Institute of Automation, Chinese Academy of Sciences (CASIA)

Medical Robotics Research Team

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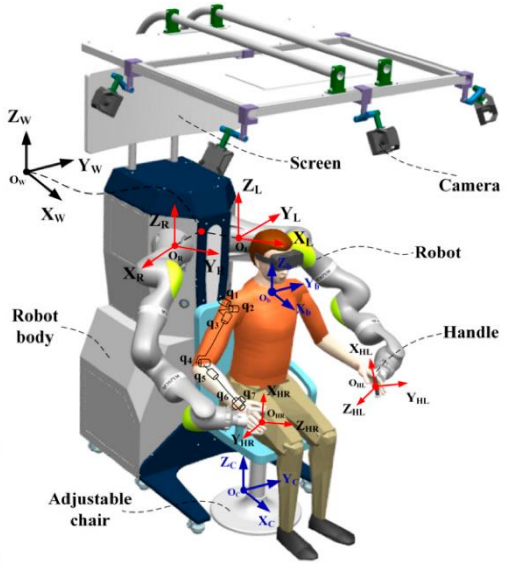
Lab Introduction

- Image processing on surgical robots
  - ✓ Image segmentation
  - ✓ Navigation system
- Rehabilitation robots
  - ✓ Exoskeleton
  - ✓ End-effector
  - ✓ Signal Processing



