This paper proposed a search-based automatic test data generation technique that uses the activity diagram of the system under test (SUT), focusing on its data flow. The proposed method firstly takes the activity diagrams (ADs) of the SUT as input, which are converted into XML documents, then based on the ElementTree (obtained by parsing XML documents), automatically analyzes the flow of data among the activities to identify the def-use pairs. Finally, a GA is applied to generate test data and make the test cases executable. The effectiveness, statement and branch coverage of proposed technique were evaluated with three open-source software systems, and the performance of proposed technique was compared with two baseline techniques including DFAAD and EvoSuite. The results of experiment showed that the improved fault-detection performance of the proposed technique, which was 11.1% better than DFAAD and 38.4% better than EvoSuite, although the techniques did not differ significantly in terms of statement and branch coverage.

In general, the presentation is good, and the motivation of the research is clear. It is easy to follow the main idea of the proposed technique.

The reviewer has the following concerns which should be further addressed:

1. The performance of proposed technique was compared with DFAAD and EvoSuite. The authors should explain why DFAAD and EvoSuite are used as baselines, and give a brief description of baselines.
2. The test case generation overhead is also an important criterion for evaluating test techniques. Therefore, the author should calculate the time cost of generating test cases and compare them with the baselines.

Minor Revision