CSCI 6370 - Final Project - Phase 1

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Topic of Choice: DNA Cryptography

Paper of Choice: Nik Abdullah, Nik Azura & Zakaria, Nur & Halim, Azni & Ridzuan, Farida & AHMAD, Azuan & Seman, Kamaruzzaman & Ariffin, Suriyani. (2022). *A Theoretical Comparative Analysis of DNA Techniques Used in DNA Based Cryptography.* Journal of Sustainability Science and Management. 17. 165-178. http://doi.org/10.46754/jssm.2022.05.014.

Brief Overview: Cryptography is a critical element for ensuring confidential data shared between humans remains secure, especially in the backdrop of a revolution in digital communications. However, as conventional cryptography algorithms are becoming easier to break and face physical restrictions in traditional computer implementations, new methods for protecting information have been studied. DNA-based computing has emerged as a new candidate for improving cryptography technologies, due to the DNA molecule's support for extensive parallelism and large data capacity (significantly larger than any other developed storage media). Thus, various *DNA-based* cryptography algorithms have been proposed in recent years to address the need to develop new cryptography algorithms that are more safe and secure.

In our final project, we investigate the various DNA-based cryptography algorithms referenced by our chosen paper. Our software project will be a Python-based program that implements and showcases at least some of these DNA cryptography algorithms to our program users.