

Individual Assignment

Deadline: December 30th, 2022, 23:59

1 Introduction

In this assignment, you will write a critical literature review. As a scientist it is important to keep track of your sources: whatever goes in your mind influences you. For others to be able to understand what you know, it is necessary to show where you learned what. Paraphrasing Plato [?]: if you know something, then either you discovered it yourself (and must be able to explain what experience you had), or you learned it from someone (and must be able to say from whom).

Present your sources in a bibliography: books and scientific (conference) articles. Also web resources (such as hypertext and video) are considered “literature”. Indicate per source what you think about its **authority** (does the source have a good or bad reputation?), **reliability** (were you able to find any factual errors or omissions or missing citations, or is the source absolutely accurate?), **usefulness** (did you learn anything from this source or was it a total waste of time?), and **pleasure** (was the source dense and difficult to go through, or was the source delightful and easy-going?).

Then, make a selection of concepts (some of which are listed below for your convenience) that sufficiently spans the concepts as they were introduced during the whole course. For each selected concept, write, in your own words, what the concept means: your written explanation should be **understandable** to your fellow students, and should be **succinct** but still **complete**. You should indicate where you obtained this knowledge from and where the reader may find more information (i.e. use references to your sources). You may use examples to clarify the meaning of concepts. You may also write about interrelations between concepts in the same manner as the concepts in itself.

The assignment is written individually using LaTeX and its PDF output is submitted by in Brightspace. You could use the Overleaf tool for writing the paper, but any other LaTeX editor is fine too. The LaTeX document must use the standard *article* document class: do not change the page geometry or margin sizes. Make sure to include your name and student number on the first page. For inserting references to sources, you should make use of BibTeX and use the *plain* referencing format. The article ends with a bibliography section that LaTeX/BibTeX can automatically produce [1].

2 Concepts

Here is an (incomplete) list of concepts: **formal language, translation, interpretation, compilation, grammar, context-free grammar, Backus-Naur Form, abstract syntax trees, ambiguity, syntactic sugar, substitution, recursive-descent parsing, denotational semantics, operational semantics, referential transparency, compositionality, variables, variable occurrence, variable binding, scoping, variable capturing, aliasing, shadowing, expressions, purity, side-effects, (short-circuit) evaluation, control structures, blocks, loops, breaking, returning, labeling, assignments, overloading, coercions, casting, overflows, underflows, simple data types (Booleans, characters, integers, floats), complex data types (strings, arrays, slices, lists, maps, records, tuples, free unions, discriminated unions), pointers, references, procedures, functions, methods, lambdas, closures, continuations, abstract data types, inheritance, dynamic dispatch, subtyping, type systems, type checking, type inference, type parameters, generics, covariance, contravariance, exceptions, exception handling, events, event handling, components, composition over inheritance, concurrency, forking, shared memory, critical section, thread barrier, multiprocessing, atomicity, caching, nodes, channels, message passing, actors, predicates, constraint solving, unification, resolution, theorem proving, et cetera.**

3 Evaluation criteria

The paper submitted must be **between 4 and 10 pages long** (excluding bibliography): this requires you to make a selection of concepts to fit within the allowed page limit. One strategy might be to start summarizing all concepts first (this is a good exam preparation too!). Another strategy is to pick those concepts that you can relate in some way with one another.

The submission will be evaluated on the following criteria:

- Completeness and correct descriptions of concepts (soft criterium, 30%): are enough concepts covered? Are concepts clearly and correctly described in your own words?
- Critical evaluation of sources (soft criterium, 30%): did you critically evaluate the sources you used? Are sources clearly indicated in your explanations of concepts? Is the bibliography formatted correctly?
- Readability (soft criterium, 40%): are there no spelling mistakes, no grammatical mistakes, and is the paper written to be understandable to your fellow students?

References

- [1] Referencing, citing, and structuring bibliographies. <https://libguides.rhul.ac.uk/referencing/latex>. Accessed: Thu, Oct 13th, 2022.