Looking for graduate students and postdoctoral researchers

for a TUBITAK research project

Project Title: Criticality in packing coloring of graphs

Principal Investigator: Prof. Didem Gözüpek

Duration: 2,5 years (2024-2027)

Required background: A BS/MS/PhD degree from computer engineering, computer science, mathematics, or industrial engineering. A basic course in graph theory is a plus.

(Although Gebze Technical University graduate students have a priority, applications from other universities are also welcome)

(Part-time scholarship is possible for students who have a full-time job)

Project summary:

Graph theory is a broad and interdisciplinary field with applications in areas like computer science, telecommunications, biology, and social sciences. A graph consists of vertices and edges, with a *"proper coloring"* ensuring adjacent vertices have different colors. *"Packing coloring"* is a specific coloring where vertices of the same color must be a certain distance apart, and the "packing chromatic number" is the minimum number of colors needed for this purpose.

This project focuses on studying criticality in packing coloring of graphs, where removing a vertex or edge impacts the packing chromatic number. It aims to characterize and recognize packing-critical graphs, especially those with a radius of 2, and analyze how graph operations affect their properties. The project also explores edge removal in S-packing coloring, extending previous research, and examines graphs with minimal packing coloring gaps.

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