VIRTUAL SEMINAR SERIES

Kexin Pei

JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

Computer Science

"Scalable, Accurate, Robust Binary Analysis with Transfer Learning Trace Modeling"

📅 Thursday, October 7, 2021

🕐 10:45 AM - 12:00 PM

▮▮▮ https://wse.zoom.us/j/94272825614
Meeting ID: 942 7282 5614

ABSTRACT

In this talk, Pei will describe two of his recent projects that learn program operational semantics for various binary analysis tasks. His key observation is that by designing pretraining tasks that can learn how binary programs execute, we can drastically boost the performance of binary analysis tasks. His pretraining tasks are fully self-supervised -- they do not need expensive labeling effort. Therefore, his pretrained models can use diverse binaries to generalize across different architectures, operating systems, compilers, and optimizations/obfuscations. Extensive experiments show that Pei's approach drastically improves the performance of tasks like matching semantically similar binary functions and binary type inference.

BIOGRAPHY

Kexin Pei is a fifth-year Ph.D. student at the Department of Computer Science, Columbia University. He is co-advised by Suman Jana and Junfeng Yang, and works closely with Baishakhi Ray. He is broadly interested in Security, Systems, and Machine Learning, with the current focus on developing ML architectures to understand program semantics and using them for program analysis and security.

HOW TO REACH US

✉ Contactus@cs.jhu.edu
☎ 410-516-8775
🌐 cs.jhu.edu

Johns Hopkins University
Department of Computer Science
3400 N. Charles St | Malone 160
Baltimore, MD 21218