Collaboration Plan

This proposed research will be conducted by two investigators from Georgia Tech and UT Dallas with a wide range of expertise from operating systems, security, cloud computing, programming languages and compilers. Both PIs share strong interests in system security, and more specifically have unique expertise to the following topics in order to complete all aspects of the proposed work:

- **PI Kim:** Operating system design, security, programming languages, manycore operating systems, and computer architecture.
- **PI Lin:** Virtualization, systems security, binary code analysis, compilers, and cloud computing.

Past Collaboration. The two investigators have established collaboration recently. They have ongoing collaborations on several fronts including the design of new security applications with SGX. These collaborations so far have helped bridge the different specialties resulting in co-advising students, and design and implementation of new tools and systems. Also, the joint publications will come soon.

Joint Workshop Organization. Both PIs participated the International Security Education Workshop that GTISC, NSF and Intel jointly organized at Georgia Tech in May 2015. Through the educational workshop, we have confirmed a huge interests and demands, not only from academic institutions but also from industries and government. In addition, both PIs participated the Intel SGX Workshop held as a part of ISCA 2015, and shared our early experiences and potential research directions with Intel researchers and people in academia. Based on feedback and our early experiences, we are planing to organize a joint workshop on Intel SGX in one of security conferences in near future.

Online Community. To foster open source community, our team will maintain a forum site to share our experiences of building SGX applications. Since PI Kim leads the OpenSGX project and already maintains it as an open source project, our team, as part of this proposed work, extends it to broader communities by creating a community forum and by providing tutorials and better guide line.

Collaboration Mechanisms. To have a successful collaboration and complete the proposed project on time, we plan to use the following collaboration mechanism:

1. *Regular Meetings:* The project team including the students will have a bi-weekly research meeting through the web and teleconferencing. The investigators already use such tools (Skype, Webex, Google docs) for remote collaborations in their ongoing collaborative projects. Further, we will have quarterly day-long web-based technical presentations to share critical progress and identify significant road blocks. These presentations will also enhance the communication skills of the graduate and undergraduate students involved in the project. An annual day-long teleconferencing meeting (or near security conferences) will also be conducted for an annual assessment of the research progress. We will invite our industry collaborators from Intel to join both our quarterly and annual meeting, interact with them and also hear their feedbacks.
2. *Student Exchange:* Student exchange between two campuses will further foster collaboration and interaction among the students who participate in the projects. We will perform this exchange once throughout the projects in a rotating fashion among the students.
3. *Industry Input:* We will interact with our industry collaborators in particular Intel for their input on the technology front. This will be accomplished through internship opportunities for our students, having industry collaborators on student thesis committees and through co-authorship of research articles.
4. *Web-based Interaction:* We will maintain a central repository for the project at Georgia Tech. This will have pointers to all major developments, papers, technical reports, tools, and education and outreach activities. This repository will also contain extensive simulation data/traces to help outside researchers, as well as links to related projects to facilitate interaction with different research groups worldwide.