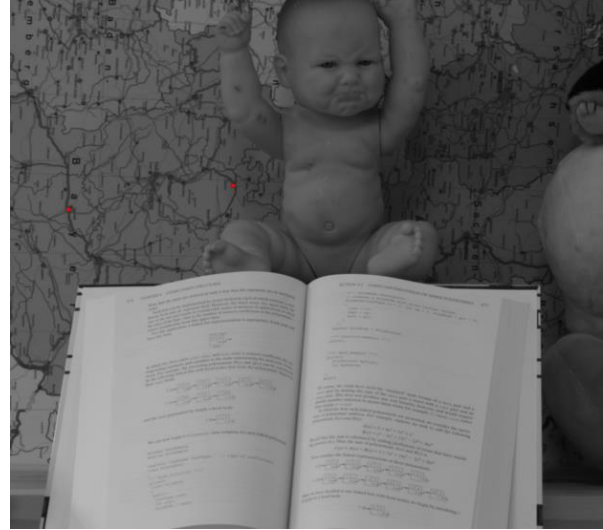
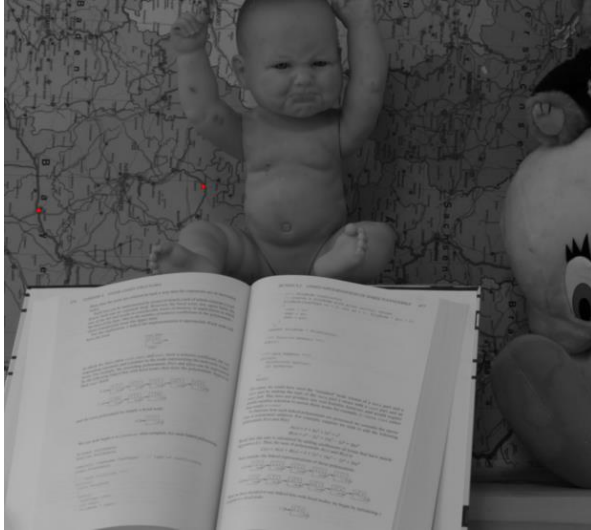


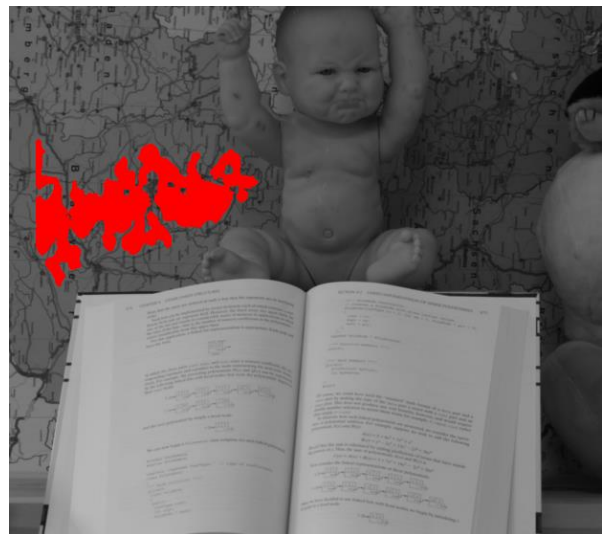
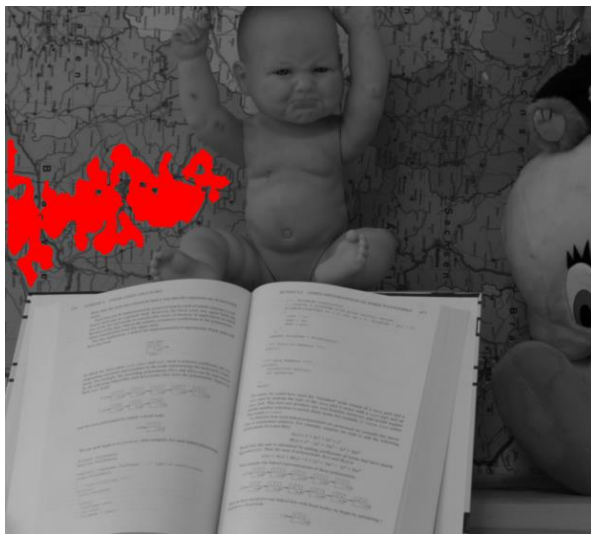
Quasi Dense Matching Feature Search Algorithm^[1]

Key Idea: take initial feature points from SIFT (or any algorithm of your choice) and find more matches in the surrounding area (propagation)

Using the standard Baby image, if one finds the SIFT feature matches in the left and the right image (stereo pair) and locate arbitrarily 2 of them like shown (bright red spots):



Now after implementing the feature search algorithm, these are all the possible matches one gets with ZNCC threshold of 0.99999:



Note:

1. Both the regions have similar shapes
2. It is evident that each feature point in the left image is mapped to a nearby point in the right image
3. The red patch (points matched) has a characteristic shape: e.g. 1) notice the holes left at some places where the points are not invariant, those are not matched; 2) notice that the red patch keeps its shape according to the lines in the map behind the baby (possible reason being that corner points in the map tend to be invariant points)

Thus it can be seen that the algorithm (although naïve) does its job of matching thousands of key points which will be used for triangulation at the end (depth estimation).

[1] Maxime Lhuillier, Long Quan. Match Propagation for Image-Based Modeling and Rendering. IEEE Transactions on Pattern Analysis and Machine Intelligence, Institute of Electrical and Electronics Engineers, 2002, 24, p. 1140-1146. fahal-00118524f