

YUAN YANG, PhD
Associate Professor,
University of Illinois Urbana-Champaign
Email: yuany@illinois.edu

FACULTY APPOINTMENTS

Current

- 08/2023-Present **Associate Professor (Tenured)** in Bioengineering (100%, primary), Neuroscience (0%, affiliated), and Beckman Institute (0%, part-time), the University of Illinois Urbana-Champaign, Urbana, IL
- 08/2023-Present **Associate Professor** (0.2 fte shared employment agreement with UIUC) in Clinical Imaging Research Center, Carle Foundation Hospital, Urbana, IL
- 2025 – Present **Associate Professor** (Courtesy) in Biomedical & Translational Sciences, Carle Illinois College of Medicine, Urbana, IL.

Past

- 09/2023-10/2025 **Adjunct Associate Professor** in Physical Therapy and Human Movement Sciences, Northwestern University Feinberg School of Medicine, Chicago, Illinois
- 08/2020-08/2023 **Assistant Professor** in Biomedical Engineering (Primary), Electrical and Computer Engineering (Adjunct), and Rehabilitation Sciences (Adjunct), the University of Oklahoma, Norman/Tulsa/Oklahoma City, Oklahoma.
- 07/2017-07/2020 **Assistant Professor** in Physical Therapy and Human Movement Sciences (Primary), Neuroscience and Development Sciences, Northwestern University Feinberg School of Medicine, Chicago, Illinois.

EDUCATION AND POSTDOC TRAINING

- 2004 – 2008 **Bachelor** in Biomedical Engineering, Central South University, Changsha, China
- 2008 – 2010 **Master** in Biomedical Engineering, Shanghai Jiao Tong University (*#36 in QS World University Rankings 2027*), Shanghai, China.
- 2010 – 2013 **Ph.D.** in Signal and Image Processing, Télécom ParisTech (now known as Telecom Paris / Polytechnic Institute of Paris, *#41 in QS World University Rankings 2027*), CNRS LTCI, Paris, France.
Thesis: EEG signal analysis for brain-computer interfaces for large public applications.
The level of distinction: ***Très honorable.***
Advisors: Isabelle Bloch (Chair of Artificial Intelligence) and Joe Wiart (Chair of Modeling, Characterization and Control)
- 2013 – 2017 **Researcher (postdoc)** in BioMechanical Engineering, Delft University of Technology (TU Delft, *#48 in QS World University Rankings 2027*), The Netherlands.
Collaboration sites: VU University Medical Center-Amsterdam (Rehabilitation Sciences), Reinier de Graaf Hospital – Delft (Neurology).
Advisors/PIs: Alfred Schouten (Head of BioMechanical Engineering Department, UT Delft), Fans van der Helm (former department head), Gert Kwakkel (Chair of Department Rehabilitation Medicine of the VU University Medical Centre in Amsterdam)

RESEARCH GRANTS/AWARDS

A. Active:

Agency: NIH

Program: **R01 Parent**

ID#: R01HD109157

Title: Shift from unilateral to bilateral sensory-motor connectivity in chronic hemiparetic stroke

Principal Investigator: Yang

Role: **PI**

Total costs for the project period: **\$ 1,663,727**

Project period: 09/18/2022 - 08/31/2027

Project description: The overall goal of the proposed research is to examine the pathophysiology of the maladaptive hemispheric somatosensory “shift” and its relationship to the expression of abnormal limb synergies following a hemiparetic stroke, using advanced multimodal brain imaging and artificial intelligence approaches. The results will lead to a novel understanding of abnormal synergies by closing the sensorimotor loop, and thereby should provide a novel means by which to therapeutically manipulate the emergence and expression of abnormal flexion synergy in the paretic arm.

Agency: National Science Foundation (NSF)

Program: **CAREER**

ID # 2401215 (original: 2236459)

Title: CAREER: Neuro-navigation guided non-invasive brain stimulation for individualized precision rehabilitation in stroke

Principal Investigator: Yang

Role: **PI**

Total cost for project period: **\$ 595,895**

Project period: 04/01/2023-05/31/2028

Project description: The proposed research paradigm includes: 1) Identify and characterize individualized brain networks for movement control in injured brains; 2) Model and evaluate the effect of HD-tDCS on a “live” brain to enable targeted, precision stimulation of brain networks; and 3) Develop closed-loop imaging-guided HD-tDCS to improve brain function and behavior outcomes. The research will be integrated with educational activities to foster next-generation rehabilitation pioneers.

Agency: American Heart Association (AHA)

Program: **Bridge Award**

ID#: 26BCDA1622682

Title: Optimal targeted high-definition tDCS for reducing post-stroke upper limb motor impairments

Principal Investigator: Yang

Role: **PI**

Total costs for the project period: **\$77,000**

Project period: 04/01/2026 – 03/31/2027

Project description: The goal of this Bridge project is to collect preliminary data on combining individually optimized targeted high-definition tDCS with rehabilitation therapy for a future Phase II clinical trial.

Agency: OSF HealthCare

Program: Jump ARCHES award

ID#: N/A

Title: Low-cost haptic enhancement for surgery via stochastic resonance

Principal Investigator: Cao (lead PI), Schultz (Co-PI), Yang(Co-PI), Anderson (Co-PI)

Role: **Co-PI**

Total costs for the project period: **\$ 99,931**

Project period: 08/01/2024 – 08/31/2026

Project description: This project aims to develop a wearable device that can enhance surgeons' haptic sensitivity during remote surgery. In the past three decades, minimally invasive surgery (MIS) has been the gold standard for many surgical procedures, especially in general surgery. Advantages of MIS include faster recovery time and less pain and suffering for the patient post-op. However, for the surgeon, it requires a great deal more hand-eye coordination skills, adapting to increased motor and safety constraints given the reduced sensory information, such as lack of depth cues and altered haptic feedback, resulting in higher physical and cognitive workload for the surgeon.

B. Pending:

Agency: NIH

Program: **R01 Parent**

ID#: R01HD122853

Title: Shared neural mechanisms driving the expression of post-stroke flexion synergy and spasticity

Principal Investigators: Yang, Dewald

Role: **Contact PI**

Total costs for the project period: **\$3,965,799**

Project period: 04/01/2027 - 03/31/2032 (**scored 16 percentile**)

Project description: The overall goal of this R01 is to characterize and determine the shared supraspinal neural substrate that drives the expression of the flexion synergy and spasticity in chronic stroke patients. This will provide a foundation for future novel, unified therapeutic approaches that can simultaneously address both volitional and reflexive motor impairments following a unilateral stroke or brain injury.

Agency: NIH

Program: **R21 Parent**

ID#: R21HD122131

Title: Personalized acoustic stimulation for improving brain-muscle communication in hemiparetic stroke

Principal Investigator: Yang

Role: **PI**

Total costs for the project period: **\$ 459,316**

Project period: 10/01/2026 - 09/30/2028 (**scored 13 percentile**)

Project description: This R21 project explores the clinical potential of personalized beta-band binaural beats for improving brain-muscle communication and reducing motor impairments in hemispheric stroke. If successful, this work will bring us a novel, non-invasive, non-pharmaceutical neuromodulation approach to improve motor function in stroke or injured brains.

C. Completed:

Agency: American Heart Association (AHA)

Program: **Career Development Award**

ID#: 932980

Title: Determine the effect of targeted high-definition tDCS on reducing post-stroke upper limb motor impairments

Principal Investigator: Yang;

Role: **PI**

Total costs for the project period: **\$231,000**

Project period: 07/01/2022 – 06/30/2026

Project description: The overall objective of this career project is then to investigate how diffusion tensor imaging and computation-guided bilateral HD-tDCS modulate the specific cortical motor regions and their underlying motor pathways to diminish post-stroke upper limb impairments. This is a hypothesis-driven Phase 1 clinical trial (**ClinicalTrials.gov Identifier:** [NCT05479006](https://clinicaltrials.gov/ct2/show/study/NCT05479006)).

Agency: NIH NICHD

Program: NIH R21

ID#: R21HD099710

Title: Determination of the recruitment of indirect motor pathways in chronic hemiparetic stroke

Principal Investigators: Dewald, Yang (Multi-PI plan)

Role: **MPI**

Total costs for project period: **\$416,079**

Project period: 07/01/2019- 06/30/2023.

Project description: This mechanistic study seeks to quantitatively determine the maladaptive reliance on the contralesional indirect motor descending pathways and its link to post-stroke motor impairment, using EEG, EMG, mechatronic device, and multivariate nonlinear functional connectivity methods. This research provides new knowledge and associated measures that are essential for the development of more effective rehabilitation interventions to combat abnormal limb synergy and spasticity following recovery from a hemiparetic stroke.

Agency: OCAST

Program: Oklahoma Health Program

ID#: HR21-164

Title: Multimodal integration of concurrent high-density EEG-fMRI with diffusion and anatomical MRI to determine dynamic information flow in brain circuits – an application to hemiparetic stroke

Principal Investigator: Yang

Role: **PI**

Total costs for the project period: **\$135,000**

Project period: 11/01/2021-08/15/2023

Project description: Our primary objective is to develop and establish an advanced new imaging tool based on simultaneous EEG-fMRI and Diffusion MRI for precisely tracking sensory information flow in the brain networks and, by that, to improve our understanding of the neural basis of post-stroke motor impairments.

Agency: NIH NIGMS

Program: OSCTR Clinical and Translational Research Pilot (CTRP) Grants.

ID#: U54GM104938 - Yang

Title: Targeted HD-tDCS for reducing post-stroke movement impairments

Principal Investigators: Yang, Sidorov

Role: **Contact PI**

Total costs for the project period: **\$72,500**

Project period: 01/01/22-06/30/23

Project description: This is a pilot trial to evaluate the effect of a new MR and TMS-guided targeted unilateral HD-tDCS on mitigating muscle synergy impairment. **ClinicalTrials.gov Identifier:** [NCT05174949](https://clinicaltrials.gov/ct2/show/study/NCT05174949).

Agency: NIH/NIGMS/Laureate Institute for Brain Research (LIBR, PD: Paulus)

Program: CoBRE Pilot

ID # 5P20GM121312-Yang

Title: Probing sex difference in brain networks and the relation with the MAD psychopathology

Principal Investigator: Yang (Pilot)

Role: Pilot **PI**

Direct costs per year: 50,000 USD

Total cost for project period: **\$77,500**

Project period: 01/01/2021-12/31/2021

Project description: The overall objective of this CoBRE pilot study is to explore 1) whether such morphological differences are associated with sex-related functional differences in the brain and 2) if

these sex-related differences (both structural and functional) affect the psychopathology of a specific type of mood and anxiety disorders (MAD), i.e., major depression disorder (MDD), using **advanced multimodal brain imaging and modeling approaches**.

Agency: Northwestern Memorial Foundation

Program: Dixon Translational Research Award

ID#: SP0051062

Title: Assessment of the usage of indirect motor pathways in hemiparetic stroke

Principal Investigator: Yang

Role: **PI**

Total costs for the project period: **35,000 USD**

Project period: 1/1/19-12/31/19

Project description: Using a clinically applicable mechatronic device and novel signal processing methods, this translational research aims to provide clinicians with a relatively easy-to-use tool for the determination of the usage of indirect motor pathways post hemiparetic stroke. This will then facilitate the development of physical rehabilitation treatments for reducing the usage of indirect motor pathways in favor of remaining corticospinal resources from the lesioned hemisphere during recovery from a stroke.

