

2018 Research Interest/Project Ideas

Roopsha Samanta (Assistant Professor)

<https://www.cs.purdue.edu/homes/roopsha/>

Data-driven Repair of Web Applications

PHP web applications are ubiquitous, error-prone and especially susceptible to security vulnerabilities. While automated techniques for analysis, fault localization and repair of PHP applications have seen some success, the problem is far from solved. For instance, most repair approaches are restricted to manually identified code transformations for specific classes of bugs. Inspired by the success of data-driven repair of programs written in C, Java or C#, this proposal seeks to develop PHPFix: a framework for data-driven repair of real-world PHP-based server-side programs. The project will explore different program representations, probabilistic models and machine learning algorithms suitable for the domain of PHP applications. For training and evaluation, we will rely on the many open source PHP web applications that are available along with revision histories, documented bugs and patches.

In the near future, we plan to build on the results from this project to target web applications based on Javascript as well.