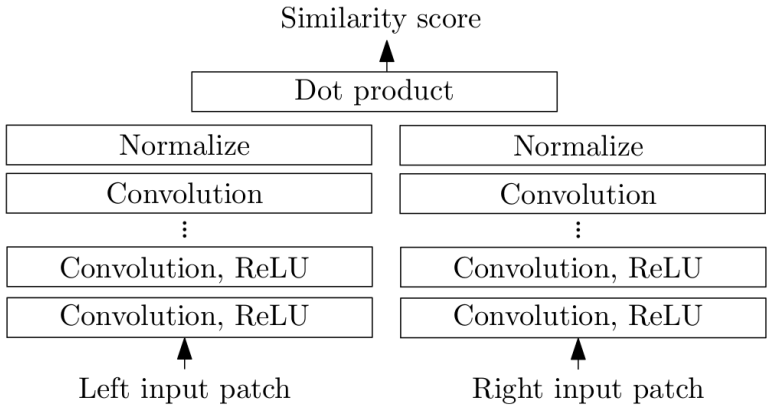
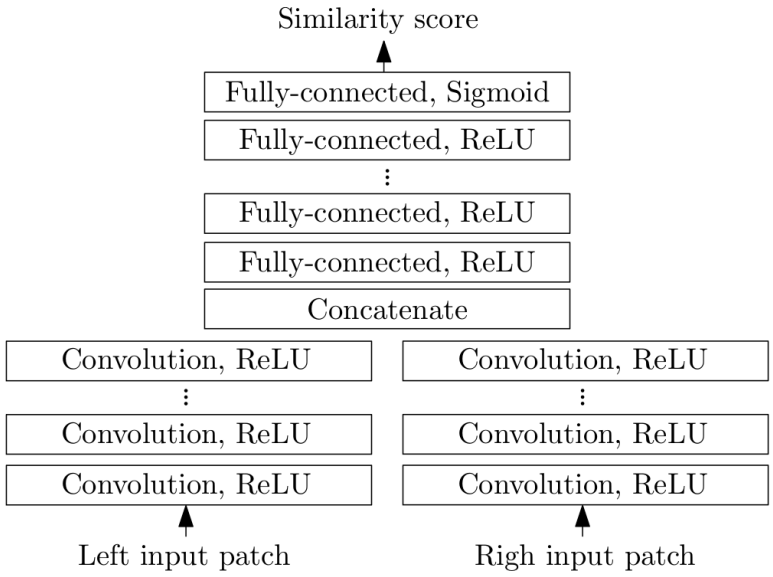
Stereo Matching by Training a Convolutional Neural Network to Compare Image Patches

J. Zbontar, and Y. LeCun (JMLR 2016)





- Matching cost computation by learning a similarity measure on patches using a CNN
  - Siamese network with normalization and cosine similarity in the end
  - Fast architecture and accurate architecture (+fully connected layers)
- Binary classification of similar and dissimilar pairs
  - Sampling negatives in the neighbourhood of the positive
  - Margin loss
- A series of post-processing steps:
  - cross-based cost aggregation, semiglobal matching, a left-right consistency check, subpixel enhancement, a median filter, and a bilateral filter
- The best performing on KITTI 2012, 2015 datasets