

Motivation Letter

I am a PhD student specializing in Structural Bioinformatics in the School of Computer Science at Tel-Aviv University. My B.Sc. and M.Sc. degrees were in the fields of engineering and mathematics. My main interest is in the computational modelling of protein complexes from cryo-EM map.

In my current project I am developing a deep learning algorithm for integrative structural analysis of cryo-EM maps, which integrates 3D imaging information from a cryo-EM map with existing sequence and structural data. As part of the developed algorithm, I have developed a neural network for realistic simulation of a cryo-EM map (nicknamed cryo-GAN). Having large quantities of realistic simulated (or real) data is crucial for the training of deep learning algorithms. I would like to present a poster describing cryo-GAN and expose it to a wide audience, since I project that experimentalists engaged in modeling macromolecular structures from cryo-EM can benefit from a realistic simulation. Feedback and improvement suggestions from the EMBO audience are of high value to me.

Participating in the workshop will allow me to be introduced to the most novel and state of the art methods in structural bioinformatics. Some of them presented by thought leaders of the community. The obtained knowledge is crucial for filling gaps in my research and focusing it on the actual needs of molecular biologists.