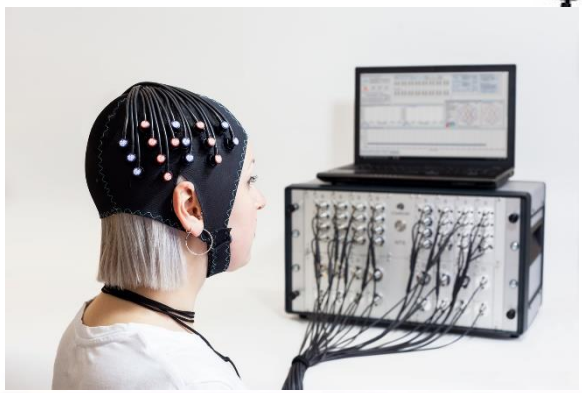
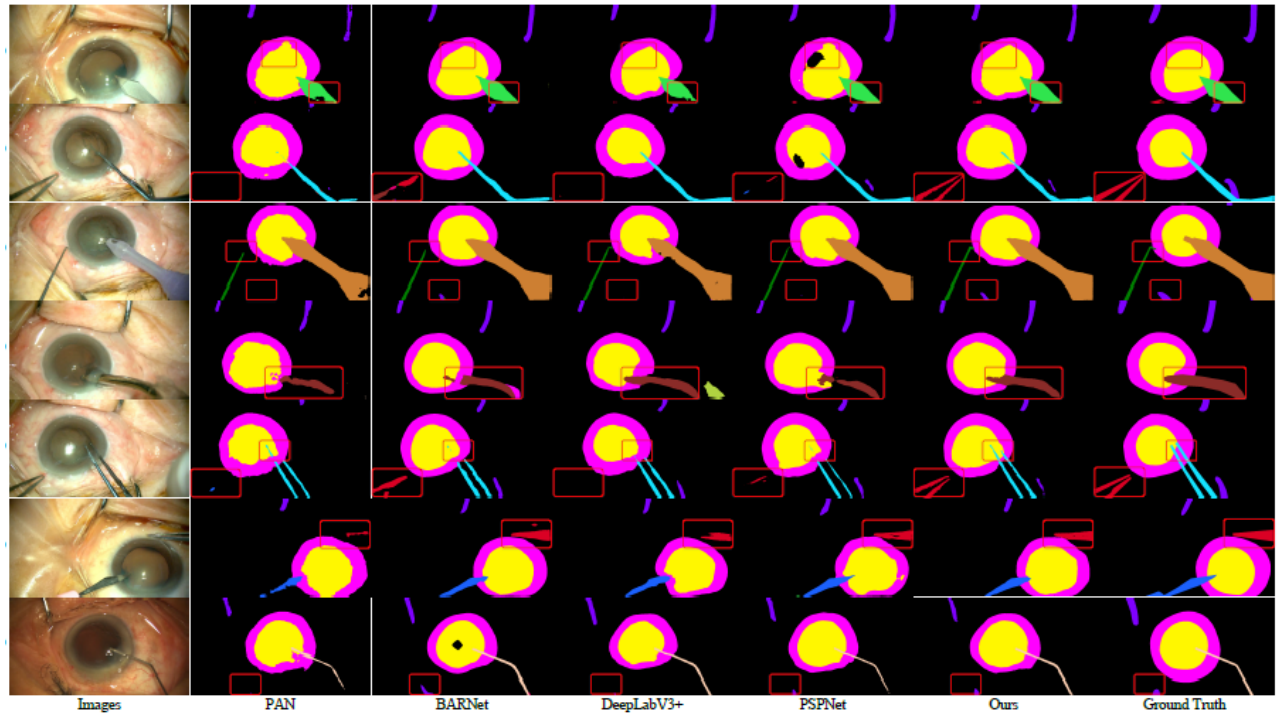
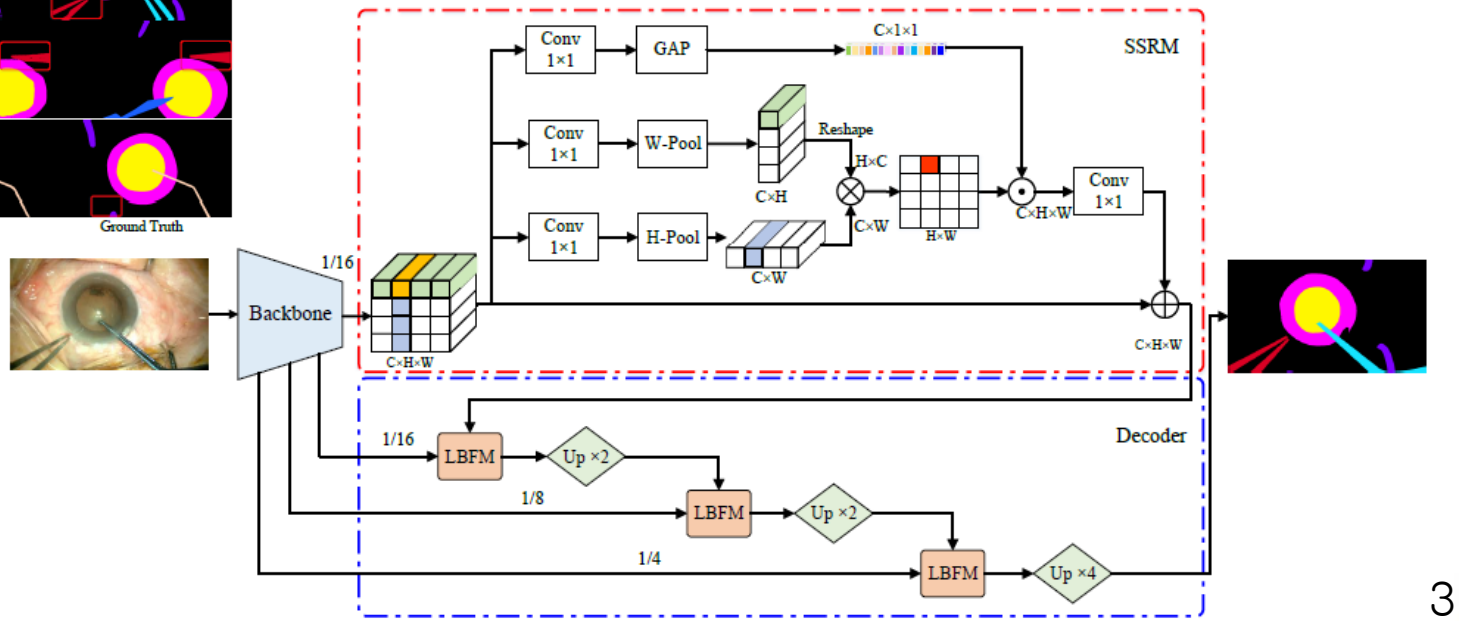


