CS 0368-4246: Combinatorial Methods in Algorithms (Spring 2025)   April 21, 2025

Lecture 5: Property Testing and Sublinear-Time Algorithms

Instructor: *Or Zamir*

Homework Questions

1. A graph is called **Biclique** if it is a complete bipartite graph for some partition (that is, $G = K_{s,n-s}$ for some $1 \leq s \leq n-1$). Design a property tester for whether a graph is a Biclique or ε-far from being one.

2. Generalize the triangle removal lemma from class to the general graph removal lemma. Let H be a graph with a fixed number h of vertices, and $\varepsilon > 0$, then there exists some $\delta = \delta(\varepsilon, H) > 0$ such that any graph that is ε-far from being H-free must contain at least δn^h copies of H.