# NSF CURRENT AND PENDING SUPPORT

PI/co-PI/Senior Personnel: Shao, Zhong

# PROJECT/PROPOSAL CURRENT SUPPORT

1. Project/Proposal Title: PPoSS:Planning:High-Performance Certified Trust for Global-Scale Applications

Proposal/Award Number (if available): CCF-2118851 Source of Support: National Science Foundation Primary Place of Performance: Yale University

Project/Proposal Support Start Date (if available): 2021/10 Project/Proposal Support End Date (if available): 2022/09 Total Award Amount (including Indirect Costs): $250,000

Person-Month(s) (or Partial Person-Months) Per Year Committed to the Project:

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2022 | 0.1 |

Overall Objectives: A 1-year planning grant to work out the challenge problems in building trustworthy global-scale applications.

Statement of Potential Overlap: None

1. Project/Proposal Title: REFUEL: Verified Composition and Flattening of Unified Enclave Layers

Proposal/Award Number (if available): N6600121C4018

Source of Support: Defense Advanced Research Projects Agency (DARPA) Primary Place of Performance: Yale University

Project/Proposal Support Start Date (if available): 2021/04 Project/Proposal Support End Date (if available): 2025/03 Total Award Amount (including Indirect Costs): $2,331,808

Person-Month(s) (or Partial Person-Months) Per Year Committed to the Project:

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2021 | 1.5 |
| 2022 | 1.5 |
| 2023 | 1.5 |
| 2024 | 1 |
| 2025 | 1.5 |

Overall Objectives: To develop verified layer flattening and distribution mechanism to support verified security and performance enhancement of large legacy software

Statement of Potential Overlap: None.

1. Project/Proposal Title: FMitF: Track I:ADVERT: Compositional Atomic Specifications for Distributed System Verification

Proposal/Award Number (if available): CCF-2019285 Source of Support: National Science Foundation Primary Place of Performance: Yale University

Project/Proposal Support Start Date (if available): 2020/10 Project/Proposal Support End Date (if available): 2023/09 Total Award Amount (including Indirect Costs): $749,943

Person-Month(s) (or Partial Person-Months) Per Year Committed to the Project:

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2021 | 0.5 |
| 2022 | 0.5 |
| 2023 | 0.5 |

Overall Objectives: To build verified strongly consistent distributed systems using the ADO (atomic distributed object) technologies

Statement of Potential Overlap: None

1. Project/Proposal Title: SaTC: CORE: Small: Partition-Oblivious Real-Time Hierarchical Scheduling

Proposal/Award Number (if available): CNS-1945541 Source of Support: National Science Foundation Primary Place of Performance: Yale University

Project/Proposal Support Start Date (if available): 2020/04 Project/Proposal Support End Date (if available): 2023/03 Total Award Amount (including Indirect Costs): $499,905

Person-Month(s) (or Partial Person-Months) Per Year Committed to the Project:

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2020 | 0.12 |
| 2021 | 0.12 |
| 2022 | 0.12 |

Overall Objectives: To improve security of real-time systems by developing new partition- oblivious real-time scheduling algorithms.

Statement of Potential Overlap: None

1. Project/Proposal Title: SHF: Medium: DeepSEA: A Language for Programming and Synthesizing Certified Software

Proposal/Award Number (if available): 1763399 Source of Support: National Science Foundation Primary Place of Performance: Yale University

Project/Proposal Support Start Date (if available): 2018/06 Project/Proposal Support End Date (if available): 2022/05 Total Award Amount (including Indirect Costs): $800,000

Person-Month(s) (or Partial Person-Months) Per Year Committed to the Project:

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2018 | 0.3 |
| 2019 | 0.3 |
| 2020 | 0.3 |

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2021 | 0.3 |

Overall Objectives: To develop a new specification language DeepSEA and a certifying compiler for DeepSEA

Statement of Potential Overlap: None

# PROJECT/PROPOSAL PENDING SUPPORT

1. Project/Proposal Title: Collaborative Proposal: SaTC: Frontiers: OASIS: Software Supply- Chain Security

Proposal/Award Number (if available):

Source of Support: National Science Foundation Primary Place of Performance: Yale University

Project/Proposal Support Start Date (if available): 2022/07 Project/Proposal Support End Date (if available): 2027/06 Total Award Amount (including Indirect Costs): $550,000

Person-Month(s) (or Partial Person-Months) Per Year Committed to the Project:

|  |  |
| --- | --- |
| **Year** | **Person-months per year committed** |
| 2022 | 0.5 |
| 2023 | 0.5 |
| 2024 | 0.5 |
| 2025 | 0.5 |
| 2026 | 0.34 |

Overall Objectives: The goal of this SaTC Frontiers proposal is to invent the OASIS systems, tools, and frameworks which will create novel, next-generation program analysis methods built upon cutting-edge ML and rigorous statistics, as well as a new software verification co-design approach.

Statement of Potential Overlap: None.