

# Analysis of Algorithms

## Homework V

November 4, 2025

1. Skip List

- (a) Implement in C the skip list data structure,
- (b) And see if the calculated complexities are correct for insertion, deletion and search operations by using a large enough random dataset of insertions, deletion and searches. Please, try to obtain an average to each instruction and compared with the calculated complexities.

2. Implement in C the Bellman-Ford Algorithm:

- (a) Test against a suitable large random graph and analyze its running time.
- (b) Generate a graph with a negative weight cycle and see what happens with the algorithm

3. Implement in C the Dijkstra's algorithm Algorithm:

- (a) Test against a suitable large random graph and analyze its running time.