Image Segmentation

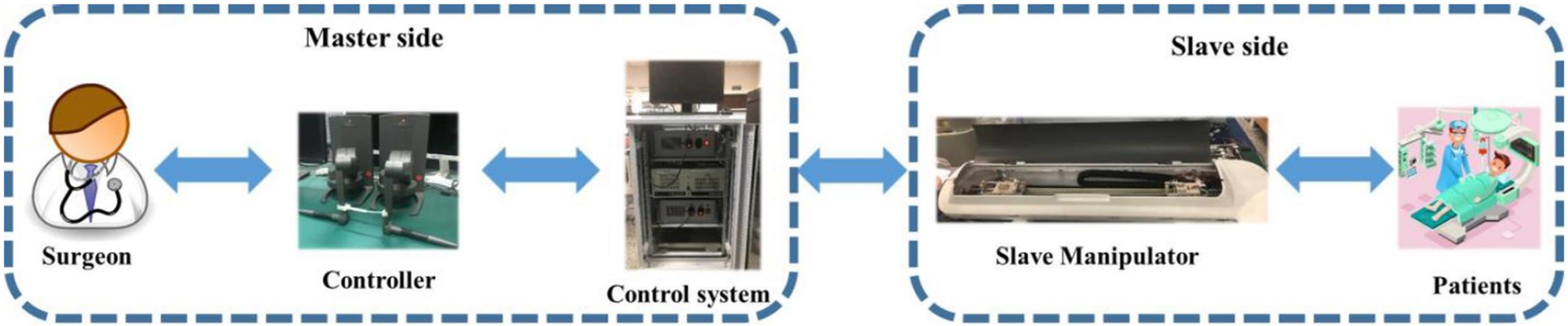
- Surgical image segmentation

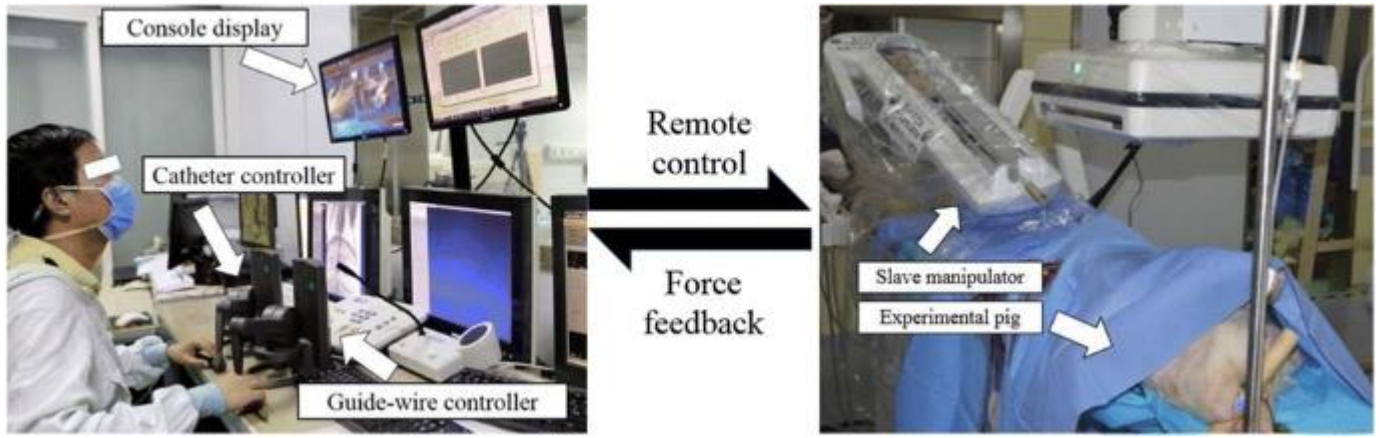




Navigation System

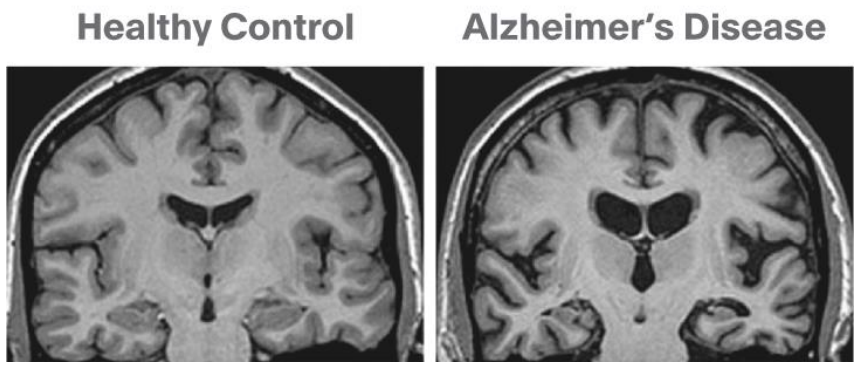
- Spatial Predictive Positioning Navigation System (SPPN)
- Doctors can perform surgeries from remote areas.

