

**TEAM NAME:** R-Tartu

**TITLE OF THE PROJECT:** R-tree search based for Tartu public transport system.

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**ABSTRACT:** Geospatial data structures is a domain with multiple options. This project aims to find the most optimal for locating closest points of interest based on a user location whose value would change as the user is moving across the city. For this proposal, the point of interest would be the public transport stops in Tartu. If time allows, create a webapp.

**DESCRIPTION:** First, research on the field of geospatial data structures will be conducted, in order to find optimal algorithms for searching and ingesting new location on the data structure, followed by ram consumption and scalability of the algorithm to hold from tens to millions of locations.

Based on this principle we aim to develop a search based on Tartu public transport stops. The user will introduce the location, in coordinates, and our model will return the closest or recommended stops according to some search parameters. The information about public transport is public available ([here](#)). The very first steps of the project will be command line based.

For a most advanced visual representation, a very simple approach would be making use of Google Maps documentation ([here](#)) to use the embedded functionalities to display our results.

#### **TIMELINE:**

The updated timeline could be founded here: [Data structures timeline](#)

Week	Description	Milestone
1 19/12 - 15/12	Initial research of geospatial algoritms and SOTA	Obtain 3 algorithms implemented for storing, accessing and deliting points of interest
2 16/12 - 22/12	Define performance analysis metrics for ranking the algorithms.	Rank the three algorithms base on the performance metrics, define wich is better in terms of scalability.
3 23/12 - 29/12	Christmas break	
4 30/12 - 5/01	Use case, Tartu public transportation implementation	Get a real API and a UI (Linux CLI or visual interface)
5 6/01 - 12/01	Write paper	Paper and poster
6 13/01 - 16/01	Final details	

#### **IDEAS:**

- Algorithms performance differences and description

- Simulation of millions of request and performance degradation.
- Let the user use the application / cli to interact with the solution.