

# Keyframe Based SLAM



Final Presentation

Team Pixel

# Goals

- Reduce drift considerably
- Run in real-time
- Optionally: Use bundle adjustment

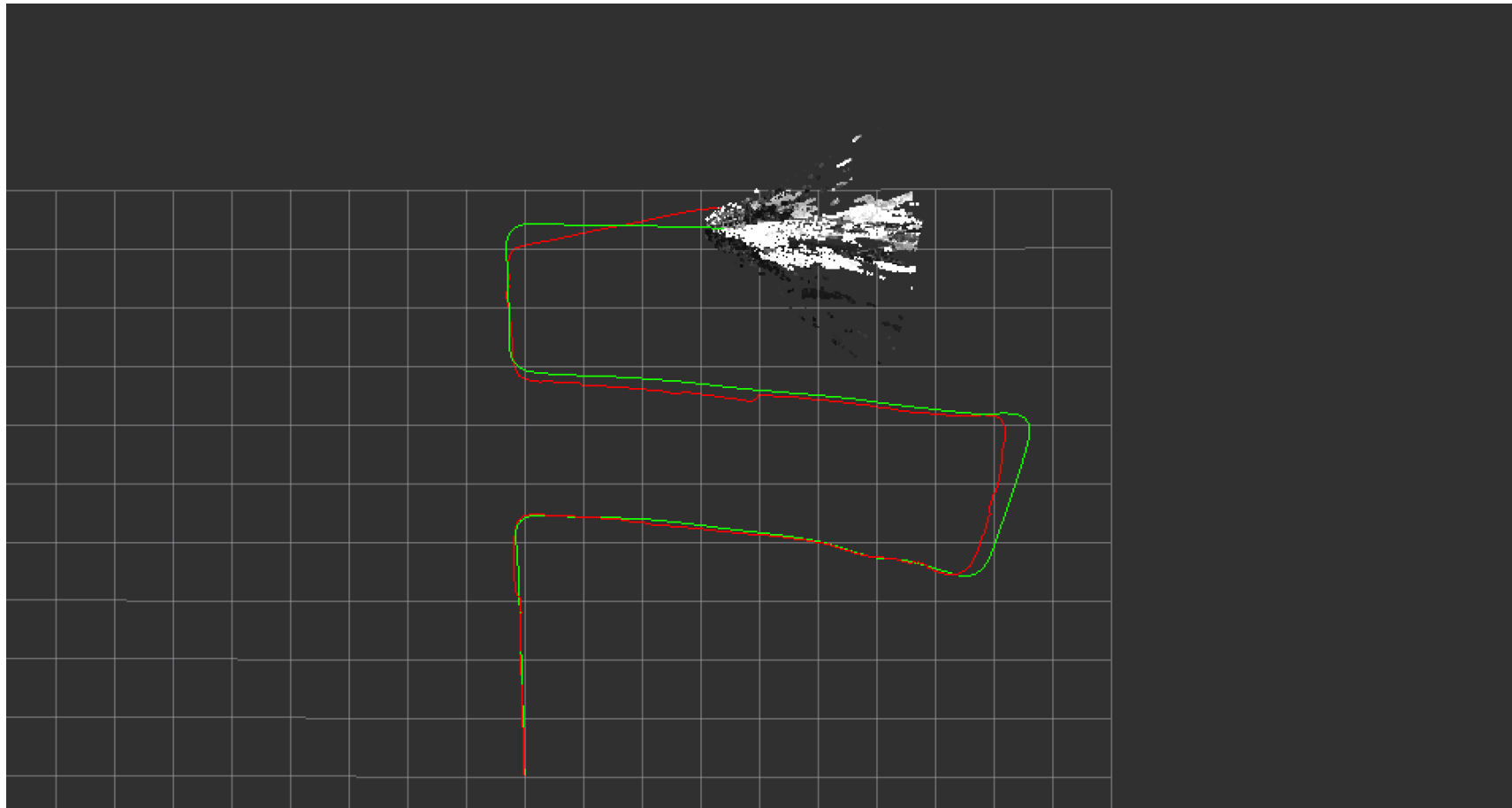
# Approach

- Feature detection with ~~BRISK~~
  - StarFeatureDetector adjusted dynamically
  - FREAK extractor
- Select Keyframes
  - Every 25 frames
  - Distance/Angle threshold
  - ~~Inlier rate~~
- Compute pose from 3D-to-2D matches
  - Perspective n point problem->solvePnP/RANSAC
- ~~Optionally: Do local Bundle Adjustment with Ceres-solver/GTO~~
  - ~~OpenCV wrapper for the SBA library~~

# Goals

- Reduce drift considerably
- Optionally: Add Dense Stereo Matching
- Run in real-time
- Optionally: Use bundle adjustment*

# Trajectory



# Lessons Learned

- 3D-to-2D pose estimation better than 3D-to-3D
- Drift in turns has to be tackled differently, maybe with edgelets as in Klein & Murray (2008)
- If there is already OpenCV functionality, don't reinvent the wheel.
- Don't use unsupported OpenCV API unless you have the time to fix it yourself.

# Discussion