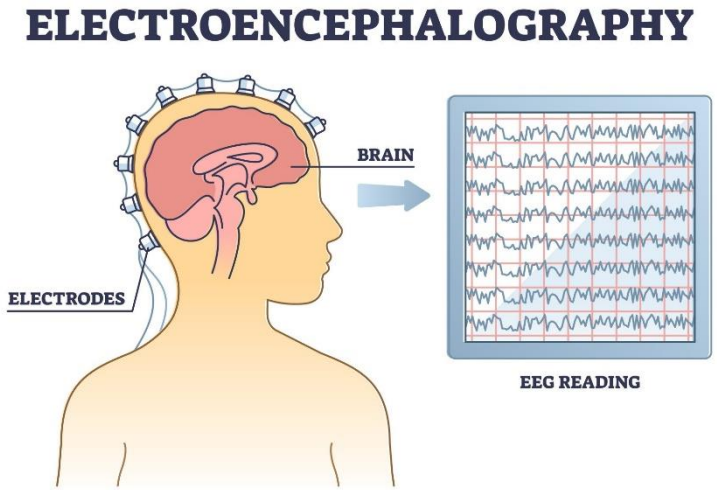




Signal Processing: Neuroimaging data

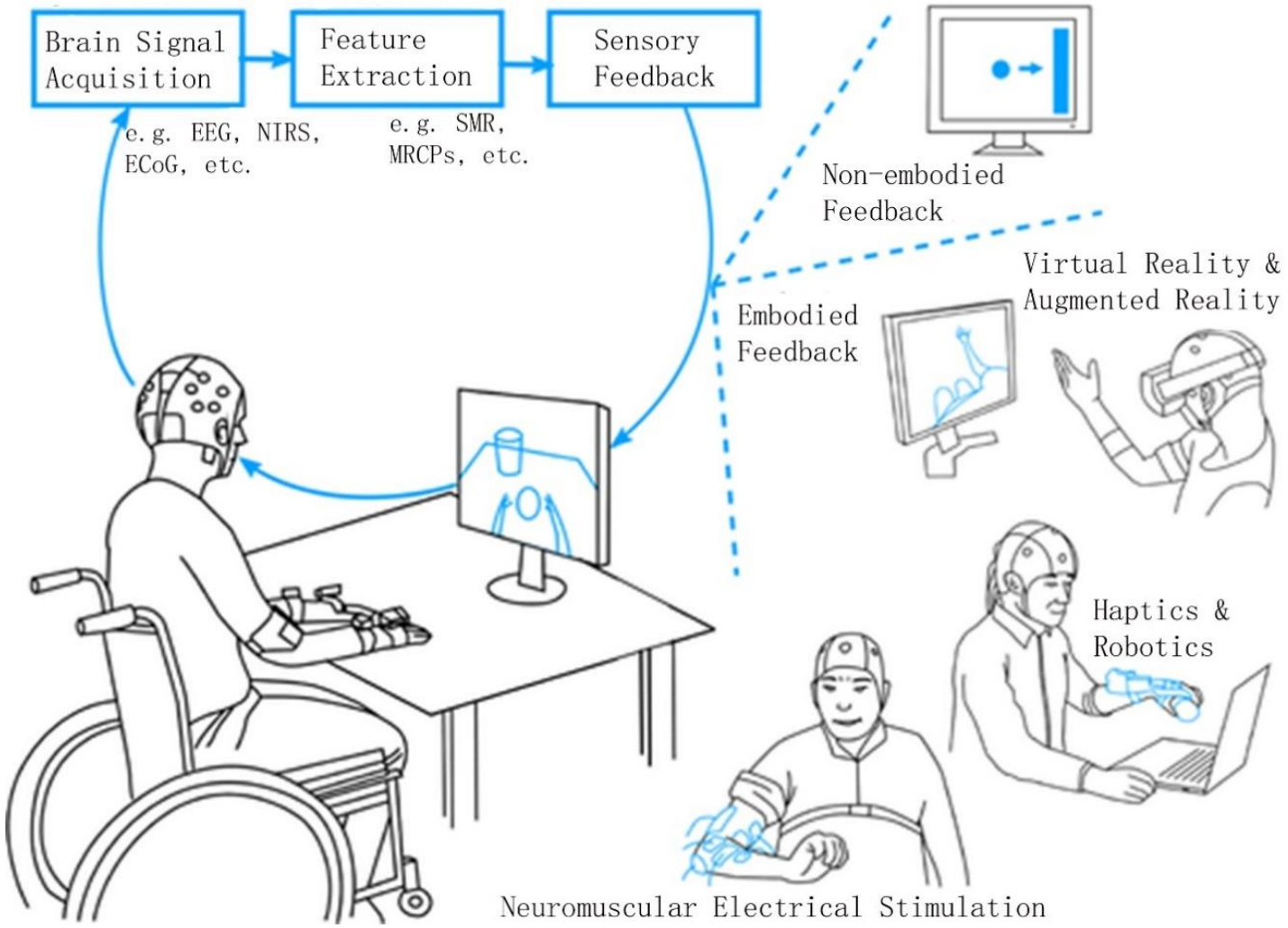
- Collect neuroimaging data such as MRI, EEG, NIRS, etc.
- Formulate model to classify between healthy subjects and patients.
- Assist doctors in diagnosing neurodegenerative diseases such as Alzheimer’s disease, Parkinson’s disease





