

Can computer vision help us understand biological vision?

Dmitri “Mitya” Chklovskii
Janelia Farm Research Campus
Howard Hughes Medical Institute

Future progress in neuroscience hinges on reconstruction of neuronal circuits to the level of individual synapses. While Electron Microscopy (EM) can generate images of required resolution, the size of the datasets presents unique challenges for reconstruction. The rate limiting step is image processing, which, if done manually, requires hundreds of years. By using computer vision and machine learning algorithms we are developing a high-throughput EM reconstruction pipeline. We are using our pipeline to map the fly visual system with the goal to understand how fly vision works. It would be interesting to see whether information gained from biology can help computer vision, thus closing the loop.