# Eric James McDermott

•PhD Candidate: Neuroscience
•Project Lead: Rehality

*I develop innovative solutions to improve the livelihood of people and the planet*

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## EXPERIENCE

### Project Lead
'Rehality'

*05/2018 - Present*      *Tübingen, Germany*

*Details*

- I combine XR devices with EEG / EMG and machine learning to create effective BCIs aimed at predicting behavior and motor intentions in real time in order to deliver tailored and gamified neurorehabilitation. To do so, I collaborate with four institutions across Europe, and work hands-on with stroke patients to better understand their needs.

*Grant:* *Bundesministerium für Bildung und Forschung (1.4M, 3 years funding)*

### Technical and Business Liaison
Medical Innovations Incubator

*09/2018 - Present*      *Tübingen, Germany*

*Details*

- I am the Swiss army knife of the incubator. My role is to help make projects successful. Sometimes I program, sometimes I network, sometimes I build. In the end, I communicate effectively and use a robust skill toolbox to complete the job as efficiently as possible.

### Co-Founder
Prometheus Science

*06/2017 - 04/2018*      *Tübingen, Germany*

*Details*

- We developed a low-cost 3D-printed biology lab capable of basic microscopy, optogenetics, and behavioral tracking for a fraction of the cost of the competitors. We released it open-source, positively impacting regions across the world.

### Fulbright Research Scholar
US Fulbright - Nehru Program

*08/2011 - 10/2012*      *Bangalore, India*

*Details*

- A novel approach of using Neurofeedback Training for alleviation of motor symptoms due to Huntington's Disease.

*Grant:* *US-Nehru Fulbright Research Scholar (11 month funding)*

## EDUCATION

### PhD: Neural and Behavioral Science
Max Planck Institute / University of Tübingen

*03/2017 - Present*      *Tübingen, Germany*

*Focus*

- Machine Learning Approaches to VR-EEG Neurorehabilitation

### MSc: Neural and Behavioral Science
University of Tübingen

*10/2014 - 10/2016*      *Tübingen, Germany*

*Focus*

- Investigation of Vision Restoration through Optogenetics

### Bachelor's: Psychology (Summa Cum Laude)
San Diego State University

*08/2007 - 05/2011*      *San Diego, CA*

*Focus*

- Motor Assessment of Neurodegenerative Disease

## SKILL SET

| | |
|---|---|
| VR / AR / XR Development | Research Methods and Design |
| EMG / EEG / Motion Tracking | Machine Learning / BCI |
| MATLAB / Python / C# / C++ | Arduino / Raspberry Pi |
| Data Analysis | Game Design / User Design |
| Business Development | Public Speaking / Outreach |

## RECENTLY PUBLISHED WORK

Artifacts in EEG-based BCI therapies: friend or foe?
*1st author (submitted)*

Real-time decoding of 5 finger movements from 2 EMG channels for XR human-computer interaction
*1st author (submitted)*

Predicting motor behavior: an EEG processing pipeline to detect relevant brain-states (2021) ⬈
*1st author*

Brain oscillation-synchronized stimulation ... using real-time EEG-triggered TMS (2019) ⬈

The Effects of Weight & Height on Hand Selection: A Low-cost Virtual Reality Paradigm (2018) ⬈
*1st author*

Building and Hacking Open Source Hardware (2018) ⬈

Vision Restoration through Optogenetics (2017) ⬈
*Masters Thesis*

## PERSONAL PROJECTS

NFL Impact Challenge (2021)
- Computer vision AI model to track helmet impacts in NFL games

Modeling the Baseball Swing (2018) ⬈
- Simulink model and vicon motion tracking to create a realistic 3D models

Orthoptera Acoustic Communication (2017)
- Acoustic and digital signal analysis, along with behavioral modeling

## AWARDS

2nd Place: Early Career Investigator Award; International Conference for Virtual Reality (ICDVRAT) (2021)

1st Place: Hackathon "VR4Rehab" (AR memory game for kids) ⬈

2nd Place: MedTech Demo Day Pitch (Rehality) ⬈

1st Place: MedTech Demo Day Pitch (Prometheus Science) ⬈

## ADDITIONAL ACTIVITIES

Deutsch-Amerikanisches Institut (2016 - Present)
*Instructor*

Woodworking / Art / Film / Photography ⬈

Study Abroad: Scotland
*Research Project: The Power and Influence of Facial Expression*