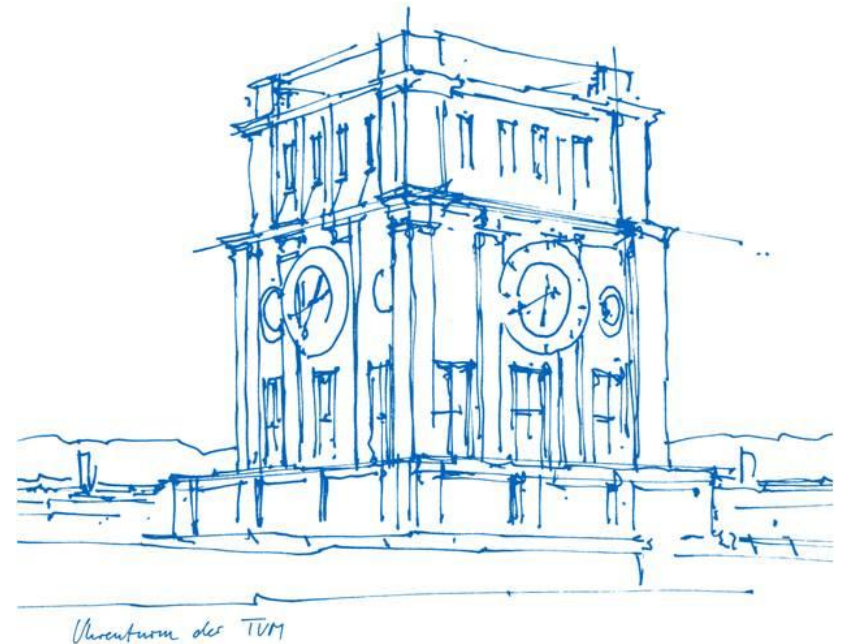


Deep Learning from Scratch

Marc Katzenmaier

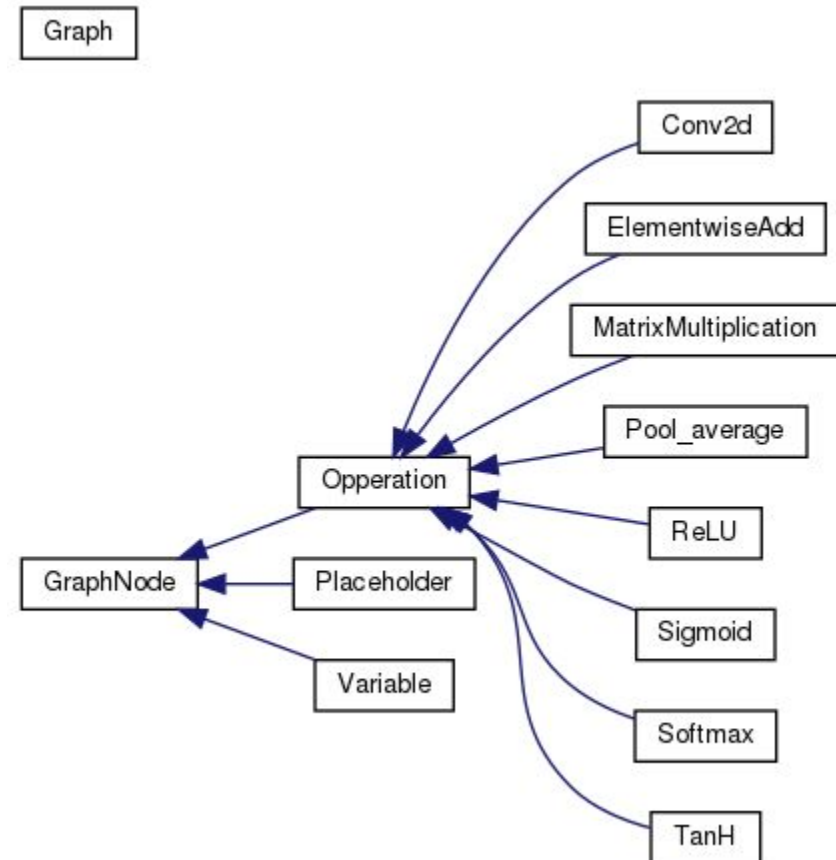
Technical University of Munich

Wednesday, 31st July, 2019



Deep Learning Library

- GraphNode
 - Variable
 - Placeholder
 - Operation
- Graph
 - Calculates Computation Order
 - Runs Forward and Backward Pass
 - Can be feed with data for the Placeholder
- Additional Functions
 - Loss
 - Optimizer
 - Load/Store



