



# Mobile Computing

## Exercise 6

Assigned: June 23, 2003

Due: June 26, 2003

### 1 Degree of Euclidean Graphs

In the lecture the four Euclidean graphs Minimum Spanning Tree (w.r.t. the Euclidean length of edges) MST, Relative Neighborhood Graph RNG, Gabriel Graph GG, and Delaunay Triangulation DT have been introduced. Which of these four graphs has degree bounded by a constant? Give a reasoning if you think a graph has bounded degree, or draw a counterexample if you believe a graph can have unbounded degree.

### 2 Gabriel Graph Spanner Property

You have seen in the lecture that the Gabriel Graph GG contains the energy-minimal paths (and is therefore an energy-spanner with spanning factor 1). Do you think GG is also a Euclidean spanner, i.e. with respect to the Euclidean length of edges? If you think so, give a reasoning; if not, provide a counterexample.

### 3 Geometric Routing

Which graph is used for the geometric routing as presented in the lecture and why? Could we use any of the other described Euclidean graphs? Why (not)? What would we lose using a different graph?