

Practical Course: Vision-based Navigation (IN2106)

Exercise 5

Real-Time Visual Odometry

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Exercise 1: Skeleton Code

1. Describe the workflow of odometry method implemented on next_step function.

Answer:

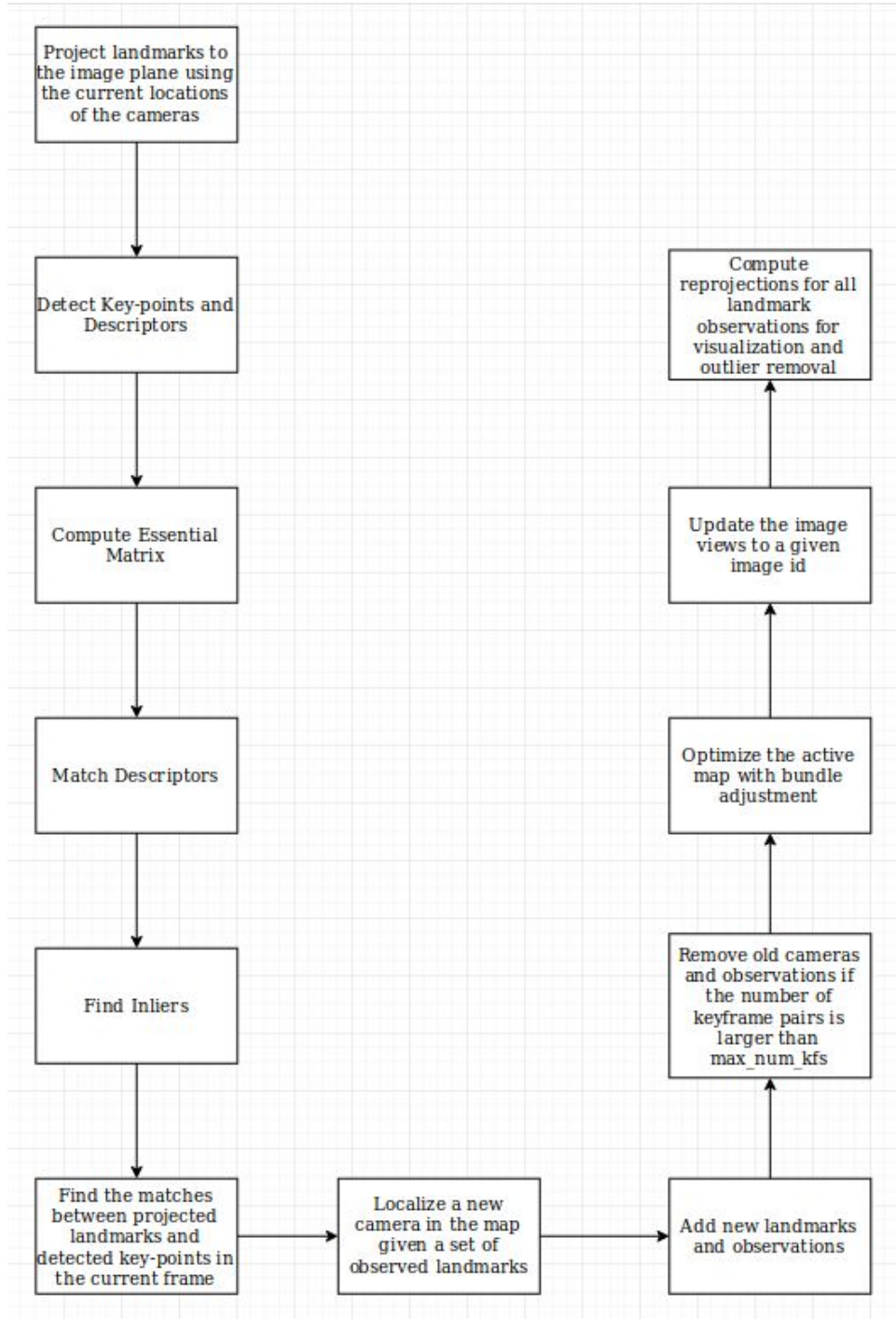


Figure: Workflow of Odometry in next_step Function.

Exercise 3: Optimization

1. What is the difference of optimize function in sfm and odometry?

Answer:

Optimize function in odometry work in real-time on an ordered sequence of images acquired from a fixed camera set-up. In the other hand, in sfm it work on an unordered set of images often computed in offline.

2. What is the functionality of the variables `opt_finished` and `opt_running`?

Answer:

Though the optimization needs lots of computational power, it is a very good idea to run this process in multiple threads (parallel). These variables helps us to keep track the optimization is finished or running in all threads or not and guaranteed us the thread-safety.

3. What will happen if we remove them?

Answer:

If we remove them then we are no longer in thread-safe mood. In the other hand, the optimization process will not be able to optimize fully or properly.