Dear colleague,

We are looking for a post-doc candidate at the crossroad of statistical physics, machine learning, and computational biology, interested in the theoretical and applied aspect of data-driven modeling.

Thanks to recent progress in machine learning, machine learning can be used to establish models of complex systems, which remain out of reach with standard first-principle methods. The goal of the post doctoral project will be two-fold:

(1) develop unsupervised machine learning tools and apply statistical physics methods and concepts to better understand how these methods operate and learn from data. Different unsupervised architectures will be studied and compared, including Boltzmann Machines, Restricted Boltzmann Machines, and (Variational) Autoencoders.

(2) apply these methods to model proteins from sequence data, with special emphasis on the prediction of mutational effects and mutational paths in the trypsin enzyme, in connection with high-throughput experiments by C. Nizak and O. Rivoire at College de France.

The post-doc will be located in the Department of Physics at the Ecole Normale Superieure in Paris, under the supervision of S. Cocco and R. Monasson. The duration of the position is of two years. Post-doc candidates are expected to have solid knowledge in statistical physics, inference methods and data analysis, and both analytical and computer programming skills. Moreover he/she should have a deep interest and possibly a previous experience in computational biology and/or bioinformatics.

Applications should be sent by email to coco@lps.ens.fr or monasson@lpt.ens.fr by January 15, 2018.