To whom it may concern,

I am writing to express my strong interest in the position described in your lab. My name is Mehdi Borjkhani, and I am a Computational Neuroscientist with a deep passion for bioelectric phenomena and computational neuroscience. I am currently a researcher at the International Center for Translational Eye Research, part of the Polish Academy of Sciences in Warsaw, Poland. I believe my unique skills and experience would significantly contribute to your lab's focus on synaptic communication and social behavior modeling.

With a solid foundation in mathematics and extensive programming expertise (C++, Matlab, Python), I have consistently delivered high-quality research. My recent work involves building a biophysical model of cortical columns in the primary visual cortex. This model, developed using the Neuron simulator, Brain Modeling Toolkit (BMTK), Python, and Matlab, explores the role of interneurons in forming orientation selectivity, offering insights into cortical processing. Additionally, I have a strong background in modeling cellular mechanisms underlying addiction, focusing on synaptic plasticity and astrocytes' involvement in the development of pathological memories.

Throughout my career, I have bridged the gap between computational models and experimental data. For instance, I have successfully analyzed various experimental signals in rodents, with the findings published in peer-reviewed journals. I also have substantial experience in artificial intelligence, ranging from the fundamental principles of single neurons to the application of deep neural networks. My expertise in AI extends to diagnostic applications, such as using handwriting kinematics to classify schizophrenic patients, and controlling robots through EEG data using convolutional neural networks.

Moreover, my academic background includes teaching and course development in artificial neural networks, biological signal processing, and system identification at the Urmia University of Technology. Beyond academia, I have designed and implemented systems such as a 16-24 channel Near-Infrared Spectroscopy (NIRS) system and a Heart-Rate Variability (HRV) Analyzer, further honing my technical and problem-solving skills.

Given my extensive background in computational modeling, signal analysis, neuroscience, and programming, I am confident in my ability to quantify synaptic dynamics in your lab and generate meaningful models for investigating optimal synaptic arrangements in social behavior patterns. I am excited about the opportunity to contribute to the interdisciplinary research efforts within the Field of Excellence COLIBRI at the University of Graz, and I would welcome the chance to collaborate on cutting-edge neuroscience projects.

I am highly motivated and eager to start contributing as soon as possible. I would be thrilled to be considered for this position and would appreciate the opportunity to discuss how my background, skills, and experiences align with your team's goals.

Thank you for your time and consideration.

Best regards,
Mehdi Borjkhani