Agency: NIH National Center for Advancing Translational Sciences

ID#: UL1TR001422

Title: Northwestern University Clinical and Translational Research Institute Voucher Program

Principal Investigator: Lloyd-Jones

Role: Pilot **PI**

PI project title: Pilot data collection for nonlinear analysis of stretch reflex behavior in individuals with chronic hemiparetic stroke

Total costs for the project period: 2,500 USD

Project period: 12/21/17-06/30/18

Project description: The goal of this study is to collect pilot data from a few stroke individuals to demonstrate the feasibility of my novel nonlinear connectivity method to quantitatively assess post-stroke spasticity.

INTERNAL RESEARCH SUPPORT

2021	College of Engineering Strategic Research Incentive (\$10,000), University of Oklahoma
2021	Robberson Research Grant (\$1,500), University of Oklahoma
2022-2023	IBEST-OUHSC Interdisciplinary Research Funding (\$30,000), University of Oklahoma Project Title: <i>Pilot Research in Cortical Biomarkers for Pain Modulation.</i> Project Description: This pilot project is collecting preliminary data to explore the influence of chronic pain conditions on acute pain processing (Aim 1), as well as the effect of low-dose opioid use (Aim 2), using advanced brain imaging approaches. The obtained preliminary results will lead to a future R01 proposal for NIH/NINDS/NIDA.
2022-2023	Data Institute for Societal Challenges Seed Funding Program (\$10,000), University of Oklahoma.

Project Title: Interacting genetic and imaging biomarkers for sex differences in Alzheimer's disease risk.

Project Description: The overall goal of this **data science** project is to develop and validate **integrated (genetic and imaging) biomarkers** for sex differences in Alzheimer's disease risk, using a large-scale, multisite dataset. The objectives include 1) identifying genetic and imaging biomarkers in AD development and 2) determining their relationship and sex differences. The obtained preliminary result will lead to a future R01 proposal for NIH/NIA.

2022-2023 Research Incentive Program Postdoc Matching Fund (\$16,000), University of Oklahoma (OU). This program is for training a postdoc in multi-modal imaging for clinical applications. *The trainee Parikshat Sirpal published several high-quality journal papers during his training with me. He got his faculty position in OU Health Sciences Center with an American Heart Association Career Development Award right after his training.*

2025-2026 Biomedical Imaging Center 7 Tesla MRI Seed Grant (\$25,200), University of Illinois Urbana-Champaign.

Project title: Functional and Structural Mapping of Human Motor System using 7T MRI and TMS.

Project Description: In this pilot study, we will examine whether inter-effector regions can compensate for the lost function of motor effectors in stroke or brain injuries and thus, contribute to motor recovery. It is also yet to explore the difference of descending pathways underlying motor effectors and inter-effector regions, in particular, their connections to the brainstem. The data collected will support our future R01 application.

2026-2027 Parkinson's Research Fund (\$121,000), University of Illinois Urbana-Champaign

Project title: Neural Engineering Therapeutic Approaches to Parkinson's Disease.

Project Description: Develop an electrophysiological neurostimulation approach to monitor and modulate network activity. In this aim, we will measure connectivity and provide targeted stimulation to human subjects, modulating the network connectivity between cortical regions and brainstem nuclei. This neurostimulation will be evaluated behaviorally by its ability to provide remediation of neurogenic dysphagia (inability to perform a safe swallow) and other motor disorders in PD. This effort will be co-led by Yuan Yang and Brad Sutton.

HONORS AND AWARDS

2014 **Young Investigator Training Program Award (Italy)**, awarded by the Federation of European Neuroscience Societies (FENS), International Brain Research Organization (IBRO), and Italian Society for Neuroscience. I am the **only awardee in the Netherlands**.

2015	EU-Japan Young Researchers Exchange Program Award , awarded by the Japanese Neuroscience Society and FENS, as an outstanding European young researcher.
2016	EU-Australasia Young Researchers Exchange Program Award , awarded by the Australasian Neuroscience Society and FENS, as an outstanding European young researcher.
2016	Young Investigator Training Program Award (Denmark) , awarded by FENS and the Danish Society for Neuroscience.
2017	Hojjat Adeli Award for Outstanding Contributions in Neural Systems awarded by the World Scientific Publishing Co. and International Journal of Neural Systems.
2017	Outstanding Reviewer , awarded by Computers in Biology and Medicine.
2017	Outstanding Reviewer , awarded by Neuroscience Letters
2018	Winner of LooxidVR Happiness Challenge , awarded by Looxid Labs, a High-Tech company developing a Mobile-powered VR headset combined with eye-tracking and electrical brain signal (EEG) sensors.
2023	Vice President for Research and Partnerships Annual Award for Excellence in Research Grants , awarded by the University of Oklahoma Vice President for Research and Partnerships Office.
2024	Member, Sigma Xi The Scientific Research Honor Society
2025	Ernest W. Johnson Excellence in Research Writing In-Training Award (M.D. Trainee: Dorothy He), Association of Academic Psychiatrists
2025	In-Time Reviewer Award, VA ISRM Subcommittee on Rehabilitation Engineering & Prosthetics/Orthotics , US Department of Veterans Affairs (VA).
2025	Distinguished Lecturer , IEEE Engineering Medicine & Biology Society (EMBS)

SHORT-TERM LAB VISITS AND GLOBAL NETWORKING ACTIVITY

06-07/2014	Robotics, Brain and Cognitive Sciences Department (Prof. Cristina Becchio), Italian Institute of Technology, Genova, Italy.
10-11/2015	ATR Brain Information Communication Research Laboratory Group (Prof. Okita Yamashita), Kyoto, Japan.
06-07/2016	Department of Neuroscience & Pharmacology (Profs. Jens Bo Nielsen and Jesper Lundbye-Jensen), University of Copenhagen, Denmark.
03/2017	System Neuroscience Group (Prof. Michael Breakspear), QIMR Berghofer Medical Research Institute, Brisbane, Australia.

TEACHING

2015-2017 (Fall semester)	I gave lectures and laboratory classes in the Master Course “<u>System Identification and Parameter Estimation Q1</u>” (TUD, code WB2301, 7 EC) for Biomedical Engineering (BME) and BioMechanical Design students, Delft University of Technology, The Netherlands. This course includes biomechanics, system identification, EMG signal processing, MATLAB, and human experiment design.
2017 (Summer)	I taught biomechanics and new techniques for assessing stretch reflexes and somatosensory functions at the Dutch Summer School for Motor Control, Delft, The Netherlands.
2019-2020	I taught the Northwestern Doctor of Physical Therapy course (Annual Research “2019 WI_PHYS_TH_570-5_SEC20 Synthesis Project” to train the students to use engineering tools (advanced signal processing and mechatronic devices) for neuro-rehabilitation research.
2019 (Summer)	I taught movement neuroscience and new techniques for assessing functional neural connectivity in the sensorimotor system at the US-Dutch Summer School for Motor Control.
2020 - 2023 (Fall semester)	I taught the University of Oklahoma Biomedical Engineering undergraduate course <u>BME 3133 Bioelectricity (3 EC)</u> . The course teaches the electrophysiology of excitable cells from a quantitative perspective. Topics include the ionic basis of action potentials, quantitative models for nerve and muscle, including the Hodgkin-Huxley equations, impulse propagation, synaptic dynamics, source-field relationships, and an introduction to functional electrical stimulation (peripheral and brain), EEG, EMG, and ECG
2022 - 2023 (Spring semester)	I created and have been teaching the University of Oklahoma Biomedical Engineering graduate course <u>BME 5970 Neural System and Rehabilitation Engineering (3 EC)</u> . The course teaches advanced knowledge of neural control of movement, the musculoskeletal system, and movement impairment and disability. We discuss the frontiers of rehabilitation engineering, including assistive technologies, brain-computer interfaces, regenerative rehabilitation, and machine learning in rehabilitation. The course also teaches writing skills for the NIH/AHA aims page for research projects in the field of rehabilitation engineering.

2024 Spring and 2025 Fall semesters	I redesigned and taught the University of Illinois Urbana-Champaign cross-listed undergraduate and graduate course <u>ECE/NE 410 Neural Circuits and Systems</u> (3 EC for undergraduate and 4 EC for graduate) for the new Neural Engineering Program. The course teaches modeling functions of neurons and systems of neurons in the brain. Topics include Boolean signal processing, nonlinear diffusion equations, and delay-and-add synaptic signal processing. Integrates information from the structure and physiology of a single neuron up to the assembly of brain circuits. Examples presented to discuss neural circuits and systems include the auditory and, to a lesser extent, the visual system. The course concludes with a look at theories of brain function built up from systems of neurons.
2024 Fall and 2025 Spring semesters	I taught University of Illinois Urbana-Champaign <u>BioE 210 Linear Algebra for Biomedical Data Science</u> for the BioE program and our <u>new Neural Engineering Program</u> . The course teaches analytical and computational tools from linear algebra. Students will solve large systems of linear equations, systems of linear ODEs, and linear PDEs; Analyze large, multivariable datasets to quantify relationships between variables; Decompose complex datasets into simpler representations; Introduce and solve common problems in classification, image processing, and machine learning; and develop a geometric understanding of high-dimensional spaces
2026 Spring semester	I developed and taught the University of Illinois Urbana-Champaign Neural Engineering undergraduate course <u>NE 412 Neural Data Analysis</u> . This course introduces students to multiple neural data modalities (e.g., EEG and fMRI) and illustrates through examples how modern data analysis techniques, such as machine learning, can be used to automatically extract meaningful information from those data. We will cover the basics of neural data acquisition, preprocessing methods, data representation, dimensionality reduction, clustering, supervised learning, unsupervised learning, and some select advanced analytic concepts. This course will put equal emphasis on the understanding of analytical methods as well as practical hands-on experience and equip the students with the essential skills to analyze neural data using advanced data analysis techniques such as machine learning.

SERVICE

A. Leadership and Service (leadership positions held, committee service, etc.)

International/National

- | | |
|------|---|
| 2015 | Co-organizer (with Robert Kearney, Eric Perreault, and Alfred Schouten), Special Session “System Identification to Unravel Human Motion Control” in the 17th International Federation of Automatic Control Symposium on System Identification, Beijing, China. |
| 2017 | Session Chair , the 6th Dutch Conference for Biomedical Engineering, Egmond aan Zee, The Netherlands |
| 2017 | Co-organizer (with Frans van der Helm, Alfred Schouten, and Julius Dewald), Dutch Summer School for Motor Control, Delft, The Netherlands. |

- 2019 **Co-organizer** (with Julius Dewald, CJ Heckman, Lee E Miller, Gert Kwakkel, Frans van der Helm, Alfred Schouten), US Dutch Summer School for Motor Control, Chicago, IL.
- 2022 **Committee Member**, TENCON 2022 - IEEE Region 10 Conference Robotic and Artificial Intelligence Technical Committee
- 2022-2023 **Council Member**, SfN Oklahoma Neuroscience Chapter
- 2023-present **Committee Member**, IEEE EMBS Biomedical Signal Processing Technical Committee
- 2024 **Chair**, IEEE EMBC 2024 mini-symposium “Frontiers in Non-invasive, Non-pharmaceutical Technologies for Movement Rehabilitation in Chronic Stroke”, July 17, 2024, Orlando, FL.
- 2024 **Chair**, IEEE EMBC 2024 session “Deep Learning for Clinical Applications”, July 18, 2024, Orlando, FL.
- 2024 **Chair**, IEEE EMBC 2024 session “Neural Stimulation & Modulation 1”, July 18, 2024, Orlando, FL.
- 2024 **Chair**, IEEE EMBC 2024 session “Lower Limb Rehabilitation & Assistance Robots”, July 19, 2024, Orlando, FL.
- 2026 **Co-Chair**, IEEE EMBC 2026 session “Neural Stimulation and Modulation I”, July 27, 2026, Toronto, Canada.
- 2026 **Chair**, IEEE EMBC 2026 mini-symposium “AI-Empowered Neuromodulation: From Neural Circuits to Clinical Cures”, July 28, 2026, Toronto, Canada.
- 2026 **Chair**, IEEE EMBC 2026 session “Neurorehabilitation II”, July 28, 2026, Toronto, Canada.

