National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Multi-Modal Software Fault Localizer using Structural Source Code Features
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Venue	: Conference Hall, (CS - 323), Department of CSE
Date and Time	: 05 Feb 2025 (11:00 AM)

Abstract : Software failures in applications result in significant costs for organizations, making it essential to identify and fix defects efficiently. Software fault localization, i.e., the process of pinpointing the location of bugs, helps developers reduce debugging and maintenance efforts. Automated fault localization further accelerates bug finding and patching. Recent studies leverage artificial neural networks (ANNs) for fault localization, typically using binary branches and functions coverage data to train the models. However, the proposed approach enhances the performance of fault localizer by considering the number of times each branch and function are covered. The Siemens suite is employed for experiments and evaluations. A key finding of this research is that the equal (50%) split of training and testing data contributes to the higher model performance instead of 7:3 and 8:2 split. It is mainly due to presence of similar training samples in the training set leading to overfitting of the trained model. After testing, the proposed MMFL model successfully identifies all bugs in every program version, requiring just 16% of the code lines to be scanned, which is significantly less than the amount needed by current state-of-the-art methods.