

HAIC Report - 2019

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Introduction

Helsinki-Aalto Center for Information Security (HAIC) was established in 2016 as a joint strategic initiative by the Deans, School of Science, at Aalto University and University of Helsinki (UH) with a mission to attract top master's students to the Helsinki area and train them in information security by offering them tuition fee waivers funded by the universities and living cost scholarships funded by industry donations.

The main activity of HAIC is fundraising for the scholarships. The total number and type of scholarships awarded yearly depends on the magnitude of donations received each year. In addition to scholarships, HAIC organizes "Meet & Greet" events where students can meet company representatives to find internship and thesis positions during their master studies. Since 2018 HAIC has organized public outreach events under the *HAIC Talks* brand. HAIC also has a research program (HAIC-R) as part of Helsinki Institute for Information Technology HIIT.¹

Activities in 2019

Fundraising for scholarships

Sources of funding in 2019:

- Industry donations towards HAIC living cost scholarships from donors: **F-Secure & Huawei**
- **University scholarship programmes** for tuition fees at either university (100%)
- Additional funding from **Dean/SCI at Aalto** for
 - "honours work contracts" at Aalto
 - participation costs scholarships for SECCLLO students from EU countries at Aalto
 - HAIC mobility scholarships for Aalto students going to study abroad, and
 - HAIC public outreach program, including HAIC Talks

¹ <https://www.hiit.fi/research/#haic>

Industry partners

HAIC industry partners were contacted by sending them a “letter to donors”. The letter sought full donations or supporting donations. It described proposed HAIC activities including the events where the donors and supporters can meet and interact with HAIC students.

[Fundraising during Fall 2018 was successful](#). Both F-Secure and Huawei agreed to continue to support HAIC with a full donation each.

HAIC Scholarships 2019

HAIC offers different kinds of scholarships to the best applicants specializing in information security: *living cost scholarships*, *honours work contracts* (part-time research-related employment during the semesters), *SECULO participation cost scholarships* and *mobility scholarships* (since summer 2019). HAIC aims to offer up to 4 living cost scholarships per year but the total number and type of HAIC scholarships awarded yearly depends on the magnitude of donations received that year.

HAIC *living cost scholarships* (7000 €/ academic year, i.e. 700 €/month Sep-June, in total 14000 €/ two academic years) are funded by donations from HAIC donors and supporters. The figure was chosen to encourage the HAIC scholars to seek internships during summer as well as paid thesis positions when they are ready to write their MSc theses (typically during the last 6 months of their 2-year program). At Aalto, *honours work contracts* (part-time research-related employment during the semesters) are supported by funding from Dean/SCI earmarked for HAIC.

HAIC offers *SECULO participation cost scholarships* (3000 €/academic year) for SECULO students from EU countries at Aalto as a new initiative. HAIC *mobility scholarships* are offered to Aalto University students for exchange studies in the field of information security. HAIC grants maximum ten (10) mobility scholarships (á 500 €) per year, on top of Aalto Free Mover Scholarship of 1500 € according to the School of Science policy for international exchanges.

Application process and selection 2019

Aalto University:

The Security and Cloud Computing major within the Master’s Programme in Computer, Communication and Information Sciences (CCIS) received 62 eligible applications (63% increase). The selection committee decided to send admission offers to 11 applicants (seven non-EU and four EU). Five students enrolled (two EU, three non-EU).

The SECCLO – Master’s programme in Security and Cloud Computing (Erasmus Mundus) attracted a good number of applications. Over 800 applications were started and 489 were finally submitted (53% increase). Out of these, 264 were eligible from altogether 60 countries. The majority (59%) of the applications were from Asian countries (incl. Pakistan, India, China, Vietnam, Nepal). 14% were from European geographical area. The selection committee decided to send admission offers to 68 applicants (64 first application round and four in the second application round) (57 non-EU and 11 EU). The 21 enrolled students represent 15 nationalities.

In addition, Aalto University received nine eligible applications (125% increase) to its double degree program with ITMO University (<http://en.ifmo.ru/en/>, St Petersburg, Russia). Five students were selected and four enrolled. The double degree program with ITMO University was initiated in 2016. The selected students complete their first Master-year studies at ITMO’s “Computer System Information Security programme” and then continue at Aalto for their second year, including jointly supervised Master’s theses. One double degree student from ITMO graduated during summer 2019.

Altogether 30 new students started their studies in autumn 2019 in the field of Security and Cloud Computing.

HAIC Scholars 2019:

- Security and Cloud Computing major within the Master’s Programme in Computer, Communication and Information Sciences (CCIS): four applicants (all non-EU) were offered a HAIC living cost scholarship and an Aalto tuition fee waiver. Two applicants accepted the offer and two declined.
- SECCLO – Master’s programme in Security and Cloud Computing (Erasmus Mundus): Three selected students were offered HAIC scholarship to cover programme participation costs and they all accepted the offer. HAIC granted also three mobility scholarships of 500 € each to self-funded students (2018 intake). This scholarship is to cover mobility costs during the compulsory study period at one of the SECCLO consortium partner universities (exit university). These mobility scholarships were granted on top of Aalto Free Mover Scholarship of 1500 € (Decision 12/2019 of Manager of Academic Affairs) according to School of Science policy for international exchanges.

