

1st Programming Assignment
CS562 – Advanced Database Applications
Due: March 18, 2020 at 11:59PM using Gradescope

In this assignment you are requested to implement the **Skyline computation** in a database that stores points in the form of an **R-tree**. You are given an R tree implementation in Java to facilitate your work. As mentioned during the lectures and labs, R trees are data structures used for spatial access methods.

You can use either the R-tree implementation provided [here](https://github.com/davidmoten/rtree) (<https://github.com/davidmoten/rtree>), find another one online or develop your own. You are required to **modify this R-tree implementation by adding the Branch and Bound algorithm in order to compute the Skyline**. To find more information about the details of this algorithm download the slides from lab 4 and read the **Skyline paper** ([this paper](#)). You will also need to download the dataset1 ([this dataset](#)) and insert all points in the R-tree. To receive full credit, you must implement the algorithm in such a way that the skyline will **dynamically adapt to changes in the database (i.e., insertions and deletions)**. The purpose of the above is to implement a method that returns the skyline points when requested. Furthermore, you could **visualize the results** for presentation purposes.

You are required to write an executable file that parses the given dataset, inserts the points in the R-tree and then calls the skyline method you implemented.

Your implementation should follow the structure of the given code. Part of the evaluation is your ability to understand the code and integrate your own into it.

Assignments must be completed by group. Discussion of issues is encouraged, but representing the work of another person as your own is expressly forbidden. This includes "borrowing", "stealing", copying programs/solutions or parts of them from others. We will use an automated plagiarism checker. Cheating will not be tolerated under any circumstances. Handing in your own work a day or two late will affect your grade far less than turning in a copy of someone else's work on time!

References: <http://delab.csd.auth.gr/papers/IISA2015tpm.pdf>