Internal

- 2019-2021 **Interviewer**, Northwestern University Medical Scientist Training Program, Chicago, IL
- 2020-2023 **Seminar Chair**, Stephenson School of Biomedical Engineering, University of Oklahoma, Norman, OK
- 2020-2023 **Graduate Study Committee Member**, Stephenson School of Biomedical Engineering, University of Oklahoma, Norman, OK
- 2021 **OU Graduate College Representative** for 4 Ph.D. theses at the Department of Health and Exercise Science, School of Computer Sciences and School of Electrical and Computer Engineering, University of Oklahoma, Norman, OK
- 2022 **Ad hoc mentor**, Oklahoma Shared Clinical and Translational Resources (U54GM104938).
- 2023 **PPG Proposal Internal Selection Committee Member**, the University of Oklahoma Vice President for Research and Partnerships (OU VPRP) Office Limited Submission Committee for NIH Centers of Biomedical Research Excellence (COBRE, PPG) Proposal Review, University of Oklahoma, Norman, OK
- 2023-2024 **Search Committee Member** for Research Assistant Professor in Machine Learning and Imaging Hire, Department of Bioengineering, University of Illinois Urbana-Champaign, Urbana, IL.
- 2024-present **Internal Advisory Committee Member**, Department of Bioengineering, University of Illinois Urbana-Champaign, Urbana, IL.

- 2024-2025 **Search Committee Member** for tenure-track faculty (cluster) hires in 7T MRI and Neural Engineering, Department of Bioengineering, University of Illinois Urbana-Champaign, Urbana, IL.
- 2025-present **Seminar Organizer**, Department of Bioengineering, University of Illinois Urbana-Champaign, Urbana, IL.
- 2025-2026 **Award Committee Member**, Department of Bioengineering, University of Illinois Urbana-Champaign, Urbana, IL
- 2025-present **Grant Reviewer**, Campus Research Board, University of Illinois Urbana-Champaign, Urbana, IL
- 2025-2026 **Search Committee Member** for teaching faculty for the Biomedical Image Computing Program, Department of Bioengineering, University of Illinois Urbana-Champaign, Urbana, IL.
- 2026 **Award Reviewer** for Beckman Institute Erik Haferkamp Memorial Award 2026
- 2026-present **Rehab & Assistive Technologies Working Group University Co-Lead**, Advocates for Aging Care and University of Illinois Urbana-Champaign Collaborative Working Groups, Urbana, IL.

B. National and International Grant Review Service.

- 2020 **International Grant Reviewer**, the Scientific Committee of the Italian Multiple Sclerosis Society (AISM-FISM)
- 2021 & 2022 **Grant Reviewer**, Clinical & Translational Science Institute of Southeast Pilot Award, Medical College of Wisconsin
- 2022 **Grant Reviewer/Panel Member**, NIH's study section "**Acute Neural Injury and Epilepsy (ANIE)**"
- 2022 **Expert Committee Member** in "Physical activity and Rehabilitation – Neuroimaging and Readaptation" Review Panel, Fonds de recherche du Québec – Santé (FRQS) and the Canada Foundation for Innovation's (CFI)
- 2023 **Grant Reviewer**, NSF, the Information & Intelligent Systems Division (IIS), NSF- NIH Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH) **Human in the Loop Panel**
- 2023 - Present **Grant Reviewer/Panel Member**, NIH Special Emphasis Panel for Small Business Grant Review: Musculoskeletal Sciences in Diagnostics, Devices, and Rehabilitation.
- 2024 **Grant Reviewer/Panel Member**, NIH's study section "**Sensory-Motor Neuroscience (SMN)**"
- 2025 - Present **Grant Reviewer/Panel Member**, VA ISRM Subcommittee on Rehabilitation Engineering & Prosthetics/Orthotics
- 2025 - Present **Grant Reviewer**, American Heart Association, USA
- 2026 **Grant Reviewer/Panel Member**, NIH R15 Program Review Panel.

C. Editorial and Journal Review Service

- 2016 - 2017 **Guest Editor**, Special Issue on "Neural Engineering for Rehabilitation" in the Journal "*Behavioural Neurology*" (impact factor: 3.342)

2017-	Review Editor , the Quantitative Psychology and Measurement, a specialty of the journals " <i>Frontiers in Applied Mathematics and Statistics</i> " (impact factor: 1.63) and " <i>Frontiers in Psychology</i> " (impact factor: 4.232)
2021- 2024	Associate Editor , <i>Frontiers in Psychology</i> (impact factor: 4.232).
2021	Guest Associate Editor , Research Topic on "Nonlinear Connectivity, Causality and Information Processing in Neuroscience", <i>Frontiers in Computational Neuroscience</i> (impact factor: 3.387) and <i>Frontiers in Neuroinformatics</i> (impact factor 4.757)
2021	Associate Editor , IEEE EMBS Student Paper Competition Committee at 2021 <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society - EMBC'21</i> .
2022	Guest Associate Editor , Research Topic of "Integrative Modeling and System Identification for Reverse Engineering of Sensorimotor Networks at Multiple Scales", <i>Frontiers in Systems Neuroscience</i> (impact factor: 3.785).
2022	Guest Associate Editor , Research Topic of "Multimodal Fusion and Mining of Biological and Medical Big Data in Neurological and Psychiatric Disorders", <i>Frontiers in Neuroscience</i> (impact factor: 4.501).
2022	Guest Associate Editor , Research Topic of "Cortico-Muscular Network Interactions", <i>Frontiers in Network Physiology</i> .
2022	Guest Associate Editor , Special Issue of "Current State of Multimodal Neuroimaging", <i>Sensors</i> (impact factor: 3.576).
2022-	Associate Editor , <i>Medical & Biological Engineering & Computing</i> (impact factor: 3.079).
2023-present	Associate Editor , <i>IEEE EMBS Annual Conference</i>
Active	Ad hoc Reviewer , for 30+ SCI journals, including 1) Neurorehabilitation and Neural Repair 2) IEEE Transaction on Neural Systems & Rehabilitation Engineering, 3) Journal of Neurophysiology 4) IEEE Transaction on Biomedical Engineering, 5) IEEE Journal of Biomedical and Health Informatics, 6) NeuroImage, 7) Human Movement Sciences, 8) Frontiers in Neuroscience, 9) Journal of Neuroscience Methods, 10) Prosthetics & Orthotics International, 11) Experimental Brain Research, 12) Neuroscience Letters 13) Expert Systems with Applications, 14) Biomedical Signal Processing and Control, 15) Sensors, 16) International Journal of Computer Assisted Radiology and Surgery, 17) Computers in Biology and Medicine, 18) Neural Computing and Applications, 19) Entropy, 20) PLoS ONE, 21) Brain Sciences, 22) Neurocomputing, 23) International Journal of Neural Systems 24) Frontiers in Psychology, 25) IEEE Access, 26) Journal of Neural Engineering, 27) Journal of Neuroscience Methods, 28) Behavioural Neurology, 29) Cerebral Cortex, 30) IEEE Transactions on Cognitive and Developmental Systems, etc.

D. Promote STEM education.

Since 2020	I have been working with the OU engineering, local public high schools, and community colleges in Oklahoma to provide Biomedical Engineering Day and summer intern opportunities to undergraduate and high school students. Outcomes: 1 Tribe Scholarship Awardee, 1 Tau Beta Pi Scholarship Awardee, 1 National Merit Scholarship.
2021	Organizer and exhibitor, OU Neurorehabilitation at Empathy Exhibition at Science Museum Oklahoma
2022	Organizer, OU-OUHSC Neural Control and Rehabilitation Booth at Oklahoma EPSCoR Education-sponsored Women in Science Conference 2022
2023	Invited Speaker, Northwestern University Brain Awareness Outreach – Walter Payton Seminar for STEM education in high school.
2024-Present	Mentor high school teachers in NSF-sponsored summer research and co-develop their capstone projects for high school students.
2025	Mentor two high school students in their research. They published an IEEE conference proceeding paper with me. One is admitted to Columbia University and the other is admitted to the University of Michigan.

ADVISING STUDENTS, POSTDOCS AND RESEARCH STAFF

A. Current trainees (postdoc and doctoral students)

- **Postdoc (2)**

1. **Beni Mulyana, PhD. (Postdoc, UIUC)**

Beni was my PhD student at OU and moved with me as a postdoc researcher in my new lab after his recent graduation. His research is focused on multiple modal brain imaging and next-generation non-invasive brain stimulation. He is supported by the NIH R01 project.

2. **Joohwan Sung, PhD. (Postdoc, UIUC)**

Joohwan is a new postdoc in my new lab who is focused on biomechanics and EMG modeling for upper extremity rehabilitation in stroke using Biodex system. **Joohwan is awarded the SfN 2024 Trainee Professional Development Award (TPDA).**

- **PhD students (5)**

1. **Huan-Ting (Rita) Peng (Bioengineering PhD Student, UIUC)**

Rita is a third-year PhD student at UIUC. She has a biophysics background. Her research is focused on machine learning and multimodal brain imaging. She will be supported by the NSF CAREER grant. **She was awarded an IEEE NextGen Scholar and a Beckman Doctoral Fellowship.**

2. **Mahmood Rajabtabar Darvish (Bioengineering PhD Student, UIUC)**

Mahmood is a second-year PhD student at UIUC. He has a biomechanics background. His research focuses on EMG and biomechanics for upper-limb rehabilitation in hemiparetic stroke. He is also working on my AHA Career Development Award (CDA) at Carle Foundation Hospital. He has been awarded the **IEEE NextGen Scholar**.

3. **Xiaoxi Chen (Bioengineering PhD Student, UIUC)**

Xiaoxi was an M.D. physician in radiology before she joined my lab as a PhD student. Her research focused on 7T MRI for both diffusion and functional imaging in stroke. She has been awarded the **Mavis Future Faculty Fellow**.

4. **Zeming Liu (Bioengineering PhD Student, UIUC)**

Zeming is a first-year PhD student at UIUC. He had his Master's at Brown University. His research

focuses on non-invasive brain stimulation modeling and brain-heart coupling for stroke.

5. **Nishaal Parmar, MS (Electrical and Computer Engineering, Ph.D. Candidate, OU).**

Nishaal is working on a nonlinear system identification project co-chaired by Prof. Hazam Refai and me. He has two peer-reviewed journal publications with me as the corresponding and senior author. His research project support is from my grants, and he will graduate in the summer of 2027.

- **Clinical doctoral degree trainees (11)**

1. **Prateek Dullar (M.D. student, Carle Illinois College of Medicine)**

Prateek is working with me to develop a closed-loop system for spinal cord stimulation. He has one peer-reviewed journal publication and three conference abstracts with me. He was supported by my NSF CAREER award for training clinical degree students in biomedical engineering research.

2. **Meenakshi Singhal (M.D. student, Carle Illinois College of Medicine),**

Meenakshi is working with me to develop precision neurotechnology for reducing nerve injury during surgery. She has one peer-reviewed journal paper publication and four conference papers/abstracts with me.

