Machine Learning based Code Smell Detection through WekaNose

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- ***Why this tool?***

Code smells can be subjectively interpreted, the results provided by detectors are usually different, the agreement in the results is scarce and a benchmark for the comparison of these results is not yet available.

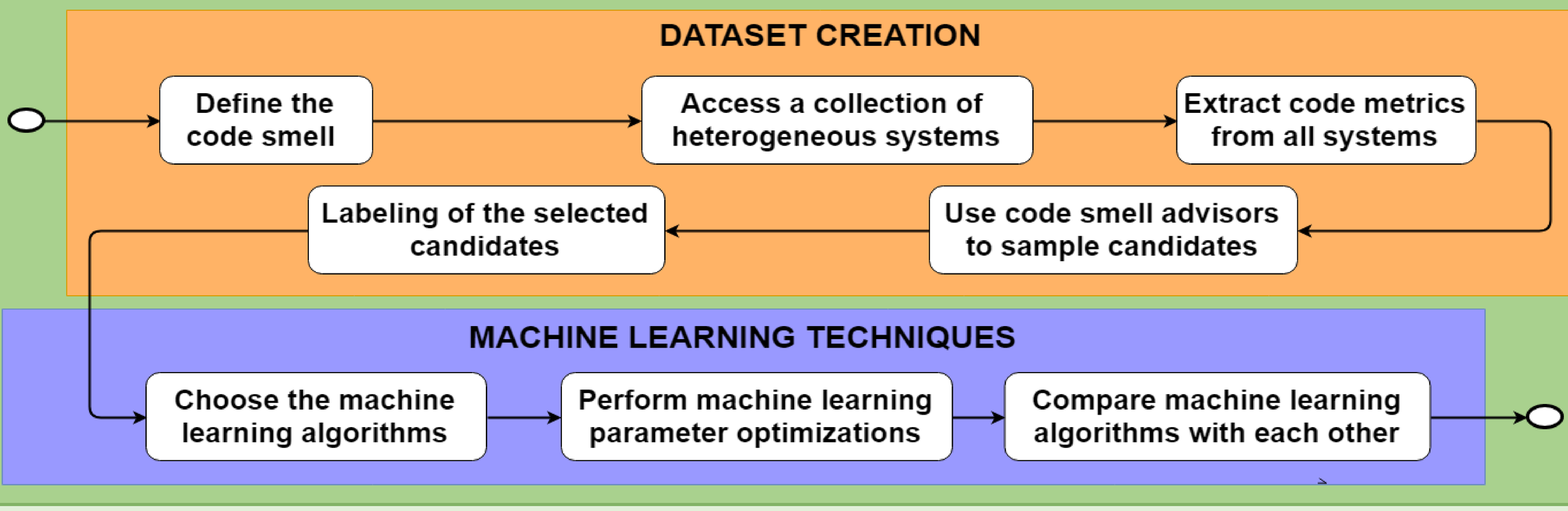
- ***What is the problem?***

The main approaches used to detect code smells are based on the computation of a set of metrics. However code smell detectors often use different metrics and/or different thresholds, according to their detection rules. As result of this inconsistency the number of detected smells can increase or decrease accordingly, and this makes hard to understand when a certain characteristic identifies a code smell or not.

- ***What is it for?***

WekaNose is a tool that allows to perform an experiment to study code smell detection through machine learning techniques. The experiment's purpose is to select rules and/or obtain trained algorithms, that can classify an instance (method or class) as affected or not by a code smell. These rules have the main advantage of being extracted through an example-based approach, rather then a heuristic-based one.

Flow graph of the experiment



Main features:

- **supports a semi-automated work-flow which aims to study the code smells through a machine learning approach;**
- **exploits supervised machine learning techniques, to support a learn-by-example process;**
- **exploits the full interpretability of code smells .**

Future Development:

- **take in consideration more metrics;**
- **make WekaNose compatible with already existing code smell detectors;**
- **develop a benchmark platform for comparing code smells detection results and the performances of different tools;**
- **extend WekaNose by considering other code smells or other issues as antipatterns and architectural smells.**

For any further information:
Website: http://essere.disco.unimib.it/wiki/wekanose
Video-Demo Tutorial: https://www.youtube.com/watch?v=cUKwipHZDuY

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