

Educational System for the Department of Cyber Defense at Korea University

**Korea University, Department of Cyber Defense/Graduate School of
Information Security
Embedded Security & Cryptographic Protocol Lab (<http://protocol.korea.ac.kr/>)**

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Graduate School of Information Security @ Korea Univ.

- 2000. 03 : Founded **Graduate School of Information Security** (情報保護大學院) – domestically for the first time
- 2009 ~ 2010 : Successively won **DC3 Digital Forensic Challenge** hosted by US Department of Defense
- 2012. 03 : Established **Undergraduate Dept. of Cyber Defense** (Cyber國防學科)

Dept. of CYDF @ Korea Univ.

■ Established in 2012

- × In 2018, 30 students have graduated from CYDF, 90 students graduated so far.

■ Joint educational program with Korean Ministry of National Defence

- × Full scholarship over guaranteed Employment
- × Upon graduation, they are to be commissioned as second lieutenants and must serve for seven years in the military.
 - ▶ Cyber Military Academy, i.e., commissioned

■ Accept top 1% of students in the national college entrance exam.

Dept. of CYDF @ Korea Univ.

■ In Korea, cyber warfare has become **real**, not virtual

- ✗ Korean NIS(National Intelligence Service, Korean CIA) officially reported 75,474 cyber-attacks launched against public sector during 2010~2014.
- ✗ In last few years,
 - ▶ S. Korea was hit by computer virus that took over 20,000 computers that attacked bank, TV stations and its ministry of defense.
 - ▶ Computer systems of Korea Nuclear power plant was hacked, released blue prints of nuclear reactor and details on various support systems.
- ✗ Korean government believes that N. Korean general bureau of reconnaissance(偵察總局) specifically Unit 121, dedicates several thousands hackers.

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Dept. of CYDF @ Korea Univ.

■ Inspired by Israel's Talpiot program

- × “Talpiot” means “best of the best” in Hebrew.
- × Israel launched the program in 1979 to train the nation's most promising high school graduates.
- × Members of the program, called “Talpions”, spend 3 years in study, followed by 6 years of military service focused on improving Israeli military's tech. edge rather than serving in combat units.

How to Recruit Top 1%

■ Things are changing

- × Medical doctors and lawyers have been most favorite jobs.
- × Cyber warfare is real in S. Korea.
- × Professors of CYDF regularly visits top high schools to introduce the vision of CYDF – over 20 times /yr and keep in touch with them continuously
- × The annual income and job security of cyber security experts rapidly increasing .
- × During military service, if the graduates want, they can enter GSIS for doctor degree
 - ▶ At the age of 30, they will have 7 years of (extraordinary) experience at military and Ph.D. This is unique! They may stay at military or start various career .

How to Develop

■ Curriculum deals with

- ✗ Computer science as a basic platform (mostly for 1st and 2nd years)
 - ▶ 4 year regular curriculum of computer science covered in 2 and half year.
 - ▶ Most freshmen with no knowledge in computer science, of course no knowledge in cyber security.
 - ▶ Basic courses such programming language operate depending on the degree of knowledge
- ✗ After 2 and half years, security courses are taught including
 - ▶ Cryptology, Digital forensics
 - ▶ Cyberlaw (such as IT compliance, Tallinn manual)
 - ▶ Information assurance
- ✗ Basic military studies, etc

How to Develop

■ Curriculum deals with

- × In their final year, most of them join **research** supported by GSIS (Graduate school of Information Security)
 - ▶ 15 full time professors, more than 200 hundreds graduate students, 17 research labs performing wide range of projects from public/private sector
 - ▶ More than 1,000 alumni
- × Also embedded some programs in the curriculum to inculcate students with **patriotism and a strong work ethics**.
 - ▶ Joint programs with military academy
- × Vision of becoming leaders in technological innovators for the military, and for our nation after discharge.
- × Hacking (?)
 - ▶ No professor is a hacker
 - ▶ Need to supply recent technology from outside the university

How to Develop

■ Achievements

- ✦ The 3rd at the **ACM International Collegiate Programming Contest**, one of the largest international programming contests, 2015
- ✦ “DEFKOR”, the team comprised of 8 students from Dept. of CYDF, 5 other Korean won **TOP prize at DEFCON CTF 2015** among 4,000 teams (the 3rd in 2016).
- ✦ Won HITCON from 2015~2017 consecutively (Taiwan)
- ✦ Won SECCON from 2016~2017 (Japan, 99 nations in 2017)



How to Develop

■ Articles on CYDF



- Scholarships given in return for 7 years of military service
- South Korean cyber warriors playing catch up with North

In a darkened "war room" dozens of South Korea's brightest college students are practicing hacking each other as part of a government program to train them to battle some of the most feared, the cyber geniuses of Kim Jong Un's regime.

International Business Times

South Korea training its brightest students in hacking to take on North Korea

By Agamoni Ghosh

November 28, 2015 12:13 GMT



Some of the brightest college students in South Korea are participating in a hackathon with each other as part of a government programme to train them to take on the tech geniuses of Kim Jong Un's regime in the North in case of any cyber-attack. As the hostilities continue in the Korean peninsula, the south has often accused the north of using cyber warfare as a key tactic to get back at them.

Through this programme, President Park Geun Hye's government has decided to enlist 120 of the country's most talented young programmers by offering them full scholarships in return for seven years of military service. The government is also doubling the size of its cyber command to 1,000 heads and has raised spending on information security by almost 50% to 250 billion won (\$218m) between 2009 and 2015.



In one college major at Seoul's elite Korea University, the courses are known only by number, and students keep their identities a secret from outsiders.

The Cyber Defense curriculum, funded by the defense ministry, trains young keyboard warriors who get a free education in exchange for a seven-year commitment as officers in the army's cyber warfare unit - and its ongoing conflict with North Korea.