

HOW TO MAXIMIZE NEURAL COMPLEXITY

LORENZO ZAMBOTTI

G. Edelman, O. Sporns and G. Tononi have introduced in theoretical biology the neural complexity of a family of random variables, defining it as an average of mutual information over subsystems, with the aim of quantifying the complexity of the brain. We provide a mathematical framework for this concept, studying in particular the problem of maximization of such functional for fixed system size and the asymptotic properties of maximizers as the system size goes to infinity. We shall also discuss some possible developments and applications of our work. (Joint work with Jerome Buzzi)