

HAIC Report 2021

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Introduction

Helsinki-Aalto Institute for Cybersecurity (HAIC) was established in 2016 as a joint strategic initiative by the Deans of Science at Aalto University (Aalto) 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. Today, HAIC's revised mission will attract students in all areas of security including security engineering, information security and cybersecurity.

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 provides opportunities for students to meet with industry representatives to help them find internship and thesis positions during their master studies by organising company visits and "Meet & Greet" events where students can meet company representatives. Since 2018 HAIC has begun to organize public outreach events under the *HAIC Talks* brand and Secure Systems annual demo days together with Secure Systems research groups at Aalto and UH. HAIC also has a research program (HAIC-R) as part of Helsinki Institute for Information Technology HIIT.¹

Activities in 2021

Fundraising for scholarships

Sources of funding in 2021:

- Industry donations towards HAIC living cost scholarships from donors: **F-Secure, Huawei and SSH.COM**
- 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 two kinds of donations: Full donations or supporting donations. It described proposed HAIC activities including the event where the donors and supporters can meet and interact with HAIC students.

Fundraising for 2021 was successful. F-Secure and Huawei continued to support HAIC and SSH.COM joined as a new partner.

HAIC Scholarships 2021

HAIC offers different kinds of scholarships to the best applicants specializing in information security: *living cost scholarships*, *honours work contracts*, *SECCLLO participation cost scholarships* and *mobility scholarships*.

HAIC *living cost scholarships* (7000 €/academic year, that is, 700 €/month (Sep-June), in total 14000 €/two academic years) are funded by donations from HAIC donors and supporters. The figure was chosen to cover the income requirement for the Finnish residence permit and to encourage the HAIC scholars to seek internships during summer as well as paid thesis positions. HAIC aims to offer up to four 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 offers *SECCLLO participation cost scholarships* (6000 €/two year programme) for SECCLLO (Erasmus Mundus funded Master’s programme in Security and Cloud Computing) students coming from EU countries.

HAIC *mobility scholarships* are offered to Aalto University students for exchange studies in the field of information security. HAIC grants maximum ten mobility scholarships, 500 € per year, on top of Aalto Free Mover Scholarship of 1500 € according to the School of Science policy for international exchanges (Decision 12/2019 of Manager of Academic Affairs).

At Aalto, *honours work contracts* (part-time research-related employment during the semesters) are supported by funding from Dean/SCI earmarked for HAIC.

HAIC Scholars 2021:

- *HAIC living cost scholarships*: HAIC offered three scholarships to CCIS/major (Security and Cloud Computing major within the Master’s Programme in Computer, Communication and Information Sciences) and two students accepted the offer.

- *SECCLLO participation cost scholarships*: HAIC offered three scholarships to cover programme participation costs and two students accepted the offer.
- *Mobility scholarships*: four scholarships were granted in 2021.
- *Honours work contracts* were not offered in 2021.

Table 1. Summary of HAIC scholars 2021 at Aalto University and University of Helsinki.

Type of scholarship	Scholarship amount	Number of accepted scholarships
HAIC living costs scholarship	14 000 €	2
HAIC scholarship to cover SECCLLO participation costs	6 000 €	2
HAIC mobility scholarships	500 €	4
Helsinki University scholarship	-	-

HAIC scholarships 2021 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), 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. Scholarship information was published on HAIC website (<https://haic.fi/scholarships/>) and on program websites (<https://www.aalto.fi/en/admission-services/scholarships-and-tuition-fees>; <https://secclo.eu/scholarships-and-fees/scholarship-and-fees/>)

Information about the HAIC mobility scholarships was advertised on HAIC website (<https://haic.fi/scholarships/>; <https://haic.fi/haic-mobility-scholarships-2021-january-call/>), and in the Aalto University student newsletter "Tuutti" published by the Department of Computer Science, and on the Aalto University exchange studies page <https://into.aalto.fi/display/enopinnot/Funding>.

Background statistics for application round 2021

Aalto University, School of Science

The Security and Cloud Computing major within the Master's Programme in Computer, Communication and Information Sciences (CCIS)

CCIS/major received 141 eligible applications out of which 17 students were selected and finally, seven students enrolled for the academic year 2021-2022. In addition, two students enrolled in the double degree programme with ITMO University, Russia (<https://en.itmo.ru/en/>). The number of eligible applications increased 131% compared to application round 2020.