University of Helsinki:

University of Helsinki has two Master’s programmes in which it is possible to study a major within the HAIC scope. These are “Master’s Programme in Computer Science” and “Master’s Programme in Data Science”. The primary program is the former. It includes the “Networking and Services” study line with Information Security as one of the main ingredients. Recipients of the scholarships are selected as part of the university-wide process. All applicants for the Master’s Programme in Computer Science are considered for the HAIC scholar positions.

Master's programme in Computer Science received 225 applications (25% increase) out of which 52 were selected. Finally, 18 students have begun their studies in the program.

For the Master's program in Data Science, the numbers are: 278 applications (79% increase), 51 were selected, and 20 students begun studies.

One applicant of each of the two Master's Program in Computer Science got a scholarship and also started studies.

Table 1. Summary of HAIC scholars 2019 at Aalto University and University of Helsinki.

Programme	Type of scholarship	Number
CCIS/Security and Cloud Computing (Aalto)	HAIC living costs scholarship + Aalto scholarship (tuition fee waiver)	2
	HAIC mobility scholarship	1
SECCLLO (Erasmus mundus, Aalto)	HAIC scholarship to cover participation costs	3
	HAIC mobility scholarship	3
Bachelor's programme in Computer Science (Aalto)	HAIC mobility scholarship	1
Master's Program in Computer Science (UH)	Helsinki University scholarship	1
Master's Program in Data Science (UH)	Helsinki University scholarship	1

Publicity

HAIC scholarships 2019 were open to all applicants applying to the Security and Cloud Computing major within the Master's Programme in Computer, Communication and Information Sciences (CCIS) or to the SECCLLO – Master's programme in Security and Cloud Computing (Erasmus Mundus) at Aalto University, and for the Master's Programme in Computer Science at the University of Helsinki. Having funding for the living cost scholarships as well as the honors work contracts, HAIC publicised this information on its website (<https://haic.fi/scholarships/>; <https://haic.fi/haic-scholarship-program-continues-in-2019/>) and on its [Facebook page](#). Both program websites also mentioned HAIC scholarships. (e.g., <https://www.aalto.fi/en/admission-services/scholarships-and-tuition-fees>; <https://secclo.eu/scholarships-and-fees/scholarship-and-fees/>)

HAIC scholarships were also mentioned in the news article on the Aalto University website: <https://www.aalto.fi/en/news/haic-student-scholarships-supported-by-f-secure-and-huawei> and on the Facebook pages of [SECCLLO](#).

Information about the HAIC mobility scholarships was advertised in conjunction with HAIC Talks advertisements during the spring in the Aalto University student newsletter "Tuutti" published by the Department of Computer Science. Information was available on the Aalto University exchange studies page <https://into.aalto.fi/display/enopinnot/Funding> when the autumn 2019 call opened.

Industry outreach

Meet and Greet events

HAIC organizes "Meet and Greet" events once a year, where information security students can meet and mingle with representatives from industry. In the Meet and Greet HAIC presents its yearly report; selected industry partners present their companies and advertise available internship/thesis positions. In conjunction to these events, HAIC leadership team meets with HAIC donors for getting feedback on HAIC activities, study programmes, and to further develop joint research activities.

HAIC Meet and Greet 2019 will be held on October 4 at Aalto University.

Company visits

HAIC started to organize company visits in 2018. The idea is to connect information security students with the local information security companies, so that they can learn about available thesis and internship positions, part-time jobs and eventually full-time jobs after graduation. The visits were started with the HAIC donor and supporter companies.

HAIC company visits during the academic year 2018 - 2019:

- Huawei, October 29
- F-secure, April 24
- Huawei, November 29

During the visits companies present overviews of their companies and on-going projects and market available positions in their companies. Companies have given valuable "working-life lessons" and advised how to apply to the open positions. Feedback from students indicated that they appreciated the opportunity to visit local information security companies.

The two seasons of company visits have shown that the best time for company visits is the autumn term. Ideally, students should get familiar with local infosec companies before they start to apply for summer internships in January. Therefore, HAIC aims to organise future visits during the autumn terms.

Public outreach

HAIC Talks

In October 2017, HAIC announced a new public outreach initiative “Information security affects everyone” with the aim of making the field of information security more accessible to a broader audience. As part of this initiative, HAIC is organizing **HAIC Talks**, a series of public lectures on contemporary topics in information security. In the style of *studia generalia*, these lectures are free and open to everyone. No background knowledge in information security is assumed. HAIC Talks are made possible through the generous support of the Aalto University School of Science. HAIC aims to organize 4-6 talks per year.

HAIC Talks 2018 - 2019:

- October 9: [Hard problems for cryptography: From Factoring to Sudoku - with Chris Brzuska](#)
- November 2: [Cybercrime in the Sky - with Alice Hutchings](#)
- February 6: [Bitcoin, Blockchains and Smart Contracts: Understanding the Crypto in Cryptocurrencies – with Colin Boyd](#)
- March 1: [5G Security – the What, Why and How – with Alf Zugenmaier](#)
- October 4: [Science of Security - with Janne Lindqvist](#)
- November 1: Post Quantum Cryptography - with Kenneth Paterson

In the HAIC Talk events, HAIC donors can have their own company stands where they can interact with students.

