Hwang In Tak

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Research Interests

Modern Cryptography

Education

Sangsan High School 2015 — 2017

DGIST 2018 — 2022
B.S. in School of Undergraduate Studies *Summa Cum Laude*

UC Berkeley 2018 Summer
Summer Sessions, in part of DGIST Freshmen Global Leadership Program (FGLP)

Seoul National University 2023 — Present
Integrated M.S./Ph.D. in Computer Science & Engineering
Advisor: Prof. Yongsoo Song

Honors and Scholarships

DGIST Dean's List 2020

CTF Security Competitions 2020 — Present
DEF CON CTF 2020 *Finalist*
TokyoWesterns CTF 2020 Finals *3rd place*
Midnight Sun CTF 2020 Finals *7th place*
Real World CTF 2020/2021 (Media Coverage) *1st place*
PlaidCTF 2021 *5th place*
DEF CON CTF 2021 *Finalist*
WhiteHat Contest 2021 *3rd place*
SSTF Hacker's Playground *5th place*

Research Experience

NIMS Academy for Industrial Mathematics 2019.08.
I studied text-based modeling and big data mining, along with its use in industrial mathematics.

DGIST Computer Architecture and Systems Lab (CASLAB) 2019.06. — 2019.08.
Mentors: Prof. Dae Hoon Kim (DGIST)
During intership, I studied various CPU Side Channel Attacks, such as Flush+Reload and Row Hammering.

DGIST Division of Intelligent Robotics 2020.06. — 2020.08.
Mentors: Dr. Sang Chul Lee (DGIST)
During internship, I studied algorithms for solving localization problems, i.e. determining the local position of autonomous robots.

DGIST Undergraduate Group Research Program (UGRP) 2020
Mentors: Prof. Hyo Sang Kang (DGIST)
I participated in two research teams as a part of UGRP. The topics were *Developing Games with Multiple Genres* and *Designing Surface Code with Uniform Hyperbolic Tiling*.
For the former, I developed several games using Godot Engine. For the latter, I studied Quantum Error Correction, Hyperbolic Geometry and developed Uniform Hyperbolic Tiling Generator using Python.

DGIST Information and Intelligence Lab (IIL) 2022.01. — 2022.06.
Mentors: Prof. Yong June Kim (DGIST)
During intership, I studied Privacy–Preserving Machine Learning(PPML) and Homomorphic Encryption.

SNU Cryptography & Privacy Lab (Internship) 2022.07. — 2022.08.
Mentors: Prof. Yong Soo Song (SNU)
During Intership, I studied Homomorphic Encryption. I participated in a research about accelerating algorithms over Homomoprhic Encryption, and encryption itself.

Teaching Experience

Tutor at DGIST
SE102 Multivariate Calculus 2019 Fall
SE201 Linear Algebra 2020 Spring

Teaching Assistant at SNU
Engineering Mathematics 1 2023.03 – 2023.06

Teaching Assistant at KAIST PRE–URP
Making a Quantum Error Correction Game 2020.12. — 2021.02.
Drawing Escherian Image Using Hyperbolic Tiling 2021.06. — 2021.08.
Decrypting RSA using Shor's Algorithm 2021.12. — 2022.02.

Seminars at DGIST Clubs
Solving Integer Problems Using Lattices 2021.11.
A Short Introduction to Approximation Theory 2022.04.
Game Development Using Godot Engine 2022.05.
Introduction to Homomorphic Encryption 2022.10.

Skills

Languages

Korean (native), English (fluent)

Programming Languages
Advanced: Python (SageMath), Go, LaTeX
Intermediate: C, C++, C#

Other Activities

Member of CTF Team CodeRed 2020 — Present
I participate in CTF competitions from time to time, mostly solving crypto challenges.

Developer & Writer of Team Invertible 2020 — Present
I am actively working on INVERTIBLE, a sokoban puzzle game. We recently ran our first closed beta test. We are planning to release the game on Steam in 2023.

President of DGIST Math Club 2021 — 2022
I founded DGIST Math Club in 2021. We hold seminars and meetings on a regular basis.

Other Interests

I love watching films. I wrote and directed three short films in college, and I still write screenplays as a hobby!