

# Targeted cortical reorganization via brain-computer interface (BCI) training in chronic stroke.

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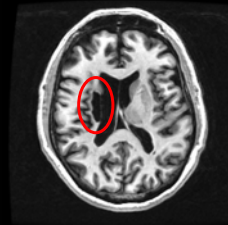
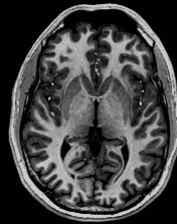
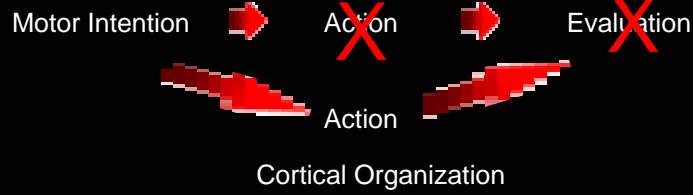
## Patients

Unilateral subcortical  
strokes

Cortical grey matter in  
sensorimotor regions  
remains intact,  
although afferent and  
efferent subcortical  
projections are  
interrupted

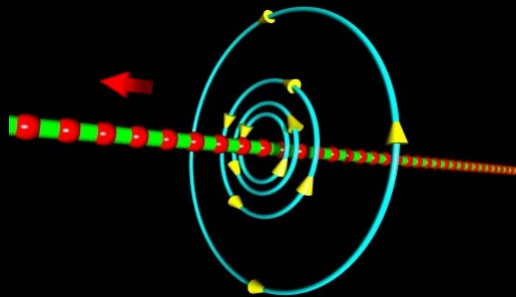


# Decoding Intention to Restore Action

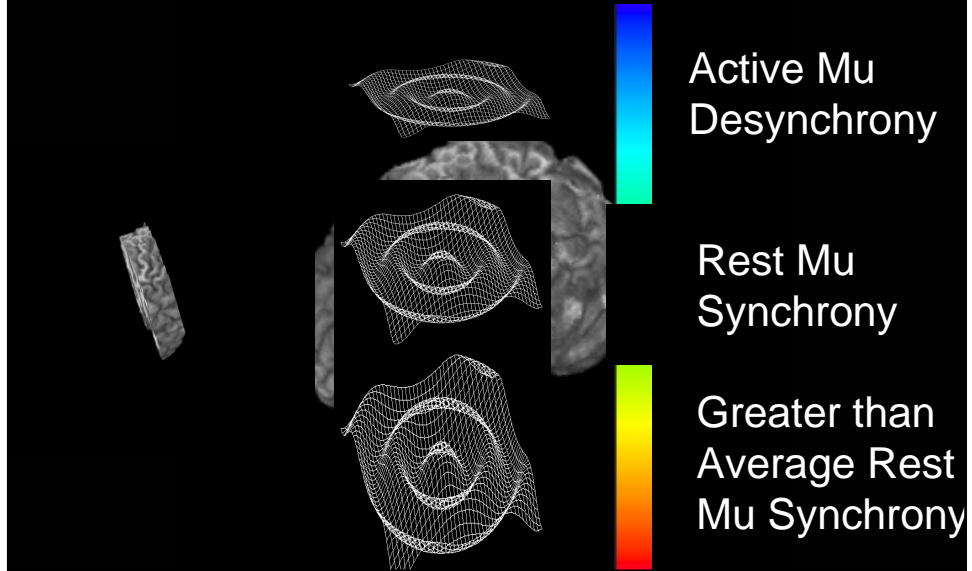


# The Interface

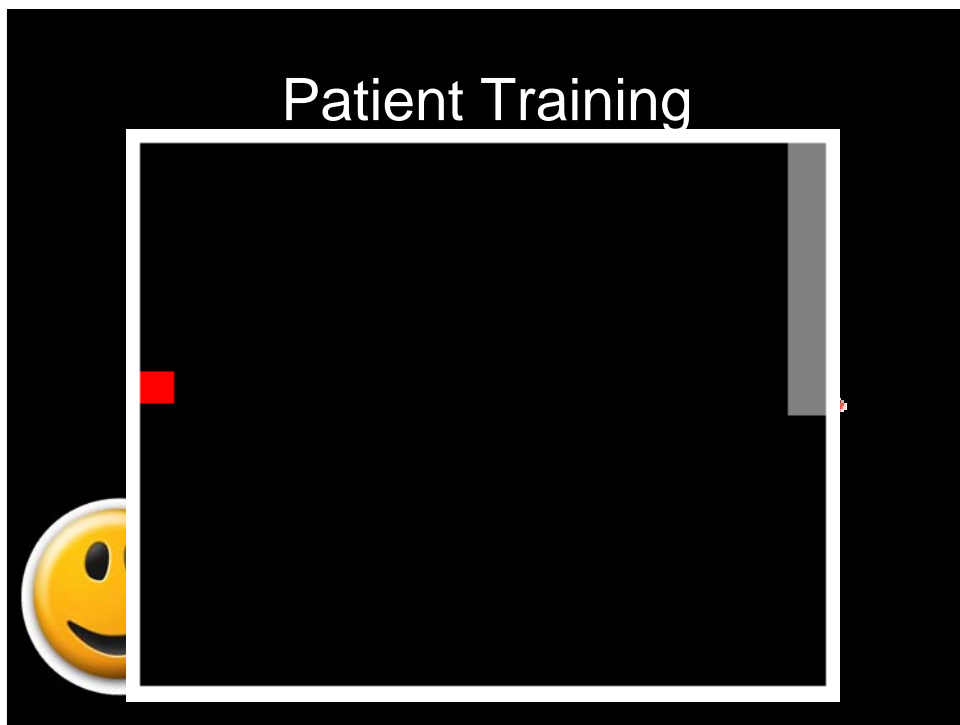
- Magneto-encephalography (MEG)



