הפקולטה לניהול
החוג לניהול מידע וידע
מזמינים אתכם לסמינר:

Perspectives from information theory on population genetic data

Omri Tal, PhD

Max-Planck-Institut für Mathematik in den Naturwissenschaften

(Max Planck Institute for Mathematics in the Sciences)

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12:00-13:30

Abstract

There has recently been growing interest at borrowing both concepts and technical results from information theory for analysis in the biosciences. I will briefly review recent efforts at incorporating notions such as entropy, channel capacity, noise and distortion into biological settings. I then describe novel conceptual and quantitative links between features of population genetic samples and a core information-theoretic property. In essence, long stretches of genetic variants may be captured as 'typical sequences' of a nonstationary source modelled on the source population. This will provide motivation for constructing simple typicality-based population assignment schemes. I will introduce the concepts of typical genotypes, population entropy rate and mutual typicality, and their relation to the asymptotic equipartition property. Finally, I will highlight an analogy between a communication channel and an inferential channel, where 'noise' results from fuzzy population boundaries and parameter estimation, and where the channel capacity closely corresponds to genetic informativeness.

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aweber@univ.haifa.ac.il