

연수 제안서

연구 분야	바이오이미지 인포메틱스/컴퓨터과학
연구 과제명	차세대 멀티스케일 기능커넥토믹스 연구
연수 제안 업무	<ul style="list-style-type: none"> - 뇌 이미지 분석을 위한 딥러닝 - 데이터 분석을 위한 효율적인 클라우드 컴퓨팅
<p>(연수 내용)</p> <p>Deep learning based methods have achieved great success in many natural image processing tasks. However, its application to 3D bioimage analysis is still limited because of the lack of large-scale training samples. In this project, we will explore methods like few-shot learning and generative model to overcome this problem. Meanwhile, we will also design efficient deep network structure for 3D bioimage and apply recurrent neural networks architectures (with attention and memory) to decipher complex 3D bioimage.</p> <p>Recent development of imaging, tissue clearing, and labeling methods have made it possible to perform whole-brain imaging even for fairly large mammalian brains, but our ability to process the large-scale image dataset is still behind. Most software platforms used for brain image analysis are still desktop based, and thus hard to scale up. As clouding computing services become easier and more convenient, it is necessary to develop new software architecture to handle large-scale brain images with cloud computing. In this project, we will develop efficient web-based software architecture to store, retrieve, visualize, and analyze brain big data. To be more specific, we will thoroughly benchmark the viable technology stacks on real experimental data to choose the best technology stack. And based on the that, we will develop smart workload balancing strategy to distribute tasks such as visualization and analyses between client and multiple servers.</p>	
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