Projekt: Face Recognition

- Input Data
 - image of a person
- Output
 - feature vector which represents the person
 - vectors of same person should have low euclidian distance
 - vectors of different persons should have big euclidian distance

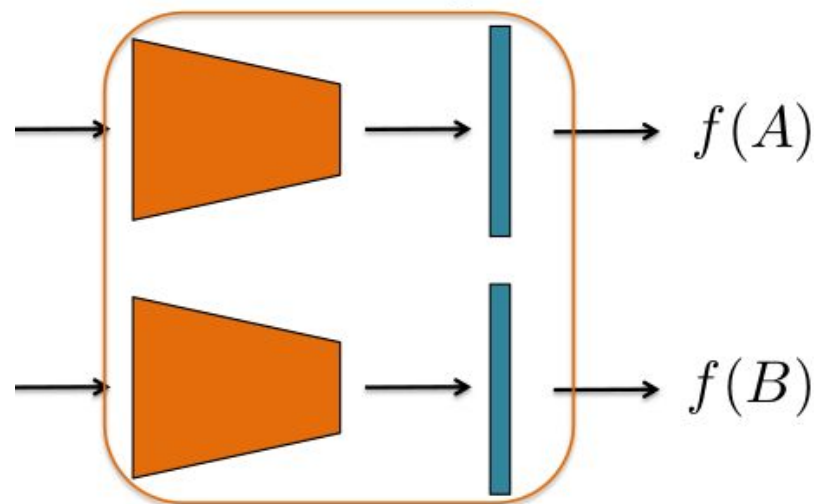


Projekt: Face Recognition

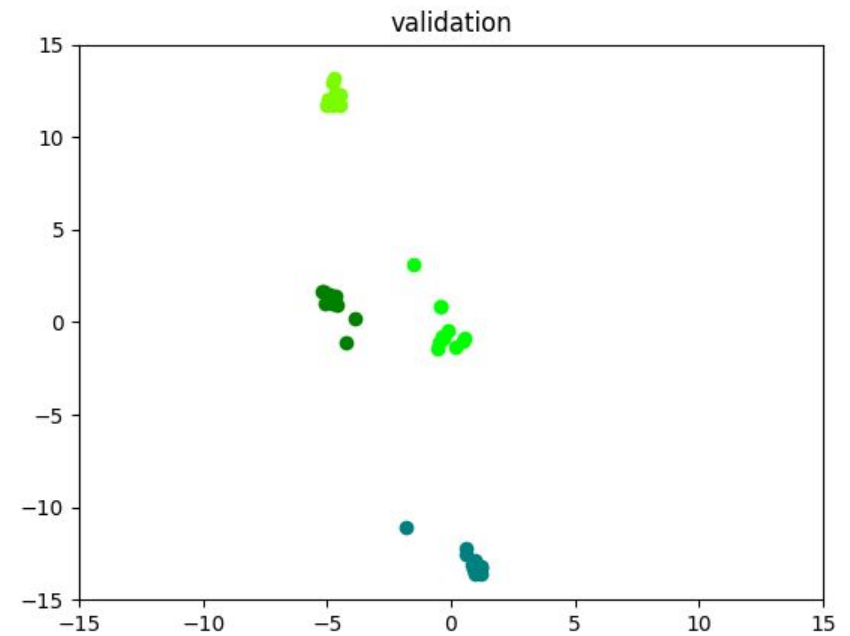
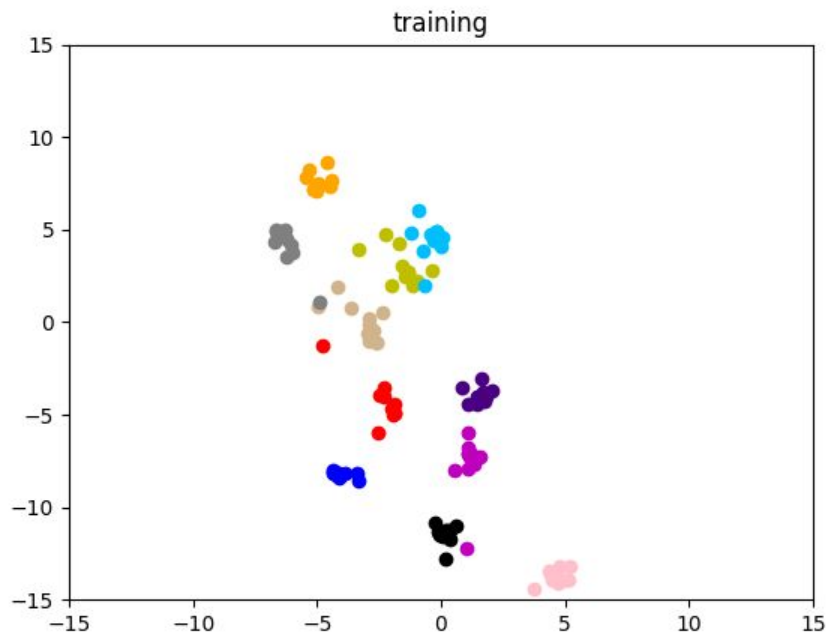
- Train
 - Resized to 32*32 pixels
 - Pair of images -> Contrastive loss