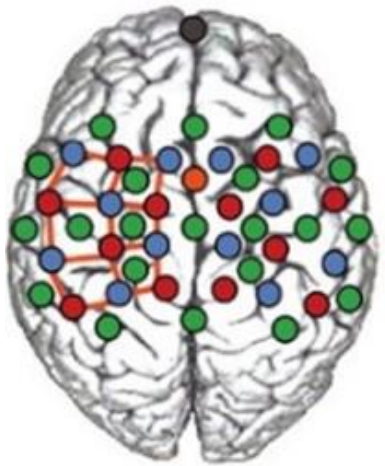
Signal Processing: EEG/NIRS

- Wearable EEG-NIRS measurement system



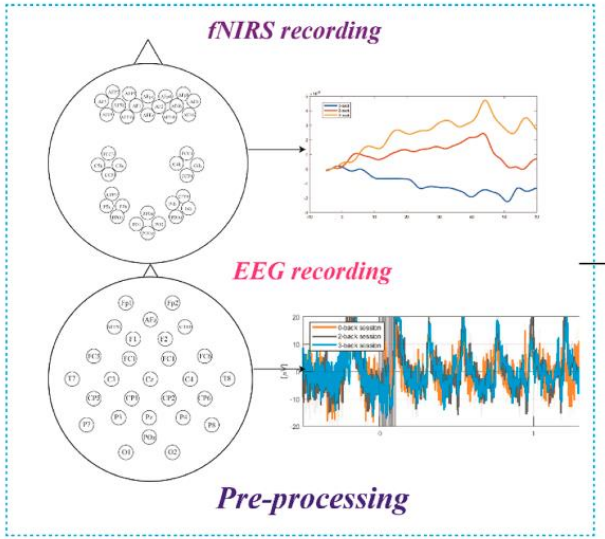
EEG-NIRS System

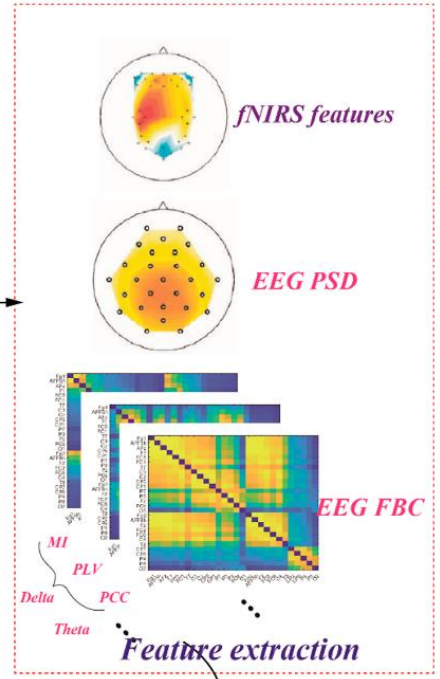
- Assist doctors in diagnosing the severity of stroke to create a rehabilitation plan for each patients.

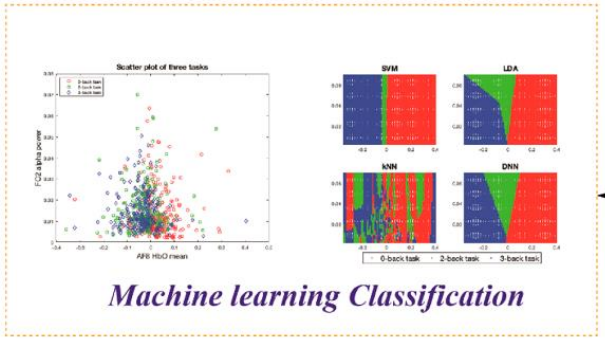


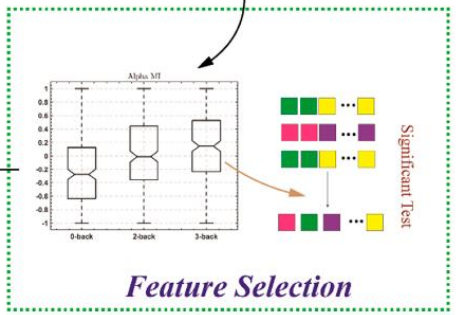
EEG Channel
EEG Ground
EEG Reference

NIRS Source
NIRS Detector
NIRS Channel









感谢聆听