
JASON LI, Carnegie Mellon University
Deterministic Mincut in Almost-Linear Time

We present a deterministic (global) mincut algorithm for weighted, undirected graphs that runs in $m^{1+o(1)}$ time, answering an open question of Karger from the 1990s. To obtain our result, we de-randomize the construction of the skeleton graph in Karger's near-linear time mincut algorithm, which is its only randomized component. In particular, we partially de-randomize the well-known Benczur-Karger graph sparsification technique by random sampling, which we accomplish by the method of pessimistic estimators. Our main technical component is designing an efficient pessimistic estimator to capture the cuts of a graph, obtained by the expander decomposition framework (Goranci et al.)