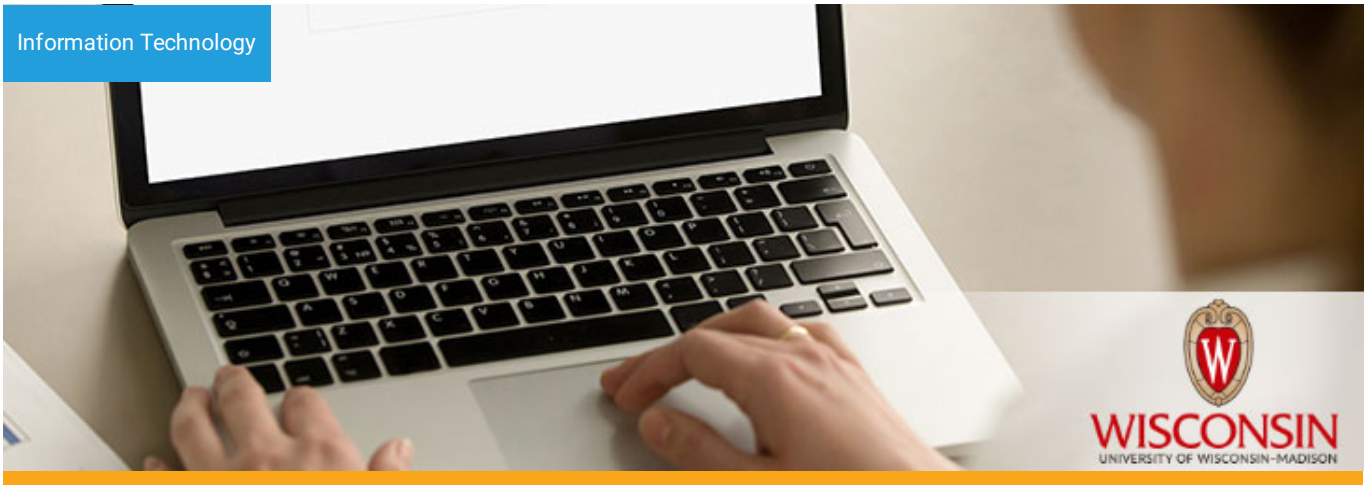
Information Technology



COMPUTER IMPLEMENTED PROGRAM SIMPLIFICATION

View U.S. Patent Application Publication No. US-2022-0357933 in PDF format.

WARF: P210211US02

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The Invention

UW researchers created a computerized system for specializing programs based on a predefined set of desired program functions, thus reducing program bloat while ensuring the soundness of the resulting program. The process relies on the observation that programs can be divided into two components: configuration logic and main logic, the division point is called a program “neck". The process performs partial interpretation of a program up to the “neck". The partial interpretation provides a set of variable states at the “neck" that can be reduced to constant values and propagated through the program. The constant-value propagation reveals program instructions that can be eliminated through optimizing transformations. The result is a shorter and substantially simpler program, which can reduce attack surface and optimize its performance

Applications

Software for debloating programs
Programs running on performance constrained devices can leverage this
IoT devices would especially benefit

Key Benefits

Reduces number of functions to “debloat” programs
Improves application performance
Enhances security
Reliable and user friendly

Additional Information

For More Information About the Inventors

- Somesh Jha
- Thomas Reps

Publications

- Alhanahnah M, Jain R, Rastogi V, Jha S, Reps T. Lightweight, Multi-Stage, Compiler-Assisted Application Specialization. arXiv. 2021.

Tech Fields

- Information Technology : Computing methods, software & machine learning

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842