Feedback in Context: Using a Code Review Tool for Program Grading by Mary Elaine Califf and Nick Dunne

Alexandru Cantor, Andrei Cotor, Alex Pop

March 30, 2024

To increase the quality of student feedback in programming courses, Califf and Dunne explore the adaptation of a professional code review tool, Code Review for Visual Studio Code, for educational purposes, specifically for grading student programs. Their motivation stems from the need to provide meaningful formative feedback that goes beyond mere assignment grades, by linking comments directly to relevant code segments. This approach is intended to address the challenge of offering context-rich feedback in programming education, which has been recognized as a significant obstacle in both the efficiency and effectiveness of learning and teaching.

The innovation of their tool lies in its ability to provide feedback that is both specific and contextual to the code being reviewed, thereby making it significantly more helpful than traditional feedback methods. The tool's design allows for feedback to be categorized and directly associated with code segments, aligning with rubric categories used for evaluation. This alignment facilitates a clearer understanding for students of how their work meets the course criteria. The novelty also includes the ease of setup and use of the tool, making it a practical solution for educators. Their study reports an overwhelmingly positive response from students, who found this method more beneficial compared to feedback received in other programming courses, highlighting the tool's potential to enhance learning outcomes and programming skills.

Validation of the tool's effectiveness was conducted through a survey of students in an upper-level algorithms and data structures course. Over 80% of respondents acknowledged the tool's superior utility in providing feedback, noting improvements in their learning and programming abilities. The validation process underscored the tool's role in facilitating a better

understanding of programming concepts and errors, fostering an environment where students are more inclined to engage with and act on the feedback provided. The study concludes with a reflection on the success of integrating the Code Review tool into the grading process, evidencing its potential to transform programming education by making feedback more meaningful and actionable for students.