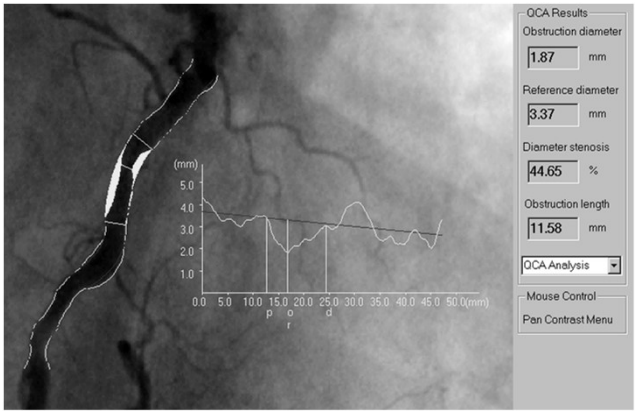
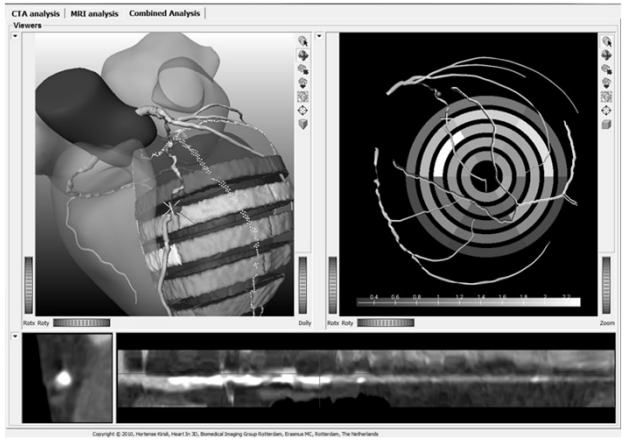
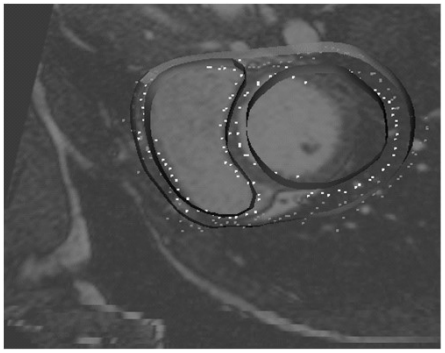
Current AI research LUMC LKEB (~35 FTE)

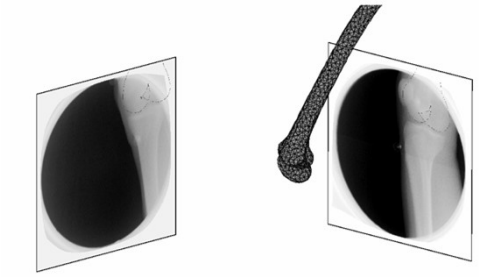






"Seeing is measuring"

- Clinic
- Clinical research
- Life sciences



Machine learning anno 2012

Feature detection
Random forests
Pattern recognition (dinosaur name for machine learning)
Sparse Dictionary Learning
Bag-of-words approaches
Dimensionality reduction
Transfer learning
Multiple instance learning
…

Since the 90's:
Neural Networks

Convolutional Neural Nets (Deep Learning)

All other stuff

AI research @ LKEB LUMC

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Google AI Blog

The latest news from Google AI

Realtime tSNE Visualizations with TensorFlow.js

Thursday, June 7, 2018

Posted by Nicola Pezzotti, Software Engineering Intern, Google Zürich

In recent years, the t-distributed Stochastic Neighbor Embedding (tSNE) algorithm has become one of the most used and insightful techniques for exploratory data analysis of high-dimensional data. Used to interpret deep neural network outputs in tools such as the TensorFlow Embedding Projector and TensorBoard, a powerful feature of tSNE is that it reveals clusters of high-dimensional data points at different scales while requiring only minimal tuning of its parameters. Despite these advantages, the computational complexity of the tSNE algorithm limits its application to relatively small datasets. While several evolutions of tSNE have been developed to address this issue (mainly focusing on the scalability of the similarity computations between data points), they have so far not been enough to provide a truly interactive experience when visualizing the evolution of the tSNE embedding for large datasets.

In "Linear tSNE Optimization for the Web", we present a novel approach to tSNE that heavily relies on modern graphics hardware. Given the linear complexity of the new approach, our method generates embeddings faster than comparable techniques and can even be executed on the client side in a web browser by leveraging GPU capabilities through WebGL. The combination of these two factors allows for real-time interactive visualization of large, high-dimensional datasets. Furthermore, we are releasing this work as an open source library in the TensorFlow.js family in the hopes that the broader research community finds it useful.

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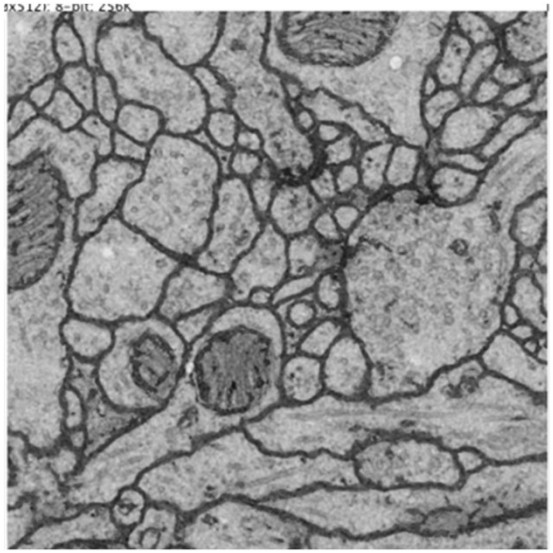
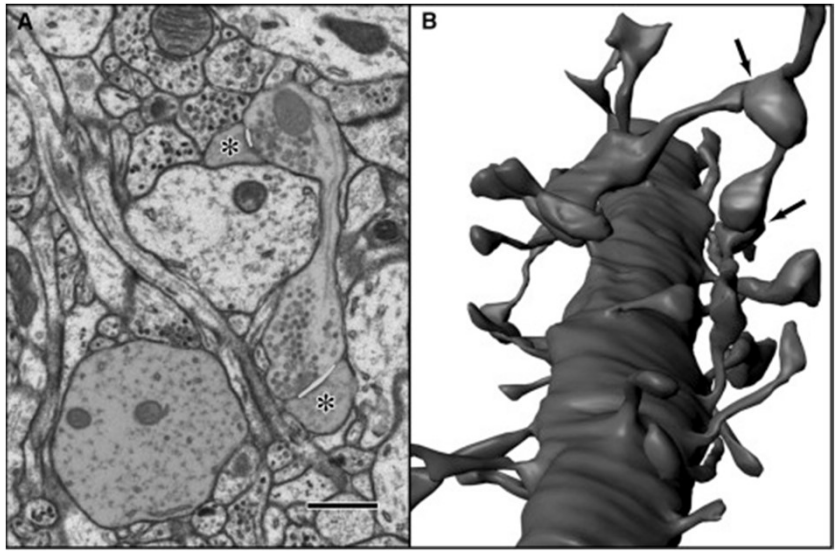
LUMC-FWN SAILS-: AI for Electron microscopy



1) Segmentation of 3D Cryo-EM
2) Fusion light-EM information

Seung-lab, Bioinformatics 2017, Ostroff e.a., Cell, 2015