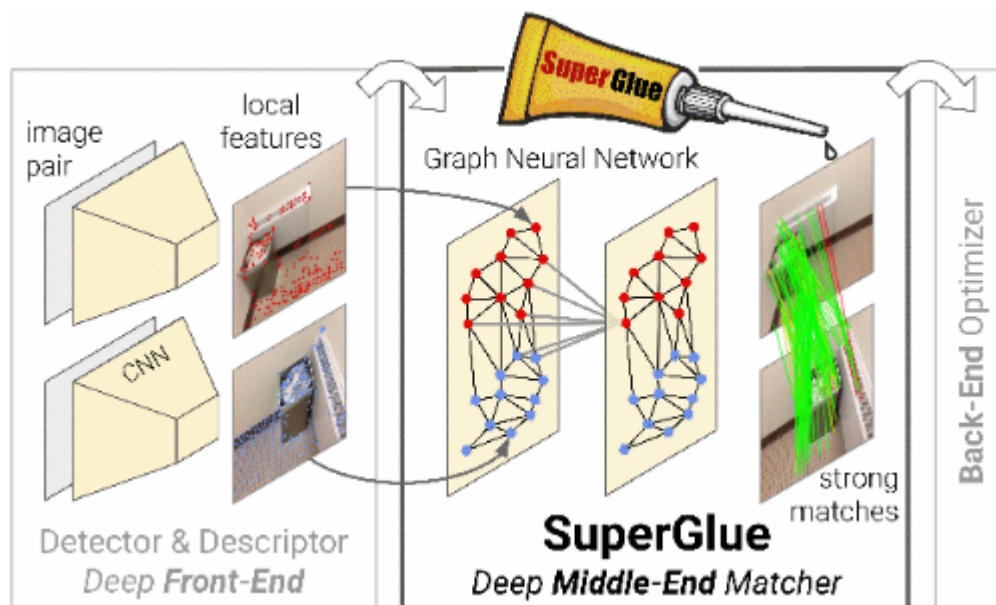
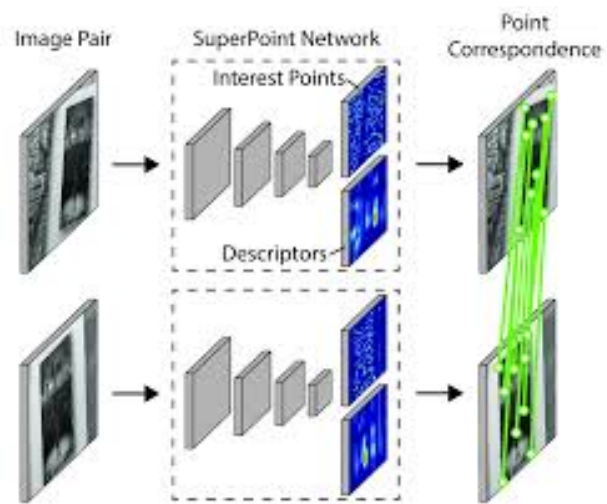


And what improvements can be made for the first NER task? Based on the results on the synthetic dataset, the BERT model successfully handled the task. However, the only improvement could be to increase the dataset's content, enriching it with more mountain names and possibly using the more advanced RoBERTa model.

Regarding the second task about matching. As mentioned, classical machine learning methods were used in my solution, such as SIFT for determining image features and BFMatcher for matching these features. However, as noted in the task recommendations, there are DL solutions that perform this task better than these methods, especially when processing large images like satellite photos. Besides combining CNN with SIFT or other algorithms, which showed better results but not significantly, some of the most popular neural networks include the SuperPoint model, which can generate descriptors and keypoints even in real time, and graph neural networks for keypoint matching such as SuperGlue, which is usually used together with the former. The working principles of both are shown below. In conclusion, using these neural networks will significantly improve the results.



SuperGlue working sequence



SuperPoint working sequence