3. **Gaurang Milind Amonkar (M.D. student, Carle Illinois College of Medicine)**

Gaurang is working with me to analyze EEG data in a pain and opioid control project.

4. **Chris Lingat (M.D. student, Carle Illinois College of Medicine)**

Chris is working with me on our stroke imaging project.

5. **Jack Lei Yang (M.D. student, Carle Illinois College of Medicine)**

Jack is working with me on Alzheimer's disease. He had a poster presented in Alzheimer's Association International Conference (AAIC) 2024 and the AI in Health Meeting in Chicago

6. **MD Student Research Project Students (6): Rishi Hoskeri, Tony Tu, Venkatesh Shenoy, Prasanna Padmanabham, Meenakshi Singhal, Wedam Nyaaba.** They are working on the 7T MRI stroke rehabilitation project under my mentorship. Their current work focuses on a scoping review of 7T biomarkers for post-stroke motor recovery, including vascular factors, lesion and perilesional tissue, corticospinal pathway integrity, network reorganization, peripheral motor phenotypes, and multimodal integration with EEG, EMG, and TMS. This project will also support future clinical studies on post-stroke motor network reorganization and rehabilitation assessment.

B. Completed trainees (including previous trainees at University of Oklahoma, Northwestern University and TU Delft)

- **PhD graduation/thesis (2)**

1. **Baoping Xiong, PhD (PhD thesis, 2020)**

Baoping's PhD work was on human joint moment prediction using EMG and machine learning approaches. He is an **Associate Professor (tenured)** at **Fujian University of Technology**.

➤ Thesis title: **Human Joint Moment Intelligent Prediction System based on Electromyography Information.**

2. **Beni Mulyana, Ph.D. (Electrical and Computer Engineering, PhD thesis 2022, OU)**

Beni's PhD work was on the non-invasive brain stimulation technology development in the MRI environment, and he got his Ph.D. in ECE in 2022. He is currently a postdoc with me.

➤ Thesis title: **Online Closed-loop tACS-fMRI for Brain Modulation.**

- **Postdoc (2)**

1. **Parikshat Sirpal, PhD. (Postdoc, OU)**

Parikshat's research with me was focused on machine learning in pain and opioid control and

stroke neurorehabilitation. He is currently an **Assistant Professor of Neurosurgery at the University of Oklahoma Health Sciences Center (OUHSC)**.

2. **Mustafa Ghazi, Ph.D. (Postdoc Researcher, OUHSC)**

Mustafa was assisting with non-invasive brain stimulation meta-analysis and robotic rehabilitation system development. He is now a Research Scientist at Children's Hospital Los Angeles, University of Southern California.

- ***PhD rotations (2)***

1. **Raghuveer Chandrashekhar (Rehabilitation Sciences Ph.D. Candidate, University of Florida)**

Raghu is a Ph.D. student under Dr. Hongwu Wang. He was doing his research internship in my lab for a stroke rehabilitation project using a Biodex system and robotic device. He left OUHSC and moved with Dr. Wang to the University of Florida in January 2022.

2. **Alexander Cates (Neuroscience Ph.D. lab rotation)**

Alex's lab rotation project with me was to investigate the neural mechanism of tDCS and its applications to motor learning and stroke rehabilitation. He has a conference abstract accepted for BMES Annual Meeting 2019, Philadelphia.

- ***Master theses/research (12 in total, 8 Master Thesis)***

1. **Jordan Williamson (Biomedical Engineering, Master's thesis 2023, OU)**

Jordan worked on aging and stroke-related projects: 1) an NIH-sponsored transcranial direct current stimulation (tDCS) pilot trial (clinicaltrials.gov ID: NCT05174949) in stroke. 2) interacting genetic and imaging biomarkers for the sex difference in Alzheimer's disease risk. **She has four peer-reviewed journal publications and several conference presentations. She is awarded the 2023 SBME Outstanding Master's Graduate. She is now a professor in Oklahoma Christian University**

➤ Thesis Title: **Neural Signatures for Precision Rehabilitation in Stroke and Aging**

2. **Grace Duginski (Biomedical Engineering, Master's thesis 2022, OU)**

Grace worked on a vibration-based wearable device design for stroke rehabilitation and an NIH-sponsored tDCS pilot trial. **She is awarded the 2022 SBME Outstanding Master's Graduate.**

➤ Thesis Title: **Focal Vibration for Upper Limb Rehabilitation After Stroke**

3. **Baizhou Pan (Biomedical Engineering, Master's thesis 2021, Northwestern University)**

➤ Thesis Title: **The inter- and intra-muscular coherence and wavelet coherence of cumulative spike trains among motor units in and out of the flexion synergy task and dual-tasks in individuals with chronic hemiparetic stroke**

4. **Mingkai Tan (Biomedical Engineering, Master's thesis 2021, Northwestern University)**

➤ Thesis Title: **Effects of Conditioned Pain Modulation on Cortical Somesthetic Evoked Potential**

5. **Ramya Sai Vuyyuru (Computer Science Master Student, OU)**

Ramya is a Data Sciences Master's student. She was working on neuroimaging and meta-analysis for Alzheimer's disease and non-invasive brain stimulation.

6. **Caroline Machenbach (MD and ME/BMD Master Intern, TU Delft/Northwestern University)**

Caroline worked on computational models of transcranial direct current stimulation (tDCS) to identify the optimal montage of stimulation for motor learning and stroke rehabilitation. **Her work provided preliminary data for the third aim of my R01 proposal. Her work led to a full conference paper published at the IEEE EBMC conference in 2020.**

7. **Nirvik Sinha, MD, MS (BME Master's thesis 2019 in India, US-India Khorana Scholar 2018, Northwestern University)**

Nirvik has an M.D. background and did his Master's graduation research project with me. He

worked on computational modeling of multi-synaptic neural systems, which led to a better understanding of the usage of backup indirect motor pathways (e.g., cortico-bulbospinal tracts) following a unilateral brain injury. He has a first-author paper with me (the corresponding/last author) published in a peer-reviewed journal during his internship. He is doing a Ph.D. in Neuroscience at Northwestern University.

- Thesis Title: **Maladaptive Neural Coupling in Descending Motor Pathways following Unilateral Brain Injury.**

8. **Catherine Hendrica Elizabeth Yvonne Hogenhuis (ME/BMD Master Intern 2019, TU Delft/Northwestern University)**

Catherine did her Master's internship with me, investigating non-invasive brain stimulation interventions for motor rehabilitation post hemiparetic stroke. **She has an abstract with me accepted for an oral presentation at the BMES Annual Meeting 2019, Philadelphia, PA.**

9. **Runfeng Tian (ME/BMD Master's thesis 2018, TU Delft).**

Runfeng did his MS thesis with me, co-mentored with Dr. Frans van der Helm and Dr. Lena Filatova. Runfeng published four journal papers with me (the corresponding author) during his Master's thesis.

- Thesis Title: **Brain Dynamic Information Flow Estimation Based on EEG and Diffusion MRI: A Proof-of-principle Study and Application in Stroke**

10. **Bekir Guliyev (BME Master's thesis 2017, TU Delft)**

Pablo did his MS thesis with me, co-mentored with Dr. Alfred Schouten. Bekir published a peer-reviewed journal paper with me (the corresponding author) during his Master's thesis. **He is the CEO and founder of Synapline, a start-up company that is building AI-powered solutions for autonomous unmanned operations.**

- Thesis Title: **Quantifying effective connectivity during the cortical intervention to stretch reflex.**

11. **Pablo Maceira Elvira (BME Master's thesis 2017, TU Delft)**

Pablo did his MS thesis with me, co-mentored with Dr. Frans van der Helm and Dr. Lena Filatova, on the topic of "Neural Dynamics based on EEG and diffusion MRI". **Pablo's work was accepted for an oral presentation in BaCi 2017, Bern, Switzerland, and is currently a Ph.D. student in Neuroscience at the Swiss Federal Institute of Technology (EPFL), Switzerland.**

- Thesis Title: **Neural Dynamics based on EEG and diffusion MRI.**

12. **Ioannis Petridis (BME Master's thesis 2017, TU Delft)**

Ioannis did his Master's with researchers at Leiden University (Michel D. Ferrari, MD, Ph.D., Professor of Neurology) and me on the topic of "Nonlinearity in the Light Processing of the Human Visual System".

13. **Leonidas Eleftheriou (BME Master Internship 2016, TU Berlin and TU Delft)**

Leonidas was a Master Student in TU Berlin (Prof. Benjamin Blankertz). He did his Master's internship with me at Delft to investigate the nonlinear dynamics in human movement control.

- **Clinical doctoral degree trainees (10)**

1. **Dorothy He (M.D. student, OUHSC)**

Dorothy is working with us on stroke projects and is focused on developing transcutaneous electrical nerve stimulation (TENS) for improving brain functions in injured brains. She was supported by my NIH R01 grant, and **her paper with me got the Ernest W. Johnson Excellence in Research Writing In-Training Award**

2. **Shannon Ashworth (first-year M.D. student summer intern 2022, OU-TU School of Community Medicine).**

She worked on a pain and opioid control study in my lab for the 2022 summer.

3. **Laura Warning (first-year M.D. student summer intern 2021, OU-TU School of Community Medicine).**
She worked on non-invasive brain stimulation for stroke in 2021 summer.
4. **Doctor of Physical Therapy Research Project Students (5): Michael Henderson, Olivia Do, Emily Biederman, Collin Fligge, Kaitlyn Rance (PT research project 2019 Northwestern).**
They investigated sensory impairment post-stroke using a mechatronic device and electrical finger stimulation under my mentorship.
5. **Faiz Safdar (D.O. Student, OSC)**
He was a volunteer clinical trainee in my lab doing research on pain and opioid control. He has a few peer-reviewed conference abstracts with me and **a presentation award in the Society for Neuroscience (SfN) Tulsa Chapter.**
6. **Aaron Monroe (Doctor of Physical Therapy Student, OUHSC)**
Aaron assisted with clinical assessment for stroke clinical trials in my lab. He had a few conference abstracts with me.

