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Syntactic and semantic analysis for extended feedback on computer graphics assignments

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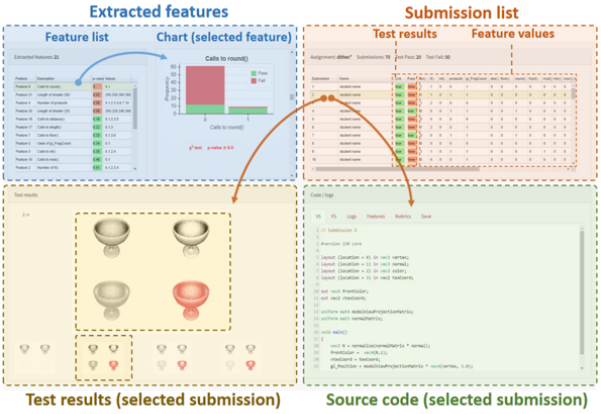

Modern computer graphics courses require students to complete assignments involving computer programming. The evaluation of student programs, either by the student (self-assessment) or by the instructors (grading) can take a considerable amount of time and does not scale well with large groups. Interactive judges giving a pass/fail verdict do constitute a scalable solution, but they only provide feedback on output correctness. In this article, we present a tool to provide extensive feedback on student submissions. The feedback is based both on checking the output against test sets, as well as on syntactic and semantic analysis of the code. These analyses are performed through a set of code features and instructor-defined rubrics. The tool is built with Python and supports shader programs written in GLSL. Our experiments demonstrate that the tool provides extensive feedback that can be useful to support self-assessment, facilitate grading, and identify frequent programming mistakes.

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