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 (2020)

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 game for kids)

2nd Place: MedTech Demo Day Pitch (Rehality)

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

ADDITIONAL ACTIVITIES

"Methodological Frontiers of Neuroscience" (2019 - Present)
Lecturer (Virtual Reality, Biosensors, and Embedded Systems; MSc Level)

Deutsch-Amerikanisches Institute (2016 - Present)
Instructor

Woodworking / Art / Film / Photography