- **Research Staff (3)**

1. **Runfeng Tian, MSc (Research Associate, OU)**
Runfeng received his master's degree in Mechanical Engineering (ME)/BioMechanical Design (BMD) from the Delft University of Technology, the Netherlands. He was my graduate student in the Netherlands. He is a clinical research associate, working on the development of a multi-modal brain imaging approach to assess dynamic information flows in the brain network and how they change after a stroke. The results from his work provide preliminary data for a part of my R01 proposal. Runfeng published several journal papers, including papers in "*Annals of Biomedical Engineering*" and "*IEEE Transactions on Neural Systems and Rehabilitation Engineering*" (top journal in Neurorehabilitation) with me (the last/corresponding author). Runfeng was offered a Ph.D. position at OU with a full scholarship.
2. **Jesse Farrand (Lab Assistant, OU)**
Jesse was working on a meta-analysis of transcranial direct current stimulation clinical trials and an American Heart Association-sponsored clinical trial ([clinicaltrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT05479006) ID: NCT05479006). Jesse is currently doing his PhD at OU.
3. **Mark Quinlan Cummings (Lab Assistant, Northwestern University)**
Mark was investigating how damage to the corticospinal tract affects motor unit firing and coupling, using EMG array electrodes and an ICA decomposition algorithm, under my supervision. **He went to the University of Illinois at Chicago for his Ph.D. (advisor: Sangeetha Madhavan, PT, PhD, FASNR) after I left Northwestern in 2020.**

C. Undergraduate research (over 40)

1. Maryam Afifah and Thijs Blad, 2015, supervised the BS Medical Delta minor project, Maryam and Thijs Blad did their BS project with me on the topic of "Unravelling cortical network effects of transcranial direct current stimulation on motor learning". **They won the best presentation prize in the Symposium of Medical Delta Minor Project 2015, Rotterdam, Delft University of Technology, The Netherlands.**
2. Bhavya Vasudeva, Spring 2019, supervised the US-India S.N. Bose Scholars program in developing a generalized phase synchronization method that allows for assessing various types of phase coupling, including integer and non-integer harmonics and intermodulation. She has a first-author paper with me (the corresponding/last author) published in the **journal Biomedical Signal Processing and Control, Northwestern University**. She is now a Ph.D. student in Computer Science at the University of Southern California,

3. Conner Westfall, 2021 Summer, supervised his summer research in EEG data analysis in our stroke project. **He was awarded the 2021 Osage Nation Tribe Scholarship.** University of Oklahoma
4. Ryan Pan, 2021 Summer, supervised his mentored research in EEG measurement and analysis for pain and opioid control. **He was awarded a National Merit Scholarship,** University of Oklahoma
5. Christopher Kuzmickas, Spring 2021, Undergraduate **Honors Research**, ""Robotic Arm for Stroke Rehabilitation." University of Oklahoma
6. Aubrey Lewellen, Spring 2021, Undergraduate Honors Research, "Transcranial direct current stimulation improves upper limb function." University of Oklahoma
7. Aninka Sedivy Thompson, 2021-2022, supervised her Undergraduate Honors Research, "Machine Learning on fMRI Scans to Identify Sex Differences in Brain Function". Her work led to a second-prize presentation on OU Research Day. **She was awarded the 2022 Woman Tau Beta Pi Scholarship,** University of Oklahoma.
8. Diamond Mark, 2022 Summer, supervised his summer research intern in stroke rehabilitation research using finger stimulation and EEG. University of Oklahoma
9. Lana Sammur, 2022 Summer, supervised his summer research intern in a pain and opioid control study using EEG and non-invasive brain stimulation. University of Oklahoma.
10. Justin Sharma, 2022 Summer, supervised his summer research intern in wearable exoskeleton robot design for stroke rehabilitation. University of Oklahoma
11. Ananya Subramanian, Fall 2023 and Spring 2024, supervised her independent study in stroke MRI and modeling project; one **co-author IEEE EMBC conference paper and NSF predoctoral fellowship application submitted.** University of Illinois Urbana-Champaign.
12. Callahan Shaklee, 2023 Summer, supervised his summer research intern in MRI-based human brain modeling, University of Oklahoma.
13. Amber Chen, 2023 Summer, supervised her summer research intern in tDCS modeling in stroke brain. University of Oklahoma.
14. Matthan Tharakan, 2023 Summer, supervised his summer research intern in analyzing biomarkers and genetic data for Alzheimer's Disease. University of Oklahoma.
15. Justin Brixey, 2022-2023 (full semesters including summer), supervised his Mentored Research Experience in computational modeling of non-invasive brain stimulation, **one co-author conference paper, was supported by NSF CAREER award.** University of Oklahoma
16. Zakariya Ali, Spring 2024 - Fall 2025, supervised his independent study on EEG-guided HD-tDCS neuromodulation for stroke rehabilitation, including protocol development, binaural beat stimulation design, DTI-based corticospinal tractography, MREIT-assisted MRI experiments, and EEG with HD-tDCS experimental support. He has **one manuscript under review.** University of Illinois Urbana-Champaign
17. Xiner Tan, Fall 2023 - present, supervised her independent study in Investigating Neural Mechanisms Underlying Movement Impairments Post-Stroke to Facilitate Recovery. University of Illinois Urbana-Champaign
18. Varshal Patel, Fall 2023 and Spring 2024, supervised his independent study in the Effect of Spinal Cord Motor Injury on Mice Sensory Feedback Systems. University of Illinois Urbana-Champaign
19. Anna Beth Mercado, Spring 2024 - present, supervised her independent study in stroke lesion segmentation. University of Illinois Urbana-Champaign
20. Harbin Li, Spring and Fall 2024, supervised his research on EEG data analysis for cortico-muscular coherence during his undergraduate studies, University of Illinois Urbana-Champaign.

He has been admitted to the graduate program in Electrical and Computer Engineering at the University of Illinois Urbana-Champaign.

21. Christopher Geier, Spring 2024, supervised his independent study in Simulation with multiple magnetic resonance (MR) images. University of Illinois Urbana-Champaign
22. Qihan Guo, Spring 2024 - present, supervised her independent study on stroke lesions in multiple MR images. University of Illinois Urbana-Champaign
23. Richard Chu, Summer 2024 - present, supervised his independent study in AL/ML for stroke MRI and DIT, University of Illinois Urbana-Champaign
24. Hongwei Dong, Summer 2024, supervised his independent study in computational modeling of EEG data using Human Neocortical Neurosolver (HNN), University of Illinois Urbana-Champaign
25. Sally Kim, Summer 2024 - Spring 2025, supervised her independent study on tACS and tDCS for stroke rehabilitation, including a literature review, computational simulations, pilot testing, and EEG with HD-tDCS experimental support. She has **one co-author journal publication and one manuscript under review**. University of Illinois Urbana-Champaign
26. Amogh Rajesh Angadi, Fall 2024 - Fall 2025, supervised his independent study on DTI-based corticospinal tract analysis for post-stroke participants, University of Michigan
27. Jinpeng Liu, Spring 2024 - Fall 2024, supervised his independent study on the development of a real-time display and feedback system for an online closed-loop EEG-guided HD-tDCS platform, with additional support for EEG experimental setup and participant preparation, University of Illinois Urbana-Champaign
28. Agniva Chaudhuri, Fall 2024 - Spring 2025, supervised his independent study on personalized corticospinal tractography and integration of CST data with individualized HD-tDCS electric field models for motor pathway visualization, University of Illinois Urbana-Champaign.
29. Grace He, Fall 2024 – Present, supervised her on EEG preprocessing and source localization, University of Illinois Urbana-Champaign.
30. Lileigh Walsh, Spring 2025, supervised her research on EEG analysis of stretch-evoked potentials, focusing on sensory-motor reorganization and its impact on the stretch reflex following stroke, University of Illinois Urbana-Champaign.
31. Laura Misiunas, Spring 2025, supervised her research on EEG analysis of stretch-evoked potentials, investigating sensory-motor reorganization and its role in the stretch reflex following stroke, University of Illinois Urbana-Champaign.
32. Nhat Bui, Spring 2025 – Present, supervised him on AI development for multimodal EEG–fMRI analysis with a focus on explainable and trustworthy AI. His research includes EEG model development and multimodal biomarker extraction using both supervised and unsupervised learning for neurological disorders. His preliminary work was accepted to the **IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)**. His results also contributed to the preparation of one of my R01 proposals. He has been awarded **Arnold and Mabel Beckman Undergraduate Fellowship 2026**.
33. Zaid Kazmi, Spring 2025, supervised his research on applying artificial neural networks to predict upper extremity motor function from EEG signals during shoulder abduction tasks, University of Illinois Urbana-Champaign.
34. Sid Gurumurthi, Summer 2025, supervised his research on using artificial neural networks to predict upper extremity motor function from EEG during shoulder abduction tasks, University of Illinois Urbana-Champaign.
35. Yuqing Gu, Fall 2025, supervised her in modeling brain-computer communication in chronic stroke, University of Illinois Urbana-Champaign.

36. Lauren Nguyen, Spring 2026, supervised her in dynamical causal modeling for stretch reflexes, University of Illinois Urbana-Champaign.
37. Calla Litteken, Spring 2026, supervised her fMRI projects with a focus on functional connectivity statistical analysis, University of Illinois Urbana-Champaign.
38. Ellen Hsuan, Spring 2026, supervised her on the computational development of AI optimizers, University of Illinois Urbana-Champaign.
39. Jalen Tyler Xu, Spring 2026, supervised him on Dynamic Causal Modeling (DCM) for evaluating hypotheses of brain signal propagation in stroke, University of Illinois Urbana-Champaign.
40. Ke Zhang, Spring 2026, supervised her on analyzing stroke-related differences in sensorimotor ERD/ERS patterns during lift-up movements, University of Illinois Urbana-Champaign.
41. Mark Dai, Spring 2026, supervised him on machine learning and computational modeling of brain function to better understand ambiguous emotional perception and the neural mechanisms that support complex human behavior. He has been selected for **2026 Mayo Clinic Summer Undergraduate Research Fellow**.

Dr. Yuan Yang's Publication List

[Yuan Yang - Google Scholar](#)
[My Bibliography - NCBI \(nih.gov\)](#)

A. Peer-reviewed Journal Publications (62).

1. Portilla-Jiménez M, **Yang Y**, Roh J, Rymer WZ, Li S. Post-Stroke Abnormal Synergies Are a Resultant Behavior of the Interplay of Weakness, Spasticity, and Environmental Demands. *Neurorehabil Neural Repair*. 2026 Aug 5; 15459683261469093. doi: 10.1177/15459683261469093. [Epub ahead of print] PubMed PMID: 42557825 (**impact factor: 4.0**).
2. Sirpal, P., Parmar, N., Mulyana, B., Refai, H. H., & **Yang, Y.** (2026). Condition-dependent disruption of low-frequency EEG-fMRI coupling reveals delayed hemodynamic timing and motor-network reorganization in chronic stroke. *NeuroImage: Clinical*, 50 (2026): 103989, doi: 10.1016/j.nicl.2026.103989. Epub ahead of print. PMID: 41915989 (**impact factor: 3.6**).
3. Dullur P, Singhal M, Hong B, Ali M, **Yang Y**, Iyer R, Pappu S (2026). Control Signals in Closed-Loop Spinal Cord Stimulation in Patients with Chronic Pain: A Scoping Review. *Neuromodulation: Technology at the Neural Interface*. 2026 Jan 8: S1094-7159(25)01170-5. doi: 10.1016/j.neurom.2025.11.011. Epub ahead of print. PMID: 41504676 (**impact factor: 3.5**).
4. Williamson JN, Peng RH, Sung J, Rajabtabar Darvish M, Chen X, Ali M, Li S, **Yang Y** (2025). Neuroengineering approaches assessing structural and functional changes of motor descending pathways in stroke. *Prog Biomed Eng*. 2025 Sep 11;7(4). doi: 10.1088/2516-1091/adfeaa. PMID: 40845894, PubMed Central PMCID: PMC12443499. (**Impact factor: 7.7**). **Invited topical review article and Editor Pick**.
5. Sirpal P, Parmar N, Refai HH, Dewald JPA, **Yang Y**. Contralesional recruitment and localization of EEG signal complexity in stroke: a recurrence quantification analysis of hierarchical motor tasks. *J Neural Eng*. 2025 Jun 30;22(3): 036051. doi: 10.1088/1741-2552/ade6ab. PubMed PMID: 40541233; PubMed Central PMCID: PMC12213125 (**impact factor: 3.8**).
6. Darvish MR, Sung J, Williamson JN, Mulyana B, Chen X, Yang Y. The Role of Hemispheric Sensory Shifts: Impacts on Stretch Reflex and Motor Plasticity Post-Stroke. *Med Hypotheses*. 2025 Jun;199. doi: 10.1016/j.mehy.2025.111653. Epub 2025 May 14. PubMed PMID: 40574877; PubMed Central PMCID: PMC12199282 (**impact factor: 2.1**).
7. Williamson JN, **Yang Y** (2025). Sex differences in aging and injured brain. *Neural Regen Res*.

