UNIVERSITÄT ZU LÜBECK
INSTITUT FÜR ROBOTIK
UND KOGNITIVE SYSTEME

Institute for Robotics and Cognitive Systems | Prof. Dr. Floris Ernst

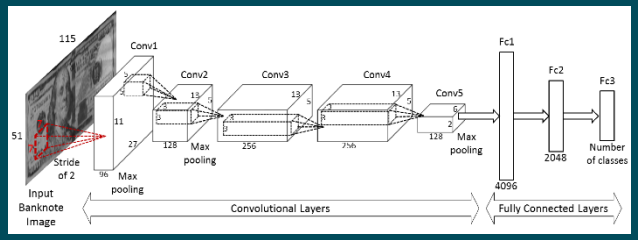
Master's Thesis

Transfer Learning for 3D ultrasound image classification

During the last years, deep learning showed outstanding performance through all fields of image processing. However, training deep convolutional neural networks requires huge data sets that are often not available for medical applications, for example planning cardiovascular surgeries based on 3D ultrasound images. One approach to face this problem is to transfer feature representations from pre-trained deep neural networks to the specific task. However, pre-trained neural networks are usually trained for 2D image processing.

Tasks

You will develop a workflow to apply 2D pre-trained neural networks to 3D ultrasound image classification problems using an evolutionary strategy. The method should be tested on synthetic as well as realistic data sets that are already available.



Qualification

- Strong interest in artificial intelligence and bio-inspired learning
- Experience with deep learning and evolutionary algorithms
- Experience with Python and/or Matlab

Interested? Contact Jannis Hagenah at hagenah@rob.uni-luebeck.de!