



Sergei Tugin

Postdoctoral Scholar, Neurology and Neurological Sciences

 Curriculum Vitae available Online

Bio

BIO

I am a postdoctoral researcher at Stanford University. My focus was primarily on the investigation of human brain with noninvasive methods such as TMS and EEG. I am interested in the mechanisms of decision-making, attention, voluntary movement preparation, and excitability of the cortex, as well as in the investigation of neurophysiological disorders such as epilepsy and depression. I pay respect to the importance of mathematics, physics, and programming in neuroscience research by applying the state-of-the-art methodologies and tools in my work.

My experience includes:

- TMS (single, paired-pulse, rTMS, PAS)
- EEG (ERP, EP, oscillations)
- TMS—EEG
- EMG
- MEG

INSTITUTE AFFILIATIONS

- Member, Wu Tsai Neurosciences Institute

PROFESSIONAL EDUCATION

- Master of Science, St Petersburg State University (2010)
- Bachelor of Science, St Petersburg State University (2007)
- Doctor of Philosophy, Aalto University (2022)
- B. A., Saint Petersburg State University , Alpha rhythm (2007)
- M.Sc., Saint Petersburg State University , Decision-making, conformity, mirror neurons (2011)
- Ph.D., Aalto University , Motor cortex, visual cortex, TMS, EEG (2022)

STANFORD ADVISORS

- Fiona Baumer, Postdoctoral Faculty Sponsor

LINKS

- LinkedIn: <https://www.linkedin.com/in/tugin/>

Research & Scholarship

RESEARCH INTERESTS

- Brain and Learning Sciences
- Child Development
- Data Sciences
- Research Methods

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The primary goal of my research is to develop effective novel treatments of epilepsy and expand my skill set and knowledge base to non-invasive transcranial magnetic stimulation (TMS) and electroencephalography (EEG) in epilepsy. During my PostDoc, I plan to take part in the development of personalized and effective treatment methods for the improvement of motor, language, and attention skills in patients. My research my allow to improve the lives and general wellbeing of children that suffer from this ailment by developing and testing neuromodulatory treatments to reduce or eliminate seizures and improve motor and linguistic functioning impairments that stem from this debilitating condition. Another important part is the current study is obtaining experience with the closed-loop, adaptive paradigm, which involves real-time adaption of TMS stimulation patterns depending on the state of the human brain. Thus, I am gain further analytic, computational, and programming skills necessary to develop a set of novel diagnostic and treatment tools for childhood epilepsy.

Publications

PUBLICATIONS

- **TMS with fast and accurate electronic control: Measuring the orientation sensitivity of corticomotor pathways** *BRAIN STIMULATION*
Souza, V., Nieminen, J. O., Tugin, S., Koponen, L. M., Baffa, O., Ilmoniemi, R. J.
2022; 15 (2): 306-315
- **A New Paired Associative Stimulation Protocol with High-Frequency Peripheral Component and High-Intensity 20 Hz Repetitive Transcranial Magnetic Stimulation-A Pilot Study** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH*
Sathyan, S., Tolmacheva, A., Tugin, S., Maekelae, J. P., Shulga, A., Lioumis, P.
2021; 18 (21)
- **Effect of stimulus orientation and intensity on short-interval intracortical inhibition (SICI) and facilitation (SICF): A multi-channel transcranial magnetic stimulation study** *PLOS ONE*
Tugin, S., Souza, V. H., Nazarova, M. A., Novikov, P. A., Tervo, A. E., Nieminen, J. O., Lioumis, P., Ziemann, U., Nikulin, V. V., Ilmoniemi, R. J.
2021; 16 (9): e0257554
- **Visual deviant stimuli produce mismatch responses in the amplitude dynamics of neuronal oscillations** *NEUROIMAGE*
Tugin, S., Hernandez-Pavon, J. C., Ilmoniemi, R. J., Nikulin, V. V.
2016; 142: 645-655
- **Electrophysiological precursors of social conformity** *SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE*
Shestakova, A., Rieskamp, J., Tugin, S., Ossadtchi, A., Krutitskaya, J., Klucharev, V.
2013; 8 (7): 756-763
- **Automatic processing of unattended lexical information in visual oddball presentation: neurophysiological evidence** *FRONTIERS IN HUMAN NEUROSCIENCE*
Shtyrov, Y., Goryainova, G., Tugin, S., Ossadtchi, A., Shestakova, A.
2013; 7: 421