

Emnekode: PIT9206

Emnenavn: Evolutionary Computation and Search-Based Software Engineering

Vurderingskombinasjon:

Utlevering/innleveringsdato:

Filformat: zip file

The exam is to deliver a project which must be submitted as **a zip file** (i.e., .zip). The exam project is to apply search-based techniques to solve a software engineering problem, and conduct an experiment to compare the different techniques (based on performance metrics related to the chosen SE problem, e.g., code coverage for software testing).

The exam project is divided into two parts.

Part 1. Experiment

The student either needs to implement a search algorithm for a SBSE problem, or use an existing SBSE tool (e.g., EvoMaster and EvoSuite) to carry out an empirical experiment. Either two search algorithms are compared, or two values of a parameter in an existing tool are compared (e.g., different rate of mutation or crossover rate). To take into account the randomness of the algorithms, experiments need to be repeated several times (e.g., 10).

Part 2. Analysis

The student must provide a report (in PDF format), built with Latex, to discuss the experiments.

The submitted zip file must contain the **raw output data** of the experiments, **an R script**, and **an analysis report in Latex format**, as well as the **generated PDF** file from it. Note: the PDF should be buildable from the provided Latex files, but, just to be sure, also provide the generated PDF.

You must submit raw data produced in your experiments, and implement an R script which can perform statistical analyses on the raw data and generate tables or figures for visualizing the analyzed results.

In the analysis report, you must describe:

- the optimization problem you solve.
- the experiment design, such as, baseline selection, configurations to compare, stopping criterion and repetition (e.g., 10 times).
- results by one or more statistical tests represented in tables/figures.
- explanation and interpretation based on the results.
- conclusion.

There is no specific limit on the size of the report. However, try to aim to be between 3 and 5 pages.