- 2025 Oct 1;20(10):2901-2902. doi: 10.4103/NRR.NRR-D-24-00753. Epub 2024 Sep 24. PMID: 39610095; PMCID: PMC11826458. (**impact factor: 5.9**). **Invited perspective paper.**
8. Cho IF, Chao CC, Lin TT, **Yang Y**, Tang P F(2025). Effects of posterior parietal cortex anodal transcranial direct current stimulation on ankle tracking visuomotor control in healthy young adults. *Hum Mov Sci.* 2025 Jun;101:103351. doi: 10.1016/j.humov.2025.103351. Epub 2025 Mar 19. PMID: 40112577.(**impact factor: 1.9**).
 9. Williamson JN, James SA, Mulyana B, Kim S, He D, Li S, Sidorov EV, **Yang Y** (2024). Quantitative EEG Metrics for Determining HD-tDCS Induced Alteration of Brain Activity in Stroke Rehabilitation. *Restor Neurol Neurosci.* 2024 Nov;42(3-4):209-221. doi: 10.1177/09226028251347427. Epub 2025 Jun 16. PMID: 40518976.(**impact factor: 1.6**).
 10. Williamson JN, Mulyana B, Peng RH, Jain S, Hassaneen W, Miranpuri A, **Yang Y** (2024). How the Somatosensory System Adapts to the Motor Change in Stroke: A Hemispheric Shift? *Med Hypotheses.* 2024 Nov;192:111487. doi: 10.1016/j.mehy.2024.111487. Epub 2024 Sep 24. PMID: 39525858; PMCID: PMC11542668.(**impact factor: 2.1**).
 11. Parmar N, Sirpal P, Dewald JPA, Refai HH, **Yang Y** (2024), Beta-Band Cortico-Muscular Phase Coherence in Hemiparetic Stroke, *Biomedical Signal Processing and Control*, 97(2024): 106719. <https://doi.org/10.1016/j.bspc.2024.106719> (**impact factor: 4.9**)
 12. Williamson, J.N., James, S.A., Mullen, S.P., Sutton, B.P., Wszalek, T., Mulyana, B. E., Mukli, P. Yabluchanskiy, A., Alzheimer's Disease Neuroimaging Initiative Consortium and **Yang, Y.** (2024). Sex difference in interacting genetic and functional connectivity biomarkers in Alzheimer's disease. *GeroScience*, 2024 Dec;46(6):6071-6084. doi: 10.1007/s11357-024-01151-x. Epub 2024 Apr 10. PMID: 38598069; PMCID: PMC11493897. (**impact factor: 5.6**).
 13. He D, Sikora WA, James SA, Williamson JN, Lepak LV, Cheema CF, Sidorov E, Li S, **Yang Y** (2024). Alteration in Resting-State Brain Activity in Stroke Survivors Following Repetitive Finger Stimulation. *Am J Phys Med Rehabil.* 2024 Jan 12. doi: 10.1097/PHM.0000000000002393. Epub ahead of print. PMID: 38261754. (**impact factor: 3.0**). **Best paper award.**
 14. Peng R H-T; He D, James, S.A., Williamson, J.N., Skadden C; Jain S, Hassaneen W, Miranpuri A, Kaur A, Sarol J. N, **Yang Y** (2024), Determining the effects of targeted high-definition transcranial direct current stimulation on reducing post-stroke upper limb motor impairments—a randomized cross-over study. *Trials*, 25:34; <https://doi.org/10.1186/s13063-023-07886-w> (**impact factor: 2.5**).
 15. Tang, Y., Xiong, X., Tong, G. **Yang Y**, et al. Multimodal diagnosis model of Alzheimer's disease based on improved Transformer. *BioMed Eng OnLine*, 23, 8 (2024). <https://doi.org/10.1186/s12938-024-01204-4> (**impact factor: 3.9**).
 16. Mukli P, Pinto C.B., Owens C, Cispo T, Lipecz A, Szarvas Z, Peterfi A, Langley A.C.C.P., Hoffmeister J, Racz F S, Perry J W, Tarantini S, Nyul-Toth A, Sorond F A., **Yang Y**, et al (2023)., Impaired Neurovascular Coupling and Increased Functional Connectivity in the Frontal Cortex Predict Age - Related Cognitive Dysfunction, *Advanced Science*, 2023 Dec 28: e2303516. doi: 10.1002/advs.202303516. PMID: 38155460 (**impact factor: 15.1**).
 17. Williamson J, James SA, Mukli P, Yabluchanskiy A, Wu DH, Sonntag W; Alzheimer's Disease Neuroimaging Initiative Consortium; Yang Y. Sex difference in brain functional connectivity of hippocampus in Alzheimer's disease. *Geroscience*. 2024 Feb;46(1):563-572. doi: 10.1007/s11357-023-00943-x. Epub 2023 Sep 25. PMID: 37743414; PMCID: PMC10828268. (**impact factor:5.6**).
Nominated for the best paper award.
 18. Williamson JN, James SA, He D, Li S, Sidorov E.V, **Yang Y**, (2023), High-Definition Transcranial Direct Current Stimulation for Upper Extremity Rehabilitation in Moderate-to-Severe Ischemic Stroke - A Pilot Study, *Front. Hum. Neurosci.*, 17:1286238. doi: 10.3389/fnhum.2023.1286238. MID: 37900725 PMCID: PMC10602806 (**impact factor:2.9**).
 19. Sirpal, P., Sikora, W. A., Refai, H. H., **Yang, Y.** (2023). Association between Opioid Dependence and Scale Free Fractal Brain Activity: An EEG Study. *Fractal and Fractional*, 7(9), 659 (**impact factor: 5.4**) **featured for issue cover.**

20. Tang, Y., Tong, G., Xiong, X., Zhang, C., Zhang, H., **Yang, Y.** (2023). Multi-site diagnostic classification of autism spectrum disorder using adversarial deep learning on resting-state fMRI. *Biomedical Signal Processing and Control*, 85, 104892 (**impact factor: 5.076**).
21. Williamson J. N, Yabluchanskiy A, Mukli P, Wu DH, Sonntag W, Ciro C, **Yang Y** (2022), Sex Differences in Brain Functional Connectivity of Hippocampus in Mild Cognitive Impairment. *Frontiers in Aging Neuroscience*. 14:959394. PMID: 36034134, PMCID: PMC9399646 (**impact factor: 5.75**).
22. Williamson J. N, Sikora W. A, James S. A, Parmar N. J, Lepak L.V, Cheema C.F., Refai H.H, Wu D. H, Sidorov E.V, Dewald J. P. A, **Yang Y** (2022), Cortical Reorganization of Early Somatosensory Processing in Hemiparetic Stroke, *Journal of Clinical Medicine*, 11(21):6449, PMID: 36362680, PMCID: PMC9654771 (**impact factor: 4.964**).
23. Vasudeva B, Tian R, Wu D.H., James S.A., Refai, H.H., Ding L, **Yang Y** (2022), Multi-Phase Locking Value: A Generalized Method for Determining Instantaneous Multi-Frequency Phase Coupling, *Biomedical Signal Processing and Control*, 74 (2022): 103492, PMID: 35111233 PMCID: PMC8803274 (**impact factor: 5.076**).
24. Gao Y, Tang, Y, Zhang H, **Yang Y**, Dong, T, Jia Q (2022), Sex Differences of Cerebellum and Cerebrum: Evidence from Graph Convolutional Network, *Interdisciplinary Sciences: Computational Life Sciences*, 14(2): 532-544, PMID: 35103919 (**impact factor: 3.492**).
25. Tian R, Dewald J.P.A. **Yang Y** (2021), Assessing the Usage of Indirect Motor Pathways following a Hemiparetic Stroke, *IEEE Trans Neural Syst Rehabilitation Eng*; 29:1568-72, PMID: 34343095 PMCID: PMC8372540 (**impact factor: 5.2**).
26. He, F, **Yang, Y** (2021). Nonlinear System Identification of Neural Systems from Neurophysiological Signals. *Neuroscience*. 458: 213-228, PMID: 33309967, PMCID: PMC7925423 (**impact factor: 3.708**). **Invited topical review article.**
27. Tian R, Dewald J.P.A, Sinha N, **Yang Y** (2021), Assessing Neural Connectivity and Associated Time Delays of Muscle Responses to Continuous Position Perturbations, *Annals of Biomedical Engineering*, 49(1):432-440. PMID: 32705425, PMCID: PMC7775285 (**impact factor: 4.219**).
28. Bao S, Chen C, Yuan K, **Yang Y**, Tong R. K-Y (2021), Disrupted Cortico-peripheral Interactions after Motor Dysfunction, *Clin. Neurophysiol.*, 132(12): 3136-3151, PMID: 34749233 (**impact factor: 4.861**).
29. Li, Y., Yang, X., Zhou, Y., Chen, J., Du, M. and **Yang, Y** (2021). Adaptive Stimulation Profiles Modulation for Foot Drop Correction using Functional Electrical Stimulation: A Proof of Concept Study. *IEEE Journal of Biomedical and Health Informatics*, 25(1):59-68, PMID: 32340970 (**impact factor: 7.021**).
30. Sinha N, **Yang Y** (2021), Strategic Diversification for Asynchronous Asset Trading: Insights from Generalized Coherence Analysis of Cryptocurrency Price Movements, *Ledger*, 6: 102-125.
31. Gu Y, **Yang Y**, Dewald J.P.A, van der Helm F.C.T., Schouten A.C., and Wei H-L (2021), Nonlinear Modeling of Cortical Responses to Mechanical Wrist Perturbations using the NARMAX Method, *IEEE Transactions on Biomedical Engineering*, 68(3): 948-958, PMID: 32746080 (**impact factor: 4.424**).
32. Mukli P, Csipo T, Lipecz A, Stylianou O, Racz F.S, Owens C, Perry C, Tarantini S, Sorond F.A, Kellawan J.M, Purebl G, **Yang Y**, Sonntag W.E, Csiszar A, Ungvari Z, Yabluchanskiy A. (2021) Sleep deprivation alters task-related changes in functional connectivity of the frontal cortex: a near-infrared spectroscopy study, *Brain and Behavior*, 11(8):e0213, PMID: 34156165, PMCID: PMC8413792 (**impact factor: 3.405**).
33. Sinha, N., Heckman, C., **Yang, Y.** (2020). Slowly activating outward membrane currents generate input-output sub-harmonic cross frequency coupling in neurons. *Journal of Theoretical Biology*, 509, 110509. PMID: 33022285, PMCID: PMC7704641 (**impact factor: 2.691**).
34. **Yang Y**, Yao J, Dewald J.P.A, van der Helm F.C.T, Schouten A.C, Quantifying the Nonlinear Interaction in the Nervous System based on Phase-locked Amplitude Relationship, *IEEE*

Transactions on Biomedical Engineering, 67(9): 2638-2645, PMID: 31976876, PMCID: PMC7363527 (**impact factor: 4.424**).

