PhD research topic proposal

BME, Doctoral School of Mathematics and Computer Science

Name and degree of supervisor :

Bolla Marianna, Dsc.

Are you willing to supervise Stipendium Hungaricum applicants?

Not

Title of the topic:

Belief propagation for bond percolation and the spectra of Hashimoto matrices

Short description:

Classical spectral clustering considers the spectra of the Laplacian or modularity matrices assigned to the graph and uses the eigenvectors corresponding to the structural eigenvalues to find assortative clusters of the vertices. These spectra are mainly capable to find clusters of dense graphs. Recent results show that for sparse gaphs the spectrum of the so-called Hashimoto matrix is more capable for clustering purposes. The main objective of the proposed research is to study the spectral properties of this matrix and find percolation thresholds when the clusters can be distinguished by belief propagation.

Requirements:

MSc diploma

Contact:

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Place of work:

Dept. Stochastics, Inst. Mathematics, Budapest University of Technology and Economics