Meeting 26-11-2015

1 Convolutional networks

1.1 Repository:

- `https://github.com/tudelft/deepdrone`

2 Textons

2.1 Repositories:

- `https://github.com/tudelft/draug`
- `https://github.com/tudelft/treXton`

2.2 Visualizer

- Visualizes texton predictions, filtered texton predictions, and SIFT predictions
- Additionally, it shows the pictures during flight and the texton histogram

2.3 Ground truth labeler using SIFT

- Slow but accurate. Creates a .csv file with x, y coordinates
- Can be used for testing different approaches (fast_test.py) – calculates difference between texton predictions and SIFT
- Could be used also used for training (semi-supervised learning): Learning with SIFT (and draug), predicting with textons.

2.4 Derotate image based on IMU data (WiFi with libardrone)

- Not tested with treXton yet

2.5 Other improvements

- Visualizer can be used live using a webcam
- Added a Kalman filter
- Training based on draug / based on ground truth labeler
- Different classifiers (random forest regression, nearest neighbors, gradient boosting) and combinations of different classifiers
- Added tfidf and global standardization to treXton

2.6 Datasets:

- Cyberzoo (ground truth: SIFT)
- Playing Mat (ground truth: OptiTrack)

3 TODO

- Clean up code
- Add global configuration file
- Test treXton with derotator
- Hyperparameter optimization (for example, number of decisions trees or number of textons) and choice of classifiers. Automate that using fast_test.py
- Add color to textons (see paper: *Color Textons for Texture Recognition*)