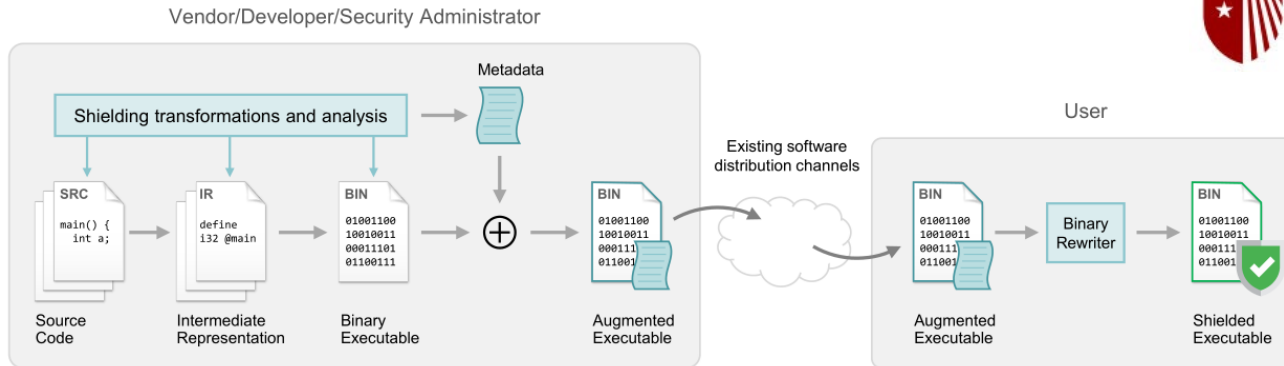


# CAREER: Principled and Practical Software Shielding against Advanced Exploits



Award Number: 1749895  
(2018–2023)  
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## Challenge

- The continuous discovery of zero-day vulnerabilities, and the lack of effective defenses against recent exploitation techniques that leverage memory disclosure vulnerabilities, necessitate the development of additional defense mechanisms

## Solution

- Design principled software shielding techniques that are readily applicable to commodity software and systems
- Three synergistic thrusts: code specialization, sensitive data protection, and binary executable augmentation

## Scientific Impact

- Consideration of the latest exploitation advancements: disclosure-aided exploitation and data-only attacks
- Hardware-assisted implementation by leveraging recent and upcoming processor features
- Focus on practical considerations, such as operational compatibility and non-disruptive deployment

## Broader Impact and Broader Participation

- Software prototypes readily applicable on third-party applications for both end users and researchers
- Participation and outreach programs through Stony Brook's Center for Inclusive Education (CIE) for undergraduate and graduate students, and Institute for STEM Education (I-STEM) for high school students