Secure Systems Demo Days

Secure Systems Demo Days are annual public events to showcase the recent research in information security going on at Aalto and UH. The event is intended to bring local academia, students, and industry together and give them an excellent opportunity to network and search possibilities for collaboration and for open positions within the local infosec industry and academia. Demo Day 2019 was organized on May 29. It was very successful with 100+ participants, 25 poster presentations and eight demonstrations. The event was opened with N. Asokan’s traditional “State-of-the-Union” talk after which there was time for demonstrations and poster presentations. Six local companies attended the event and advertised open student positions their companies.

Cybersecurity Base with F-Secure

University of Helsinki, together with F-Secure, organizes a Massive Open Online Course (MOOC) annually under the title “[Cybersecurity Base with F-Secure](#)”. The course is open to everyone and at least the first part “Introduction” (worth of 1 study credit) is also intended for the general public who want to learn the basics of cybersecurity. The total volume of the

course is 10 study credits. The first edition of the course was held over the academic year 2016-17. Then 900 people successfully passed the first module while 124 students passes the last module, called "Capture the Flag" (also worth 1 study credit). The third edition was run over the report period. In the second and the third edition, numbers of students who have passed the modules have been somewhat smaller than in the first edition but still significant.

Outcome of HAIC scholarship program

HAIC scholarship program has now completed the first full round. The first scholars who started their master's studies at Aalto in September 2017 graduated with honours in September 2019. Both scholars went to industry to do their master's thesis work, one at F-Secure and the other one at Huawei, and after graduation they plan to stay in Finland and continue working in the private field.

According to the midterm interview last December, HAIC scholars have been happy with their studies at Aalto University. All scholars emphasized the critical role of the HAIC living cost scholarship in deciding where to start their studies. Scholars also appreciated all organized events with HAIC industry partners, such as Meet & Greet events and company visits, where they learned about Finnish infosec industry and heard about open student positions in the companies. You can read the whole interview following this link:

<https://haic.fi/haic-scholars-look-back/>

HAIC scholarship program has helped us to attract the best candidates worldwide to meet the acute and growing need for information security professionals. The number of applications and accepted students have increased since 2017 and it is very nice to hear that top-notch students want to stay in Finland after graduation. In order to ensure long-term success of HAIC scholarship program, we encourage companies with an interest in security education and our graduates to join HAIC.

HAIC communications

HAIC website <https://haic.fi/> contains information about HAIC and its activities. Updates and information about coming events are posted also on HAIC Facebook page <https://www.facebook.com/haic.fi/>, and on Twitter https://twitter.com/HAIC_fi.

People behind HAIC

HAIC leadership comprises:

- N. Asokan, Aalto University - Director

- Valtteri Niemi, University of Helsinki - Director of HAIC Research Program at Helsinki Institute for Information Technology (HIIT)
- Andrew Paverd, Aalto University - Deputy director for HAIC public outreach, till Nov 2018
- Mohit Sethi, Aalto University - Deputy director for HAIC public outreach, from Nov 2018
- Eija Kujanpää, Aalto University - Manager, international relations, coordinator of the HAIC scholarship schemes at Aalto University
- Niina Idänheimo, Aalto University - Coordinator

HAIC leadership team had one strategy meeting with the Dean/SCI at Aalto in March 2019. The meeting covered HAIC's mission and plans for the future years, funding scheme and added value to the university.

As announced on the Secure Systems Demo Day 2019, the founding Director of HAIC, N. Asokan, will step down at the end of 2019 as he moves to the University of Waterloo, Canada. From January 2020 onwards, HAIC will be led by Janne Lindqvist, who will be appointed as an Associate Professor at Aalto. Similar to Asokan, Janne has strong industrial bonds and will continue to strengthen HAIC's collaboration with industry.

Outlook

HAIC's mission is to attract the best students to study information security at Aalto or at the University of Helsinki by providing them financial support and industry contacts. HAIC hopes that the corresponding universities will promote and market the information security study tracks world-wide. The Erasmus Mundus funded SECCLLO – Master's Programme in Security and Cloud Computing has helped this mission greatly and the number of applications has increased during the first two years of SECCLLO.

In order to provide financial support, HAIC hopes that the current HAIC donors will continue their donations in subsequent years. HAIC also hopes to attract new industry partners to support the HAIC scholarship program. Ideally, HAIC would require 2-3 full donations from the industry partners in order to support up to four students per year. The call for HAIC 2020 industry partners is open until the end of November 2019!

HAIC ambassador program

In order to promote information security studies at Aalto and at UH, HAIC is planning to start a HAIC ambassador program. The current plan is that HAIC would invite 2-3 ambassadors from each SECCLLO and CCIS intake, students who have benefitted from HAIC scholarships, and encourage them to advertise SECCLLO and CCIS Master's programs in their alma mater and other universities in their home country when the application period is open.