Visualization of E-Mail Traffic

- WHERE IS THIS ONE MAIL...??

- Would be nice
  - JS, SASS, HTML
  - Being creative
Visualization of Publications

- Existing project
- Implement visualizations for high-level questions

“Requirements”

- JS, SASS, React / Redux, D3.js
- Interest in visualization
- Having fun while learning something new
3D Visualization of Data from NASA

- Interactive visualization running on the Powerwall
- Different sub-topics possible
  - Investigate interaction methods
  - Design presentation of the data
  - Implementation of the renderer
Tool for publishing crowd-sourced labeling tasks

- **Problem:**
  - Large amount of labeled training data needed to train neural networks
  - Labeling is time consuming or even impossible for a single person

- **Solution:**
  - Use crowd-sourcing

- **Goal:**
  - Develop a system to publish generic labeling tasks to the crowd
  - Tasks could involve classification, semantic segmentation, and feature detection

- **Technologies:**
  - Should be implemented as a web-based system using a backend technology of your liking and HTML/JS in the frontend

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Neural Layer Visualization

- **Problem:**
  - Network layers hardly understood
  - Individual layers hard to inspect
- **Solution:**
  - Visualize individual layers of the network
- **Goal:**
  - Design visualizations for network layers based on specific examples
  - Implement visualizations
- **Technologies:**
  - Basically free choice, if possible, web preferred because of easy integration into other tools

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Inviwo VR

- Problem:
  - Inviwo very good for rendering scientific data, however, not VR capable

- Solution:
  - Integrate callbacks for VIVE controls

- Goal:
  - Make VR interaction with Inviwo possible
  - Implement demo scenarios

- Technologies:
  - C++/OpenGL

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Fibril Reconstruction

- Problem:
  - Fibril structures are important for biochemists but obtaining them is complex
- Solution:
  - Neural net to obtain this structure
- Goal:
  - Familiarize with the data
  - Train a GAN to obtain the structure
- Technologies:
  - Tensorflow

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Color Calibration of Multiprojector Systems

- Problem: see for yourself.
Color Calibration of Multiprojector Systems

- Idea: An automated color calibration should result in better images.

- Goals:
  - Implement a stand alone prototype to test some calibration methods.
  - Extend our existing calibration software.

- Requirements:
  - You should be able to use existing code.
  - C++, OpenGL, OpenCV
  - Know how to use `git`
  - Willing to learn git-flow
Derivation of synthetic pointclouds from 3D Scenes

Input
• 3D scene description
• Arbitrary CAD objects
• Geometric shapes
  • Planes
  • Cubes

Output
• Pointcloud approximation of the 3D scene
• Application of noise, holes, etc.

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