

# Institute of Neural Engineering

Graz Brain-Computer Interface Lab

Assoc. Prof.

**Selina C. Wriessnegger**



Bakk::Mas Day 2023

# Institute of Neural Engineering

Graz Brain-Computer Interface Lab

Team Lenk

Team Müller-Putz

Team Wriessnegger

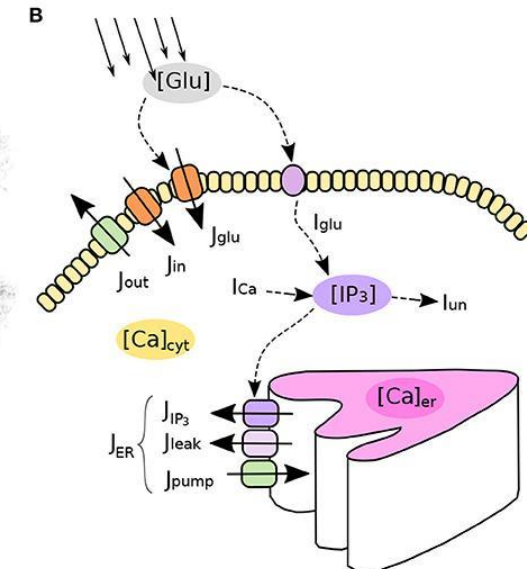
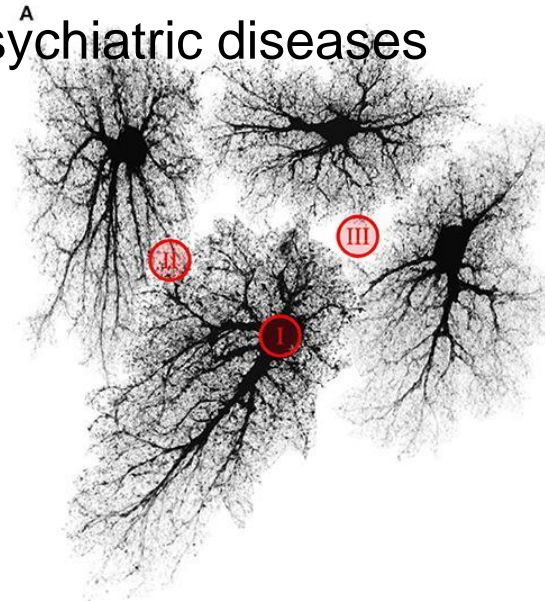
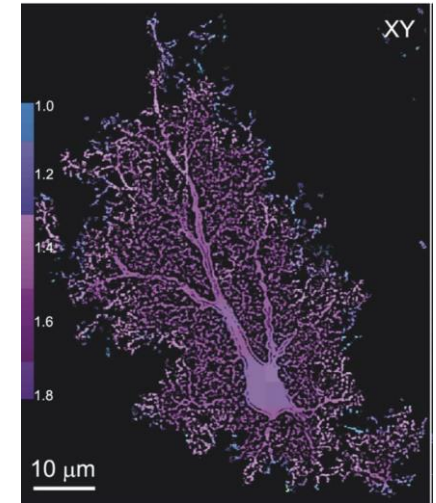




# Simulation of neurons and astrocytes

Main research area: **Computational Neuroscience**

- Modeling of the astrocytic morphology
- Neuron-astrocyte network models in synchronization and desynchronization
- Astrocytes in neurodegenerative and psychiatric diseases
- Analysis of astrocytic calcium signals
- Simulation of neuronal networks and parameter optimization