$$\mathcal{L}(A, B) = y^* ||f(A) - f(B)||^2 + (1 - y^*) \max(0, m^2 - ||f(A) - f(B)||^2)$$

- Siamese network architecture

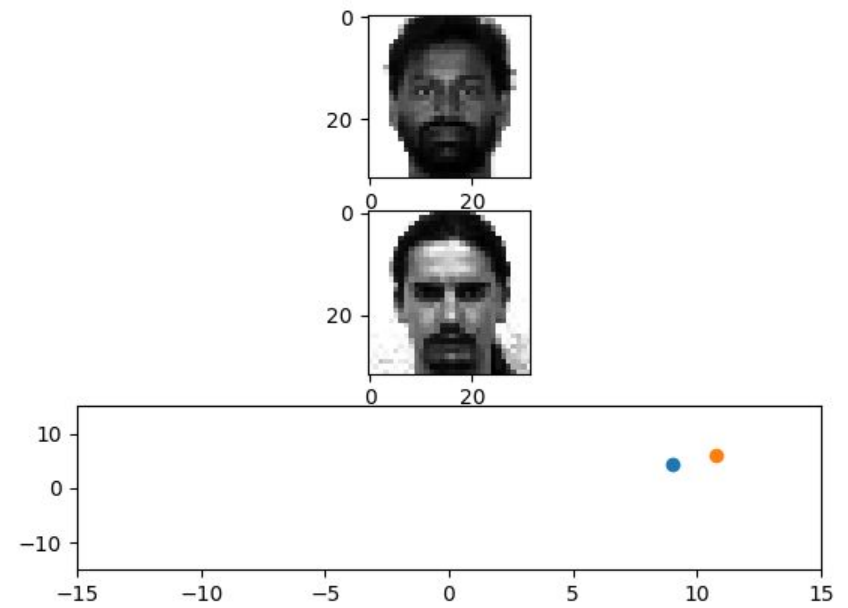
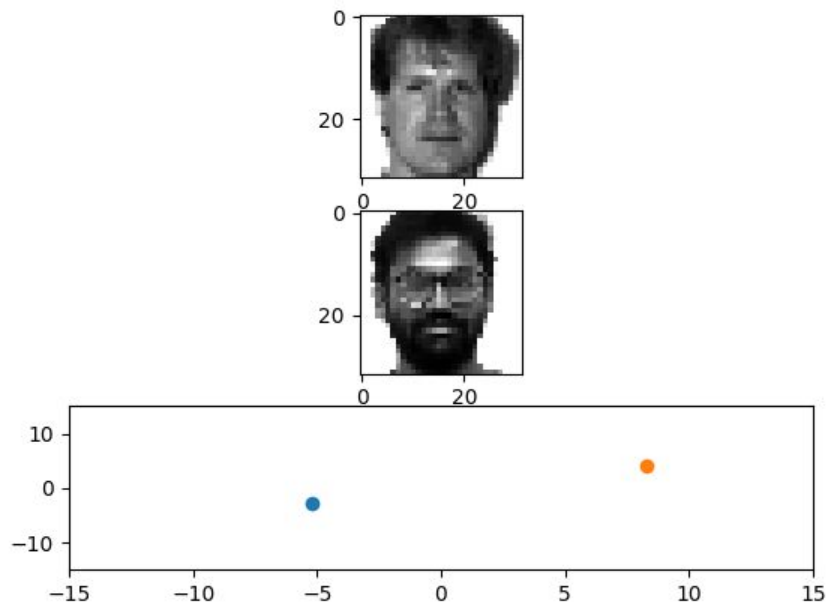


Projekt: Face Recognition



Projekt: Face Recognition

- Results



Projekt: Face Recognition

- Results

