



NIT·PATNA

DEPARTMENT OF  
COMPUTER SCIENCE  
& ENGINEERING

Expert talk by

## Dr. Aravind Prakash

Associate Professor, Department of Computer Science, Binghamton University, State University of New York, New York, USA.

**Automated Program Analysis  
with and without Source Code**



**7th April at 11:30 AM, Meghnad Saha Hall, NIT Patna**

*Dr. Prakash has multiple Research Assistant (PhD and MS) and Research Associate (Post-Doc) openings in his research group. In this regard, he will be interacting with interested B.Tech, M.Tech and Ph.D. scholars on 7th April, 2022.*

*To register: <https://forms.gle/Xad4rzF7yqBAQBzF9>*

For queries :

Akshay Deepak, akshayd@nitp.ac.in

Jyoti Prakash Singh, jps@nitp.ac.in

Please prefix “Expert talk by Dr. Aravind Prakash” in the subject

## **Talk Abstract:**

Security is a constantly evolving game of cat and mouse between the attackers and the defenders. Automated program analysis is a highly effective approach in understanding the inner-workings of a software program. It is widely used to detect bugs and vulnerabilities in code. Precision, robustness and low-overhead are key to success and widespread adoption of a security solution. In this talk, Dr. Prakash will present two solutions—PieceWise and DeClassifier—that represent the state of the art in automated program analysis from two distinct perspectives: that of a developer where source code is available, and that of an end-user where source code is unavailable (i.e., binary analysis becomes necessary).

The PieceWise compiler toolchain caters to the needs of a software vendor when source code is available. It incorporates static points-to and dependency analysis during compile time in combination with load time (i.e., late-stage) dependency pruning to substantially reduce the attack surface for code-reuse attacks. Whereas DeClassifier is a binary analysis platform that consumes a commercial-off-the-shelf C++ binary executable and recovers rich security-sensitive semantics (such as class inheritance tree) critical in enforcing end-point security. In the latter part of the talk, Dr. Prakash will present his ongoing work on supplementing program analysis with AI. Specifically, he will present problems where AI techniques show promise to substantially improve robustness of program analysis.

**Brief Bio:** Dr. Aravind Prakash is an associate professor of Computer Science at Binghamton University. He joined BU in 2015 after graduating with a Ph.D. from Syracuse University where he was awarded the All University Doctoral Prize. His research spans multiple areas of computer and mobile security with emphasis on program analysis. He is a recipient of the CAREER award from the National Science Foundation. His research is funded by organizations such as the US National Science Foundation, Office of Naval Research and DARPA. Along with