

Author Guidelines for 8.5 x 11-inch Proceedings Manuscripts

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Abstract

The abstract is to be in fully-justified italicized text, at the top of the left-hand column as it is here, below the author information. Use the word "Abstract" as the title, in 12-point Times, boldface type, centered relative to the column, initially capitalized. The abstract is to be in 10-point, single-spaced type, and up to 150 words in length. Leave two blank lines after the abstract, then begin the main text.

(Ludi)

1. Introduction

Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually and independently scrutinized for proper operation. A unit test provides a strict, written contract that the piece of code must satisfy. As a result, it affords several benefits. Unit tests find problems early in the development cycle.

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A main objective of structural software testing is to achieve full or at least high code coverage such as statement coverage [1] and block coverage [7] of the program under test.

A passing test suite that achieves high code coverage not only indicates the thoroughness of the testing but also

provides high confidence of the quality of the program under test. Dynamic Symbolic Execution(DSE) [3,6,8] is a variation of symbolic execution, which systematically explores feasible paths of the program under test by running the program with different test inputs to achieve high structural coverage. It collects the symbolic constraints on inputs obtained from predicates in branch statements along the execution and rely on a constraint solver, Z3 for Pex [9] and STP [5] for KLEE [2], to solve the constraints and generate new test input for exploring new path. Currently, DSE works well in generating inputs for methods or parameterized unit tests with parameters of primitive type. However, when applying in object-oriented code, DSE could not easily generate inputs to achieve high structural coverage due to their little support for method sequence generation and floating point arithmetic, huge search space of feasible paths caused by loops and dependence of external library. Tackling these problems require complex analysis of the program and algorithms to find out solutions from a large possible space. But human, especially developers who write the program, could figure out the solution in a short time if provided the branch and statement coverage information with the relevant issues.

Existing tools, like Pex, could report every issue encountered during the exploration, but some of the issues are actually not the cause of the problem. This will usually result in a long list of unordered issues, which makes it time consuming and tedious for user to figure out which action should be taken for guiding the DSE tool to increase the coverage.

2. Example

(Ludi)

All printed material, including text, illustrations, and charts, must be kept within a print area of 6-1/2 inches (16.51 cm) wide by 8-7/8 inches (22.51 cm) high. Do not write or print anything outside the print area. All *text* must be in a two-column format. Columns are to be 3-1/16 inches (7.85 cm) wide, with a 3/8 inch (0.81 cm) space between them. Text must be fully justified.

A format sheet with the margins and placement guides is available as both Word and PDF files as <format.doc> and <format.pdf>. It contains lines and boxes showing the margins and print areas. If you hold it and your printed page up to the light, you can easily check your margins to see if your print area fits within the space allowed.

3. Open Source Project Under Test

(Xiao)

The main title (on the first page) should begin 1-3/8 inches (3.49 cm) from the top edge of the page, centered, and in Times 14-point, boldface type. Capitalize the first letter of nouns, pronouns, verbs, adjectives, and adverbs; do not capitalize articles, coordinate conjunctions, or prepositions (unless the title begins with such a word). Leave two 12-point blank lines after the title.

4. Benefits

(Xiao)

Author names and affiliations are to be centered beneath the title and printed in Times 12-point, non-boldface type. Multiple authors may be shown in a two- or three-column format, with their affiliations italicized and centered below their respective names. Include e-mail addresses if possible. Author information should be followed by two 12-point blank lines.

5. Categorization

(Ludi)

(Not amenable)

6. Helper (xiao)

Wherever Times is specified, Times Roman or Times New Roman may be used. If neither is available on your word processor, please use the font closest in appearance to Times. Avoid using bit-mapped fonts if possible. True-Type 1 fonts are preferred.

7. Limitation(Xiao)

Type your main text in 10-point Times, single-spaced. Do **not** use double-spacing. All paragraphs should be indented 1/4 inch (approximately 0.5 cm). Be sure your text is fully justified—that is, flush left and flush right. Please do not place any additional blank lines between paragraphs.

Figure and table captions should be 10-point boldface Helvetica (or a similar sans-serif font). Callouts should be 9-point non-boldface Helvetica. Initially capitalize only the first word of each figure caption and table title. Figures and tables must be numbered separately. For example: “Figure 1. Database contexts”, “Table 1. Input data”. Figure captions are to be centered *below* the figures. Table titles are to be centered *above* the tables.

8. First-order headings

For example, “1. Introduction”, should be Times 12-point boldface, initially capitalized, flush left, with one blank line before, and one blank line after. Use a period (“.”) after the heading number, not a colon.

8.1. Second-order headings

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8.1.1. Third-order headings. Third-order headings, as in this paragraph, are discouraged. However, if you must use them, use 10-point Times, boldface, initially capitalized, flush left, preceded by one blank line, followed by a period and your text on the same line.

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they are referenced. Use Times 8-point type, single-spaced. To help your readers, avoid using footnotes altogether and include necessary peripheral observations in the text (within parentheses, if you prefer, as in this sentence).

10. References

List and number all bibliographical references in 9-point Times, single-spaced, at the end of your paper. When referenced in the text, enclose the citation number in square brackets, for example [1]. Where appropriate, include the name(s) of editors of referenced books.

[1] A.B. Smith, C.D. Jones, and E.F. Roberts, "Article Title", *Journal*, Publisher, Location, Date, pp. 1-10.

[2] Jones, C.D., A.B. Smith, and E.F. Roberts, *Book Title*, Publisher, Location, Date.

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