35. **Yang Y**, Sinha N, Tian R, Gurari N, Drogos JM, Dewald J.P.A. (2020), Quantifying altered neural connectivity of the stretch reflex in chronic hemiparetic stroke. *IEEE Transactions on Neural System and Rehabilitation Engineering*, 28(6): 1436-1441, PMID: 32275603, PMCID: PMC7340533 (**impact factor: 5.2**).
36. Sinha N, Heckman C.J, Dewald J.P.A, **Yang Y** (2020), Cross-frequency coupling in descending motor pathways: theory and simulation, *Frontiers in System Neuroscience*, 13:86, PMID: 31992973, PMCID: PMC6971171 (**impact factor: 3.293**).
37. Xiong B, Zeng N, Li Y, Du M, Huang M, Shi W, Mao G, **Yang, Y** (2020). Determining the Online Measurable Input Variables in Human Joint Moment Intelligent Prediction Based on the Hill Muscle Model. *Sensors*, 20(4), 1185, PMID: 32098065, PMCID: PMC7070854 (**impact factor: 3.275**).
38. Yuan, D., Li, Y., Wang, T., Chen, J., Chen, D., Lin, D., & **Yang, Y.** (2020). A closed-loop electrical stimulation system triggered by EOG for acupuncture therapy. *Systems Science & Control Engineering*, 8(1), 128-140 (**impact factor: 2.80**).
39. Li Y, Chen J, and **Yang Y** (2019), A method for suppressing electrical stimulation artifacts from electromyography, *International Journal of Neural Systems*, 29(6): 1850054, PMID: 30646793 (**impact factor: 6.325**).
40. Xin J, Zhang XY, Tang Y and **Yang Y** (2019), Brain differences between men and women evidence from deep learning, *Frontiers in Neuroscience*, 13:185, PMID: 30906246, PMCID: PMC6418873 (**impact factor: 5.152**).
41. Chen X, Chen J, Liang J, Li Y, Courtney C.A, **Yang Y[†]** (2019), Entropy-based Surface Electromyogram Feature Extraction for Knee Osteoarthritis Classification, *IEEE Access*, 7, 164144 – 164151 (**impact factor: 3.745**).
42. Xiong B, Li Y, Huang M, Shi W, Du M, **Yang Y[†]** (2019), Feature selection of input variables for intelligence joint moment prediction based on particle swarm optimization, *IEEE Access*, 7, 182289-182295 (**impact factor: 3.745**).
43. Xiong B, Zeng N, Li H, **Yang Y**, Li Y, Huang M, Shi W, Du M, Zhang, Y (2019), Intelligent prediction of human lower extremity joint moment: an artificial neural network approach, *IEEE Access*, 7, 29973-29980 (**impact factor: 3.745**).
44. Filatova OG*, **Yang Y***, Dewald JPA, Tian R, Maceira-Elvira P, Takeda Y, Kwakkel G, Yamashita O, and van der Helm FCT (2018), Dynamic information flow based on EEG and diffusion MRI in stroke: a proof-of-principle study, *Frontiers in Neural Circuits*, 2018; 12: 79. PMCID: PMC6174251, PMID: 30327592 (***co-first authorship, impact factor: 3.156**).
45. Tian, R*, **Yang, Y***, van der Helm, F.C. and Dewald, JPA (2018). A novel approach for modeling neural responses to joint perturbations using the NARMAX method and a hierarchical neural network. *Frontiers in Computational Neuroscience*, 12: 96. PMCID: PMC6291451 (***co-first authorship, impact factor: 3.387**).
46. **Yang Y**, Dewald, J. P. A., van der Helm, F. C. T and Schouten, A. C (2018), Unveiling neural coupling within the sensorimotor system: directionality and nonlinearity. *European Journal of Neuroscience*, 48(7): 2407-2415. PMID: 28887885 PMCID: 28887885 (**impact factor: 3.115**).
47. Gursel Ozmen N., Gumusel L. and **Yang Y** (2018). A Biologically Inspired Approach to Frequency Domain Feature Extraction for EEG Classification. *Computational and Mathematical Methods in Medicine*, 2018: 9890132. PMCID: PMC5896285, PMID: 29796060 (**impact factor: 2.238**).
48. Tang Y, Liu B, **Yang Y**, Wang C, Li M, Tang B, Guo J (2018). Identifying mild-moderate Parkinson's disease using whole-brain functional connectivity, *Clinical Neurophysiology*, 129(12):2507-2516, PMID: 30347309 (**impact factor: 4.861**).
49. **Yang Y**, Guliyev B and Schouten AC (2017) Dynamic Causal Modeling of the Cortical Responses to

Wrist Perturbations. *Frontiers in Neuroscience*, 11:518. PMID: 28955197 PMCID: PMC5601387 (**impact factor: 5.152**).

50. **Yang Y** Chevallier S, Wiart J and Bloch I (2017), Subject-specific time-frequency selection for multi-class motor imagery-based BCIs using few Laplacian EEG channels, *Biomedical Signal Processing and Control*, 38, 302-311 (**impact factor: 5.076**).
51. **Yang Y**, Solis-Escalante T, Yao J, Daffertshofer A, Schouten A.C., and van der Helm F.C.T. (2016), A general approach for quantifying nonlinear connectivity in the nervous system based on phase coupling, *International Journal of Neural Systems*, 26 (1): 1550031. PMID: 26404514 (**impact factor: 6.325**). **Best paper Award**.
52. **Yang Y**, Solis-Escalante T, Yao J, van der Helm F.C.T, Dewald J.P.A and Schouten A.C (2016), Nonlinear Connectivity in the Human Stretch Reflex Assessed by Cross-frequency Phase Coupling, *International Journal of Neural Systems*, 26(8): 1650043, PMID: 27440467 (**impact factor: 6.325**).
53. **Yang Y**, Solis-Escalante T, van der Helm F.C.T, Schouten A.C (2016), A generalized coherence framework for detecting and characterizing nonlinear interactions in the nervous system, *IEEE Transactions on Biomedical Engineering*, 63(12): 2629-2637, PMID: 27362753 (**impact factor: 4.424**).
54. **Yang Y**, Solis-Escalante T, van de Ruit M, van der Helm F.C.T and Schouten A.C (2016), Nonlinear coupling between cortical oscillations and muscle activity during isotonic wrist flexion, *Frontiers in Computational Neuroscience*, 10:126. PMID: 27999537 PMCID: 27999537 (**impact factor: 3.387**).
55. **Yang Y**, Bloch I, Chevallier S, Wiart J (2016), Subject-specific channel selection using time information for motor imagery brain-computer interfaces, *Cognitive Computation*, 8(3), 505-518 (**impact factor: 4.890**).
56. **Yang Y**, Qiu Y and Schouten A.C (2015). Dynamic functional brain connectivity for face perception. *Frontiers in Human Neuroscience*, 9:662. PMID: 26696870 PMCID: 26696870 (**impact factor: 3.473**).
57. Ansuini C, Cavallo A, Koul A, Jacono M, **Yang Y**, Becchio C (2015), Predicting object size from hand kinematics: a temporal perspective, *PLoS ONE*, 10 (3): e0120432. PMID: 25781473 PMCID: 25781473 (**impact factor: 2.74**).
58. **Yang Y**, Chevallier S, Wiart J, Bloch I (2014), Time-frequency optimization for discrimination between imagination of right and left hand movements based on two bipolar electroencephalography channels, *EURASIP Journal on Advances in Signal Processing*, 2014:38 (**impact factor: 2.099**).
59. Guo H, **Yang Y**, Gu G, Zhu Y, Qiu Y (2013), Phosphene object perception employs holistic processing during early visual processing stage, *Artificial Organs*, 37(4): 401-408. PMID: 25781473, PMCID: 25781473 (**impact factor: 3.752**).
60. **Yang Y**, Gu G, Guo H, Qiu Y (2011), Early event-related potential components in face perception reflect the sequential neural activities, *Acta Physiologica Sinica*, 63(2): 97-105. PMID: 21505723.
61. Guo H, Wang Y, **Yang Y**, Tong S, Zhu Y, Qiu Y (2010), Object recognition with distorted prosthetic vision, *Artificial Organs*, 34(10): 846-856. PMID: 20545671 (**impact factor: 2.259**).
62. Zhao Y, **Yang Y**, Wang K (2009), Iterative multi-level image segmentation based on fuzzy set theory, *Journal of Optoelectronic · Laser*, 20 (10): 1403-1409 (Chinese).

B. Editorial Commentary:

1. **Yang Y**, Yabluchanskiy A (2023). Sex-specific hippocampal connectivity markers in mild cognitive impairment. *Aging* (Albany NY). 2023, 15, 7: 2371-2372, PMID: 37053017, PMCID: PMC10120893 (**impact factor: 5.955**).
2. Hu X, Zhao T, Yao J, Kuang Y, **Yang Y** (2018), *Advances in Neural Engineering for Rehabilitation*,

C. Peer-reviewed book chapter:

1. **Yang Y**, Neural coding by electroencephalography (EEG), In Hu X. (Ed.), *Intelligent Biomechatronics in Neurorehabilitation*, 1st edition. Elsevier, USA. 2020. pp 41-49.
2. Sirpal P, **Yang Y**, Advancing electroencephalogram in tele-neurorehabilitation: integrating wearable technology and multimodal systems, In Hu X and Li Z. (eds). *Automation in Tele-Neurorehabilitation*. CRC Press, USA, 2025.

D. Dataset:

1. Schouten AC, Vlaar M, Solis-Escalante T, **Yang Y**, van der Hem FCT (2019), Cortical response evoked by wrist joint manipulation, Nonlinear System Identification Benchmarks, Doi: 10.4121/uuid:176d8f78-d9fd-491e-90e7-9370e249b701.

E. Selected Conference Proceedings from over 80 abstracts/conference papers

1. Williamson, J. N., James, S., Li, S., Sidorov, E. V., Yang, Y. Non-invasive Brain Stimulation Alters Resting-State Brain Activity in Ischemic Stroke. Stroke, Volume 56, Number Suppl1: TP105.
2. Marshall B, Sung J, Mulyana BE, Rajabtabar M, Peng RH, Bryant L, Skadden C, Daniels R, Jain S, Yang. Effects of Targeted High-Definition Transcranial Direct Current Stimulation on Poststroke Upper Limb Motor Impairment: Preliminary Results. Am J Occup Ther. 2025 August; 79(Supplement_2):7911500085p1. doi: 10.5014/ajot.2025.79S2-PO81.
3. Peng RH, Mulyana BE, Darvish MR, Sung J, **Yang Y** (2025). Implications of Hemispheric Shift of Sensory Feedback during Post-stroke Motor Control on Personalized Stroke Rehabilitation. Converging Clin Eng Res Neurorehabilit V (2024). 2024;32:540-544. doi: 10.1007/978-3-031-77584-0106. Epub 2024 Dec 21. PubMed PMID: 39816497; PubMed Central PMCID: PMC11734431.
4. Williamson, J.N., Mulyana, B.E., Peng, R.H.T., He, D., James, S.A., Sidorov, E.V. and **Yang, Y.**, 2025, November. Targeted Brain Stimulation Alters Resting State EEG and Reduces Post-stroke Impairment. In International Conference on NeuroRehabilitation (pp. 357-361). Cham: Springer Nature Switzerland.
5. Williamson, J. N., Parmar, N., Mulyana, B., Peng, R. H.T., **Yang, Y.** Alteration in quantitative EEG following sensorimotor control in stroke. American Society of Neurorehabilitation (ASNR) 2025, Atlanta, Georgia, April 23-25, 2025.
6. Williamson, J.N., James, S.A., He, D., Peng, R.H.T., Mulyana, B. and **Yang, Y.**(2024), Bilateral High-Definition Transcranial Direct Current Stimulation for Upper Extremity Rehabilitation in Stroke. In 2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). IEEE. 2024, July.
7. Sinha, N., Dewald, J.P. and **Yang, Y** (2024). Perturbation-induced electromyographic activity is predictive of flexion synergy expression and a sensitive measure of post-stroke motor impairment. In 2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). IEEE. 2024, July.
8. Yang J., Williamson, J. N., **Yang, Y** (2024), Sex Differences in Tau Biomarkers and Brain Functional Connectivity in Alzheimer's Disease. 7th Illinois AI and Health Summit: Healthy Aging of Brain and Mind with AI, Chicago, IL, April 15, 2024.
9. Peng, R. H. T. , **Yang Y**. (2024), Addressing Domain Shift Challenges in Brain Lesion Segmentation for Neurorehabilitation: A Multi-Image Approach with the 3D UNet Model. 7th Illinois AI and Health Summit: Healthy Aging of Brain and Mind with AI, Chicago, IL, April 15, 2024.

