Mid-Term Report

MP1 - Implemented the Ring Buffer as a class in dataStructures.h which checks for buffersize whenever a frame is pushed into the ringbuffer. Internally the ring buffer uses a double ended queue to push and pop frames as required.

MP2 - Implemented detectors Shi-Tomasi, HARRIS, FAST, BRISK, AKAZE, SIFT and made them selectable by setting a string accordingly.

MP3 - Extracted key points which are within the vehicle rectangle using .contains() function.

MP4 - Implemented the BRIEF, ORB, FREAK, AKAZE and SIFT descriptors using openCV functions which are selectable by a string.

MP5 - Implemented FLANN and KNN using openCV functions and selectable.

MP6 - Descriptor distance ratio test was implemented, which checks the ratio of best vs. second-best match to decide whether to keep an associated pair of keypoints. The distance ratio threshold is 0.8.

MP7, MP8, MP9 - These results are stored in the observations folder as three separate .pdf files

The best detector+descriptor combination for our use case was found to be FAST+BRIEF because of the speed of computation as well as the good number of matches which are found between frames. The average detector+descriptor computation time was od 1.1495222 milliseconds.