Abstract: Visual languages have been widely used to help people create animation programs. However, current programming environments lack features supporting efficient code exploration and program comprehension, particularly for understanding relationships among parts of animation programs. In this paper, we present novel interactive visualizations aimed at helping people to understand animation programs. We conducted an empirical study to evaluate the impact of these visualizations on programmer comprehension of the code, showing that our approach enabled programmers to comprehend more information with less effort and in less time. This result is potentially significant because it demonstrates an approach for helping users to explore and understand animation code. We anticipate that this approach could be applied in a wide variety of animation programming tools, which could ease common animation programming tasks that require understanding code.
Highlights

- We present a new tool to aid comprehension of Scratch animation programs.
- These visualizations depict relationships among parts of programs.
- The tool doubled programmers’ efficiency in program comprehension.
- Furthermore, the tool improved perceived usability.
- The approach could be applied in a variety of animation programming tools.