# Mu Rhythms

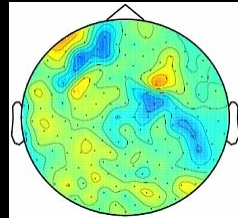


# Patient Training

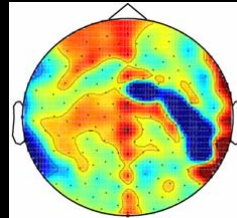


# Functional Cortical Reorganization

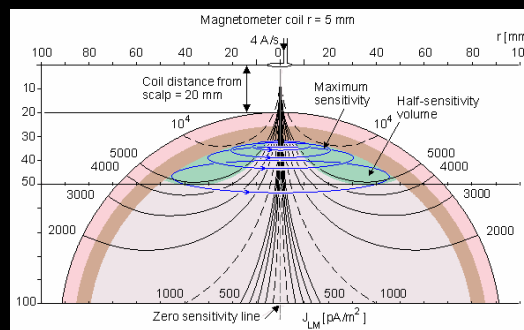
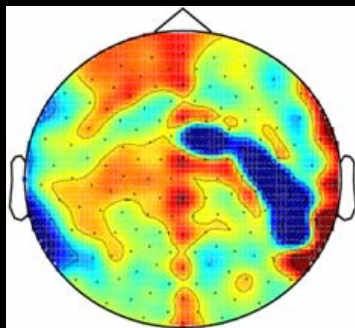
Before Training



After Training

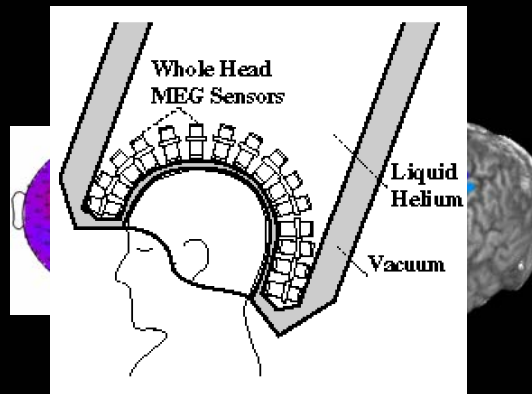


# Radial MEG Propagation



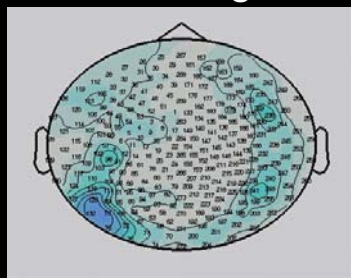
## Source Regression

- Synthetic Aperture Magnetometry (SAM)
- Combination of Forward Solution and Data

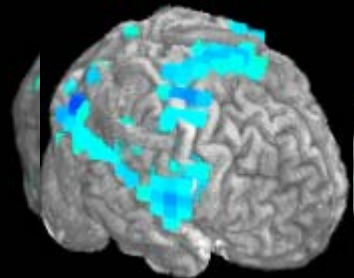


## Source Based Cortical Reorganization

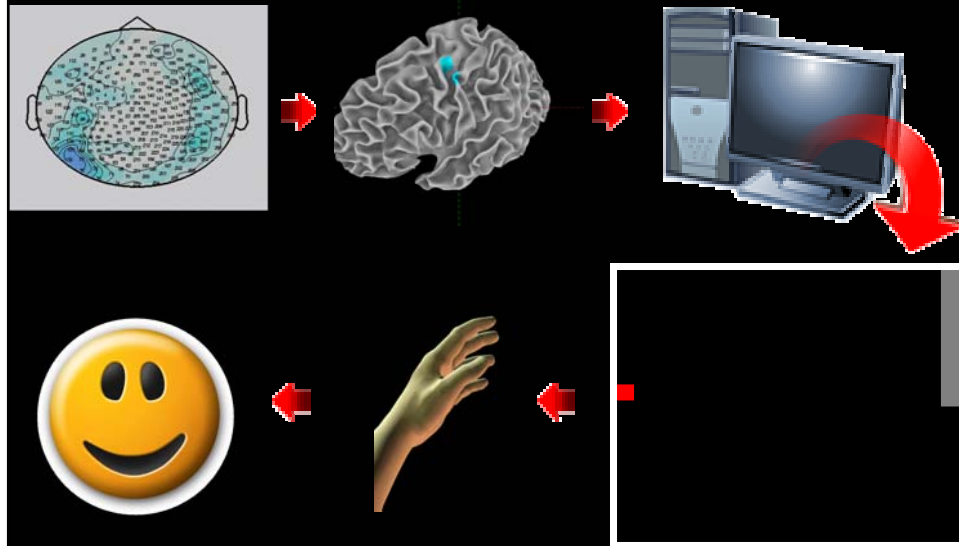
Before Training



After Training



## Future Plans



## Summary

- Measuring cortical Mu rhythm to control an orthosis that moves the patient's paralyzed hand
- Results clearly show an increased cortical Mu desynchrony after training
- Integrating source regression into real-time BCI to increase resolution will improve our system dramatically

# Contributors

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