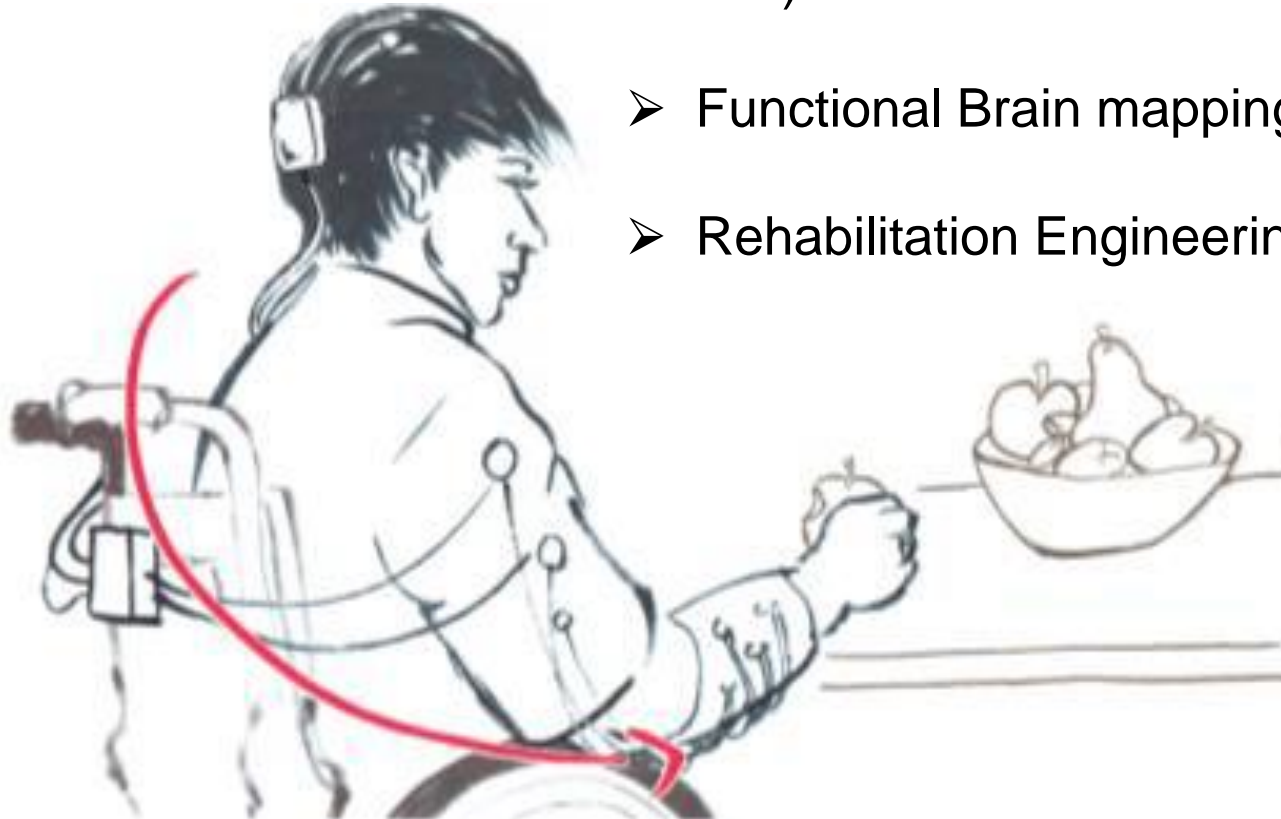
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## Main research area: **Neurorehabilitation and BCI**

- Brain-Computer Interfacing & EEG Signal Processing (machine learning, task decoding, perturbation detection, error processing, mind wandering, etc.)
- Functional Brain mapping (source localization, MRI segmentation, etc.)
- Rehabilitation Engineering (Neuroprosthetics, FES Bike, etc.)

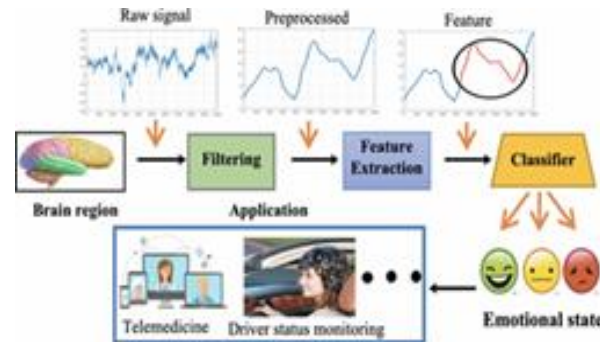
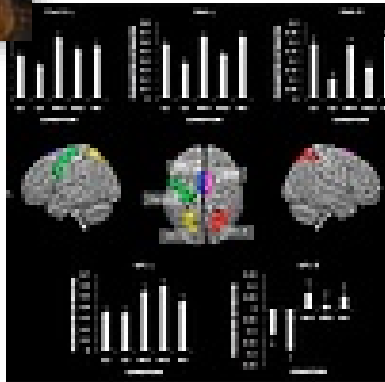


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## Main research area: Cognitive Neuroscience & Brain-Computer Interfaces



- Mental state detection from EEG
- Fusion of VR and Brain-Computer Interfaces
- Neural processing of music and emotions
- Neural correlates of [Sports] Motor Imagery



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# Institute of Neural Engineering (BCI Lab)

## Prerequisites Bachelor Thesis

- ✓ 2 dates/per year to register: SS March/ WS October
- ✓ Duration max. 6 months
- ✓ Lectures (Curriculum):
  - ✓ Modul A: Medizin und Naturwissenschaften (A1-A3)
  - ✓ Modul B: Mathematik (B1, B2)
  - ✓ Modul C (C1: Grundlagen der Elektrotechnik)
  - ✓ Modul E: Computer Science (E1-E3)
  - ✓ Modul F: Biomedical Engineering (F1, F2)
  - ✓ Modul G2: Verfassen wissenschaftlicher Arbeiten
  - ✓ **Signalverarbeitung**

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**Save the date!!!**

Bachelor - Master thesis Topics Assignment for the SS 2023

**15.03.2023 13:00**

SR BMT (3rd floor)