

To Whom It May Concern:

The purpose of this letter is to nominate Emma Grace Powers for a math sciences award. I had the opportunity of mentoring Emma Grace in undergraduate research for two semesters (Spring 2022, Fall 2022). Emma Grace is an honors student and is a math and computer science double major with a 3.95 GPA.

She not only excels in the classroom, but did a great job during our research experience. In the project, we examined the security of signature schemes based on hard lattice problems (Short Integer Solution and Learning with Errors) when choosing randomness according to different distributions (mainly uniform distributions compared to subgaussian distributions). This project included ideas from Cryptography, Abstract Algebra, Probability, and Computer Science. Emma Grace moved the project along and was able to implement experiments in MAGMA.

Emma Grace has also engaged with research in the community. She worked as a cybersecurity intern for MITRE Corporation in Quantico Virginia during the summer of 2022. During this time her responsibilities included tasks such as working on a cyber assessment tool for mission-critical Marine Corps tasks, and building models using Cameo Enterprise Architecture for Adversarial Cyber Development Testing. She also worked as a cybersecurity intern for SolonTek Corporation in from June 2020-June 2021.

Emma Grace also has experience presenting her work. At the end of Fall 2022, she presented her research to myself, Shuhong Gao, and Hui Xue. She also presented her work to one of her classes.

Emma Grace is highly intelligent, motivated, organized, and enthusiastic about math. I cannot recommend her highly enough.

Ryann Cartor