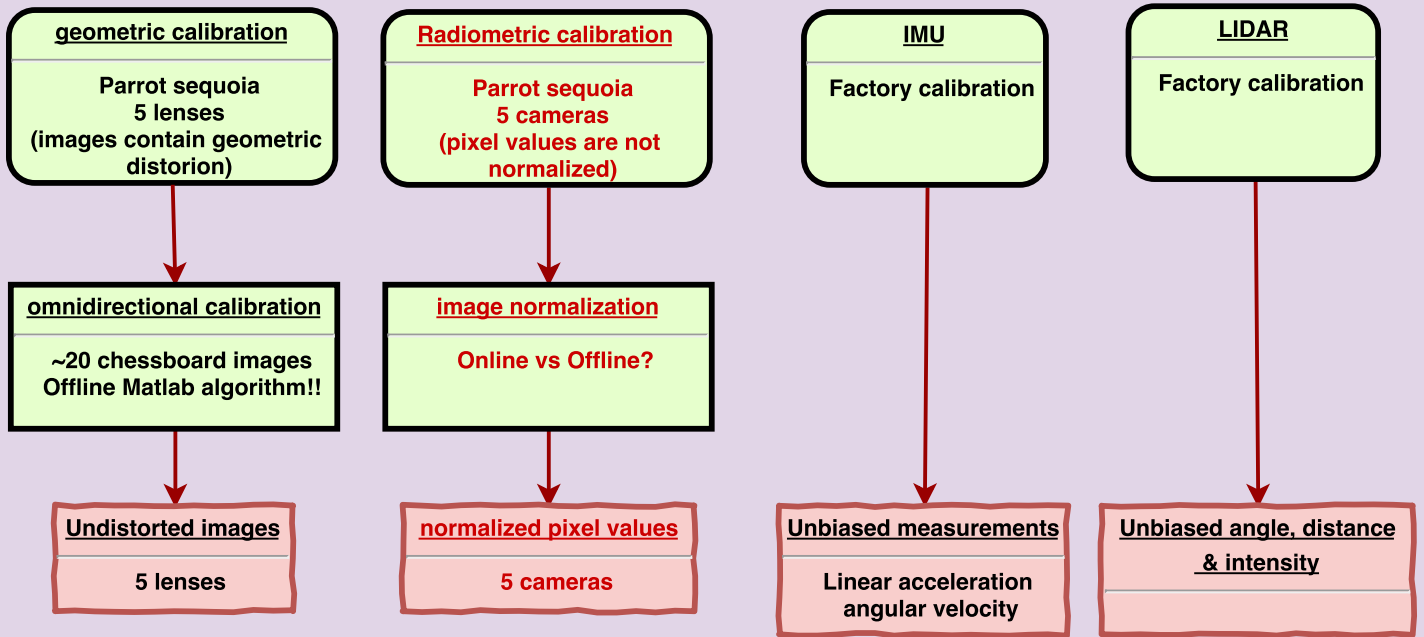# SLAM - calibration

Intrinsic calibration

geometric calibration

Parrot sequoia
5 lenses
(images contain geometric distorion)

↓

omnidirectional calibration

~20 chessboard images
Offline Matlab algorithm!!

↓

Undistorted images

5 lenses

Radiometric calibration

Parrot sequoia
5 cameras
(pixel values are not normalized)

↓

image normalization

Online vs Offline?

↓

normalized pixel values

5 cameras

IMU

Factory calibration

↓

Unbiased measurements

Linear acceleration
angular velocity

LIDAR

Factory calibration

↓

Unbiased angle, distance & intensity

Extrinsic calibration

LIDAR - Camera

↓

Relative calibration

images and scans of calibration board

↓

Rotation and translation between LIDAR and camera

LIDAR - IMU

Relative rotation calibration

IMU -> direction of gravity
LIDAR -> direction of gravity
(hanging ropes)

↓

Rotation between LIDAR and IMU

Relative translation calibration

measuring tape

↓

Translation between LIDAR and IMU

Unified Robot Description Format (URDF) in SLAM (.urdf)