10. Mulyana B. E., **Yang Y** (2024), Real-time standalone image reconstruction for multi-slice multiband EPI using matrix vectorization and GPUs CUDA implementation, the 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2024), Orlando, Florida, July 15-19, 2024.
11. Mulyana B. E., **Yang Y** (2024), Safety and Quality Evaluation of Concurrent Transcranial Electrical Stimulation with fMRI, the 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2024), Orlando, Florida, July 15-19, 2024.
12. Peng, R. H. T., Camacho, P., Sutton, B., Subramanian, A., Wszalek, T., Anderson, A., Mulyana, B. E., Lam, F., & **Yang, Y.** (2024), Improving Focality and Minimizing Cross-Hemispheric Current Leakage in Bilateral HD-tDCS. the 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2024), Orlando, Florida, July 15-19, 2024. , Orlando, Florida, July 15-19, 2024.
13. Sirpal P, Refai, HH, Dewald JPA, **Yang Y** (2024), Quantifying EEG Transition Zones: Insights Into Post-Stroke Brain Dynamics During Motor Tasks, the 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2024), Orlando, Florida, July 15-19, 2024.
14. Yang J., Williamson, J. N., **Yang, Y** (2024), Effect of Tau Biomarkers and Gender Differences on Brain Functional Connectivity in Alzheimer's Disease. Alzheimer's Association International Conference (AAIC) 2024, Philadelphia, USA, July 28-Aug 1, 2024.
15. Mulyana B, Williamson J.N, **Yang Y.**, High-definition transcranial direct current stimulation guided by delta-alpha ratio topography for precision stroke rehabilitation: a hypothetical study, Neuroscience (SfN) 2024. Chicago, IL, Oct 5-9, 2024.
16. Peng R. H.T., Camacho P.B., Sutton B, Dewald J.P. **Yang Y.** (2024), Asymmetry of Motor Pathway Tractography in Chronic Hemiparetic Stroke, Neuroscience (SfN) 2024. Chicago, IL, Oct 5-9, 2024.
17. Rajabtabar Darvish, M., Sung J., Mulyana B, Peng, R. H. T., **Yang Y.**, Cortical Dynamics of Synergy-Induced Hyperactive Stretch Reflex, Neuroscience (SfN) 2024. Chicago, IL, Oct 5-9, 2024.
18. Sung J., Rajabtabar Darvish, M., Mulyana B, Peng, R. H. T., **Yang Y.**, The Expression of Flexion Synergy Enhances Spasticity in Stroke, Neuroscience (SfN) 2024. Chicago, IL, Oct 5-9, 2024.
Trainee Professional Development Award (recipient: Sung J, postdoc)
19. Williamson, J.N., James, S.A., Brixey, J.R., Apple, B., Sharps, J., Monroe, A., He. D., Li, S., Dewald, J.P.A., Corcos, D.M., Kolobe, T.H.A., Sidorov, E., **Yang, Y.** (2023). High-Definition Transcranial Direct Current Stimulation for Upper Extremity Rehabilitation Post Stroke: A Pilot Trial. American Society of Neurorehabilitation Annual Meeting, Charleston, SC, Mar. 14-16, 2023
20. Williamson, J.N., James, S.A., Brixey, J.R., Apple, B., Sharps, J., Monroe, A., He. D., Sidorov, E., **Yang, Y.** (2023). Transcranial magnetic stimulation-induced motor evoked potential as a measure of motor impairments and recovery post-stroke. 32nd Annual Meeting of Society for the Neural Control of Movement, Victoria, BC, Canada, April. 17-21, 2023
21. Williamson J. N., Peng, R. H. T., He, D., James, S. A., Sidorov, E. V., & **Yang, Y.** (2024), High-Definition Transcranial Direct Current Stimulation Altering Resting-State Brain Activity in Chronic Stroke. Bugher Foundation Collaborative Symposium 2024, Phoenix, Arizona, Feb.7-9, 2024.
22. Peng, R. H. T., Williamson, J. N., Skadden, C., James, S., Sidorov, E. V., Mostafa, W. H., Miranpuri, A., Jain, S., Li, S., Daniels, R., & **Yang, Y.** (2024), Targeted High-definition Transcranial Direct Current Stimulation For Reducing Post-stroke Upper Limb Motor Impairments. International Stroke Conference 2024, Phoenix, Arizona, Feb.7-9, 2024.
23. Lepak L.V., Cheema C.F, James S.A., **Yang Y** (2023), Computer-Guided Non-Invasive High-Definition Transcranial Direct Current Brain Stimulation as a Targeted Intervention after a Stroke, *American Physical Therapy Association (APTA) Combined Sections Meeting (CSM)*, San Diego, CA, Feb 23-25, 2023.

24. Sikora W.A, Azizoddin D.R, Lepak L.V, Cheema C.F, Safdar F, Ashton B.R, **Yang Y** (2022). Cortical Mechanisms of Pain in the Adult Somatosensory Cortex: A Pilot EEG Study. *Biomedical Engineering Society BMES Annual Meeting*; October 13-16; San Antonio, TX2022
25. James S.A., Duginski G.A., **Yang Y** (2022), Impact of short-term focal vibration intervention on upper extremities in chronic stroke, *American Congress of Rehabilitation Medicine (ACRM) 99th Annual Conference: Progress in Rehabilitation Research*, November 8-11, 2022
26. **Yang Y.**, Sidorov E.V., Dewald J.P.A (2021), Targeted tDCS reduces the expression of the upper limb flexion synergy in chronic hemiparetic stroke, *American Congress of Rehabilitation Medicine (ACRM) 98th Annual Conference: Progress in Rehabilitation Research*, September 26-29, 2021.
27. **Yang Y**, Tian R, Sanha N, Gurari N, Drogos J, Dewald J.P.A (2020). Determining the Increased Usage of Indirect Motor Pathways in Hemiparetic Stroke, *American Physical Therapy Association (APTA) Combined Sections Meeting (CSM)*, Platform presentation in Research Section, Feb 12-15, 2020, Denver, CO, ID 24201.
28. Mackenbach, C., Tian, R., **Yang Y.** (2020). Effects of Electrode Configurations and Injected Current Intensity on the Electrical Field of Transcranial Direct Current Stimulation: A Simulation Study. In *2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)* pp. 3517-3520.
29. Shi W, Xiong B, Huang M, Du M, **Yang Y** (2019). An Extreme Learning Machine Method for Diagnosis of Patellofemoral Pain Syndrome. In *International Conference on Extreme Learning Machine*, pp. 22-30. Springer, 2019.
30. **Yang Y**, Tian R, Cummings M, Drogos J, Dewald J.P.A (2019). Transcranial direct current stimulation over lesioned motor cortices reduces the expression of the flexion synergy and nonlinear brain-muscle connectivity in hemiparetic stroke. *American Society of Neurorehabilitation (ASNR) Annual Meeting*; October 16-18, 2019; Chicago, IL. no. T50.
31. **Yang Y**, Tian R, Cummings M, Hogenhuis C.H.E.Y, Deol J, Drogos J, Dewald J.P.A (2019). Determine the usage of indirect motor pathways following a hemiparetic stroke: A pilot study. *Neuroscience 2019*; October 19-23, 2019; Chicago, IL. no. 5134.
32. **Yang Y**, Hogenhuis C.H.E.Y, Tian R, Cates A, van de Herm F.C.T, Dewald J.P.A (2019). Effects of Electrode Distance and Injected Current Intensity on High-definition tDCS: A Simulation Study. *Biomedical Engineering Society BMES Annual Meeting*; October 16-19, 2019; Philadelphia, PA, no 559.
33. Tian R, Dewald J.P.A., Sinha N, **Yang Y** (2019), Assessing linear and nonlinear connectivity and associated time delays in the muscle responses to continuous elbow joint perturbations, *Biomedical Engineering Society BMES Annual Meeting*; October 16-19, 2019; Philadelphia, PA, no 214.

INVITED LECTURES (International/National)

1. Title: “Non-invasive Brain Stimulation For Precision Rehabilitation After Stroke”, Grand Rounds-Stroke Rehabilitation and Recovery Research Seminar Series at UTHealth Houston Physical Medicine and Rehabilitation – TIRR Hermann Memorial Hospital, Nov. 21, 2025. Invited by Prof. Sheng Li.
2. Title “Nonlinear Connectivity Analysis: Applications to Neural and Physiological Signals”, IEEE Distinguished Lecture at the Southern Alberta Chapter. Oct. 28, 2025. Invited by the Chapter Committee.
3. Title “NeuroEngineering-based Precision Rehabilitation in Stroke”, Research Seminar at Duke University, July, 2024, Invited by Prof. Wayne (Wuwei) Feng.
4. Title “Targeted high-definition transcranial direct current stimulation to reduce sensorimotor impairments post-hemiparetic stroke”, Invited Guest Speaker for Progress in Clinical Motor Control II conference, Chicago, IL, July 14, 2023. Invited by the Conference Committee.

5. Title "Neural Engineering for Sensorimotor Rehabilitation in Hemiparetic Stroke", Seminar at University of Houston, Department of Biomedical Engineering, Houston, January 20, 2023. Invited by Prof. Jerome Schultz and Prof. Jinsook Roh.
6. Title "Neural Assessments and Targeted Interventions for Hemiparetic Stroke," Seminar at Coventry University, Coventry, UK, November 27, 2020. Invited by Prof. Fei He.
7. Title "Assessing Functional Neural Connectivity in Hemiparetic Stroke", lecture in Department of Kinesiology and Applied Physiology/Physical Therapy/Biomechanics and Movement Science/ Psychological & Brain Sciences, University of Delaware, Oct. 16, 2019, Invited by Prof. Hyosub Kim and Prof. John Jeka.
8. Title "Quantifying neuronal connectivity in the nervous system using cross-frequency coupling metric and multisine stimulations", lecture in Physical Therapy & Human Movement Sciences Department, Northwestern University, Chicago, July 11, 2016, invited by Prof. Julius P.A. Dewald.
9. Title "Quantifying neuronal connectivity in the nervous system using cross-frequency coupling metric and multisine stimulations", lecture in the Department of Neuroscience & Pharmacology, University of Copenhagen, Denmark, June 30, 2016, invited by Dr. Jesper Lundbye-Jensen (Associate Professor).
10. Title "Quantifying connectivity in motor control using connectivity measures and multisine stimulations", lecture in ATR, Kyoto, Japan, Oct. 27, 2015, invited by Prof. Okito Yamashita.
11. Title "Quantifying nonlinear connectivity in the human sensorimotor system", talk in "*Principles of Autonomous NeuroDynamics*" *SEIN Annual meeting*, Heemstede, The Netherlands, July 13, 2015, invited by Dr. Stiliyan Kalitzin.
12. Title "Quantifying connectivity in motor control using causality measures and multisine perturbations", lecture in Italian Institute of Technology, Genova, Italy, June 09, 2014, invited by Prof. Cristina Becchio.
13. Title "Subject-specific optimization in brain-computer interfaces", presentation in Labex DigiCosme-Paris-Saclay Research Day, Bures-sur-Yvette, France, July 10, 2013, invited by Prof. Michel Sebag.