[Capstone Category]

Project Name	**Project Thor**
Team Lead:	Josh Temel – Our team has no formal team lead. Would like to not include one on the eBook page.
Team Member(s):	Josh Temel, Adonay Pichardo, Jared Blanco, Luke Bonenberger
Faculty Advisor(s):	Dr. Siddhartha Bhattacharyya, Dept. Of Computer Engineering & Sciences, Florida Institute of Technology

Project Description: Currently, computers gather their entropy from real world sources of randomness such as IDE timing, mouse movements, or the timing between keystrokes on a keyboard. However, with increasing computer processing power, hacker's ability to predict the output of these sources has become far more probable. Additionally, it is possible that these sources of entropy may become compromised by attackers. This is where Project Thor comes in. Simply put, Project Thor provides an additional truly random source of entropy that can be mixed with other sources to build more diverse and secure entropy pools for operating systems. This way, if one source of entropy were to become compromised, an operating systems entropy pool would still be secure.

Design: Project Thor accomplishes its goal by taking in data gathered from the Global Lightning Detection Network (GLD360) and skimming off the categories with the highest entropy inherent to them. It then creates random numbers by simply selecting random chunks of data from each of the aforementioned categories, padding them with zeros so that they have the same number of bits, and then adding all of the data together to form the final random number. This number goes through a final check to ensure it is not a duplicate of one previously produced before being output to our web application so ensure proof of concept.

Challenges & Future Work: The future of Project Thor mainly lies in continuously improving our algorithm to more efficiently select data from each category without producing duplicates. Additionally, the next logical step for our project would be to implement a rolling database so that we can continually increase entropy over time by eliminating the predictable data trends that only occur locally within small samples.