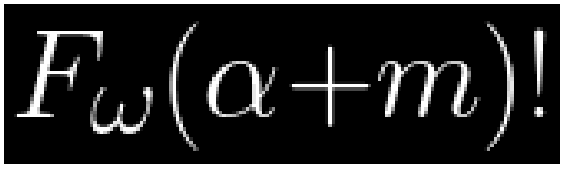

Contribution ID: **23** Type: **not specified**

Biological neural network algorithms

Thursday, October 31, 2019 4:50 PM (25 minutes)

Although traditional artificial neural networks were inspired by the brain they resemble biological neural networks only superficially. Successful machine learning algorithms like backpropagation violate fundamental biophysical observations suggesting that the brain employs other algorithms to analyze high-dimensional datasets streamed by our sensory organs. We have been developing neuroscience-based machine learning by deriving algorithms and neural networks from objective functions based on the principle of similarity preservation. Similarity-based neural networks rely exclusively on biologically plausible local learning rules and solve important unsupervised learning tasks such as dimensionality reduction, clustering and manifold learning. In addition, to modeling biological networks, similarity-based algorithms are competitive for Big Data applications. For further information please see http://www.offconvex.org/2018/12/03/MityaNN2/

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Session Classification: Deep Learning Short Talks