

Master's Thesis Position: Implementation of 5G EAP-AKA
Authentication Protocol for IoT Equipment
Aalto University

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Posted May 9, 2025, set to expire Dec. 31, 2025

Job Title	Master's Thesis Position: Implementation of 5G EAP-AKA Authentication Protocol for IoT Equipment
Department	T412 Department of Information and Communications Engineering
Institution	Aalto University , , Finland
Date Posted	May 9, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Electrical and/or Electronics Engineering - Other
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Master-s-Thesis-Position--Implementation-of-5G-EAP-AKA-Authentication-Protocol-for-IoT-Equipment_R43227

Apply By Email

Job Description

Aalto University is where science and art meet technology and business. We shape a sustainable future by making research breakthroughs in and across our disciplines, sparking the game changers of tomorrow and creating novel solutions to major global challenges. Our community is made up of 120 nationalities, 14 000 students, 400 professors and close to 5000 faculty and staff working on our dynamic campus in Espoo, Greater Helsinki, Finland. Diversity is part of who we are, and we actively work to ensure our community's diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

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Master's Thesis Position: Implementation of 5G EAP-AKA Authentication Protocol for IoT Equipment

The Department of Information and Communications Engineering at Aalto University is seeking applications for a Master's thesis position in the area of mobile communication security and protocol implementation. The work will be conducted in the research group of Professor Riku Jäntti, under the supervision of Senior University Lecturer Kalle Ruttik.

Thesis Topic

With the increasing maturity of open-source 5G base station and core network implementations, integration with commercial mobile devices has become feasible. This integration requires robust and standards-compliant authentication mechanisms. The thesis focuses on the implementation of the EAP-AKA (Extensible Authentication Protocol - Authentication and Key Agreement) protocol, a critical component of 5G authentication, particularly relevant for Wi-Fi access to 5G core networks.

The selected candidate will develop the user equipment (UE)-side implementation of the EAP-AKA protocol, replicating the authentication logic typically handled by SIM/USIM modules. This work contributes to the broader objective of enabling secure and interoperable communication between IoT devices and 5G infrastructure.

Requirements

Applicants are expected to meet the following criteria: * Strong proficiency in C programming, particularly for low-level or systems-level development tasks. * Experience with Linux-based development environments, including the use of command-line tools and typical development utilities. * Familiarity with mobile network architectures and authentication mechanisms (e.g., 3GPP specifications, EAP-AKA protocol, SIM/USIM operations) is considered an asset.

Terms of Employment

The thesis work is offered as a full-time, fixed-term contract for a duration of six (6) months. The monthly salary is 2,500 EUR.

Join us!

If you want to join our community, please submit your application through our recruitment system, "Apply now" by May 23rd, 2025. To apply, please share the following application materials with us: * Curriculum Vitae (CV) * Official transcript of academic records

For more information regarding the open position, please contact Professor Riku Jäntti, riku.jantti@aalto.fi. In any questions regarding the recruitment process, please contact HR Advisor Monika Mäkinen, hr-elec@aalto.fi.

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elec@aalto.fi.

Please note: Aalto University's employees should apply for the position via our internal HR system Workday (Internal Jobs) by using their existing Workday user account (not via the external webpage for open positions).

Aalto University reserves the right for justified reasons to leave the position open, to extend the application period, reopen the application process, and to consider candidates who have not submitted applications during the application period.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

Finland