SECCLLO – Master's programme in Security and Cloud Computing (Erasmus Mundus)

SECCLLO received 461 eligible applications out of which 81 students were selected. 30 students enrolled for the academic year 2021-2022 representing 19 nationalities. The number of eligible applications increased 49% compared to application round 2020.

Altogether 39 new students started their studies in autumn 2021 in the field of Security and Cloud Computing.

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 490 applications out of which 103 were selected. Finally, 35 students started in the programme. For the Master's programme in Data Science, the numbers are: 574 applications, 96 were selected, and 34 started. Altogether 69 new students started their master's studies in autumn 2021.

Industry outreach

Meet and Greet events

HAIC organizes "Meet and Greet" evenings once a year, where information security students can meet and mingle with representatives from industry. During the Meet and Greet evening HAIC presents its yearly report; selected industry partners present their companies and advertise available internship/thesis positions. The 2021 "Meet and Greet" event was organized in January 2022.

Company visits

HAIC started to organize company visits from the beginning of 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.

HAIC company visits 2020 & 2021 were organized online:

- Huawei, November 27
- Ericsson, December 1, 2020 and December 14, 2021 (organized by SECCLLO)
- F-secure, December 7

Companies presented overviews of their on-going projects and marketed available positions for students in their companies. Companies also gave valuable “working-life lessons” and advised how to apply to the open positions. Online visits were successful with more than 30 students attending each event.

HAIC Talks

HAIC donors can have company stands before HAIC talks where they can interact with students. Positive feedback was received from students and donors alike. In 2020-2021 this donor-only benefit was not offered due to online events.

Public outreach “Information security affects everyone”

HAIC Talks

HAIC has organized **HAIC Talks**, a series of public lectures on contemporary topics in information security, since 2018. 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 Talks 2020-2021 were organized online:

- May 19, 2021: [Internet of Things \(IoT\) Security: from specification to code – with Hannes Tschofenig](#)
- February 10, 2021: [Human Factors in Secure Development – How we can help developers write secure code – with Yasemin Acar](#)

- October 29, 2020: [Learning from the People: From Normative to Descriptive Solutions to Problems in Security, Privacy & Machine Learning – with Elissa Redmiles](#)

Online HAIC talks have been very successful with more than 130 registrations per each talk. Turnout has been high with more than 100 participants in each talk and discussion active. HAIC talks were recorded and published on HAIC Talks website: <https://haic.fi/talks/>

Secure Systems Demo Days

Secure Systems Demo Days are annual public events to showcase on-going security research at Aalto and UH. The events intend to bring local academia, students, and industry together and give an excellent opportunity to network and search possibilities for collaboration and for open positions within the local infosec industry and academia. Demo Day 2021 was held virtually on June 15 with 22 research posters/demonstrations, several coffee rooms for discussion and two company desks. 184 participants registered for demo day 2021.

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 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 course series consists of 6 smaller courses, each with a specific theme. Themes include a brief introduction to cyber security, operational security, web software development, types of vulnerabilities typical of web software, discovery and mitigation of such vulnerabilities, and advanced topics such as secure software architectures and cryptography. There will be several case studies as well as projects for participants. At the end of the course series, we'll also organize a friendly capture-the-flag competition where participants will try to solve some security puzzles. The 2021 edition opened in the beginning of September.

HAIC communications

HAIC communicates about its activities and news on its website <https://haic.fi/>. In addition, HAIC has a [Twitter](#) and [Facebook account](#) to share information about HAIC related news and events.

People behind HAIC

HAIC leadership comprises:

- Professor Janne Lindqvist, Aalto University - Director of HAIC
- Professor Valtteri Niemi, University of Helsinki - Director of HAIC Research Program at Helsinki Institute for Information Technology (HIIT)
- Dr. Mohit Sethi, Aalto University - Deputy director of HAIC, Head of HAIC public outreach program
- 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 an annual strategy meeting with the Dean/SCI at Aalto in April 2021. The meeting covered HAIC's mission and plans for the future years, funding scheme and added value to the university.

HAIC leadership team's meeting with HAIC donors for feedback on HAIC activities, study programmes, and to further develop joint research activities was postponed to January 2022.

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 SECCLLO program. Continuation of the SECCLLO program with 84 scholarships for four more intakes (intake 2021-2024) with the last students to graduate in 2026, will guarantee to attract some of the most talented master's students from around the world to study security at Aalto.

In order to provide financial support also to CCIS students, 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 (4) students per year. The call for HAIC 2022 industry partners is open!