Plagiarism Deterrence in CS1 Through Keystroke Data

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Summary

This paper investigates an approach to dissuading and preventing plagiarism in CS1. The authors expressed that view that while catching plagiarism after it has already occurred is a necessity on the part of the universities, students are better helped when they are required to turn in a log of keystroke data together with their programs.

Students recruited into this research were allowed to install some plugins to their programming IDEs that capture their keystrokes that show step-by-step playbacks of their assignments. The authors also explored privacy issues, the temptation to plagiarize, general attitude and the anxieties that comes with using the students' keystroke data for plagiarism detection. In the end, it was found that students are less likely to plagiarize when they are required to turn in keystrokes along with their programs.

Familiarity

I have a high familiarity with the paper as my current research leverages keystroke data, and I have taught CS1 courses before where I used MOSS software to carry out plagiarism checks.

Strengths & Weaknesses

Strengths:

- The paper presents an innovative approach to the use of keystroke data as a means to deter plagiarism which is an important issue in computing education. This innovation offers a unique perspective on plagiarism prevention.
- Another key strength of this article is the discussion of privacy concerns related to keystroke data collection. The authors provide a detailed explanation of the measures taken to address these concerns. This transparency is valuable in addressing potential ethical issues.
- The survey conducted among students provides insights into their attitudes, temptations, and perceptions related to plagiarism and keystroke data. This data enriches the discussion and supports the findings.

Weaknesses:

- The article focuses on data from a single university and a single instructor, which may limit the generalizability of the findings. More diverse data sources could strengthen the research's validity.
- While the article mentions the potential for keystroke data to detect plagiarism, it does not provide in-depth analysis or examples of how this was done. Including specific cases or examples would have added depth to the discussion, such as copy and paste identification using inserted and deleted keystrokes.
- While the article mentions student anxiety related to keystroke data, it does not delve deeply into this aspect. A more extensive exploration of the causes and potential solutions to student anxiety could enhance the article's comprehensiveness.

Impact

The article lays the foundation for further research in the field of plagiarism detection and deterrence using keystroke data. Future studies may explore the effectiveness of this approach in different educational contexts and disciplines. As technology evolves, keystroke logging and analysis tools may become more sophisticated, potentially enhancing their capabilities in deterring and detecting plagiarism. Therefore, Institutions and instructors may consider adopting keystroke data collection as a standard practice for assessing student work in computer science and related fields. This research may also contribute to discussions about academic integrity and the role of technology in maintaining it, leading to the development of best practices and guidelines for educators.

Presentation/Grammar

The overall presentation of the article is clear, with a well-structured layout that guides the reader through the research process.

Audience

The audience for this article includes:

- Students: It would be of utmost benefit to the students to learn that keystroke data together with their codes helps them to check plagiarism. This would boost their confidence levels and ability to program without plagiarism issues.

- Computer Science Educators: Educators in computer science and related fields can benefit from the insights provided in the article. They may consider implementing keystroke data collection as a means to deter plagiarism in their courses.

- Educational Researchers: Researchers interested in exploring new methods of plagiarism detection and student behavior in programming courses may find the article's approach and findings relevant to their work.

- Academic Institutions: Universities and colleges dealing with academic integrity issues, especially in computer science departments, may be interested in the potential benefits of using keystroke data for plagiarism deterrence.

- Educational Technology Developers: Developers of educational technology tools and plugins, including IDE plugins, may find the article's discussion of the keystroke logging software and its availability relevant to their work.

Overall

I highly recommend this research. Overall, the article presents an interesting and innovative approach to plagiarism deterrence in computing education. Essentially, the study suggests that collecting and using keystroke data alongside traditional code submissions may be an effective approach to reduce plagiarism in computer science education. It also raises important considerations about privacy and student trust.