Are you REDI?

REDI is a PhD training program like no other: 40+ industry-supported positions, most awarded two PhDs, once-in-a-lifetime year in Melbourne, Australia, annual training weeks in Barcelona, Spain, excellent salaries, access to 60+ partners...

rediprogram.eu

Position Description

Group of research topics: Ambient intelligence and wireless communications

Position is funded by	- COFUND, Marie Sklodowska-Curie Actions (MSCA), Horizon 2020, European Union - Aalto University (Aalto), Finland - RMIT University (RMIT), Australia
Research Host	Aalto University (Aalto), Finland
PhD awarding institution/s:	Dual PhD awarded by Aalto and RMIT University (RMIT)
Locations	- Primary: Espoo, Finland - Secondary: Melbourne, Australia - Annual workshops in Barcelona, Spain
Contract	Full-time, fixed term (48 months)
Gross annual salary	31.625 EUR (gross amount before employee's taxes and contributions)
Preferred start date	1st March 2022
Deadline for applications	30/11/2021 (Reference: Aalto-DC1)

Your choice of research topics (only one of these projects will be funded):

Project 1: AI in communications for remote healthcare	Project 2: Future communication networks	Project 3: Ambient Intelligence for industry and commerce
Mitochondrial recessive ataxia syndrome (MIRAS) is a common ataxia disease in Finland. Since little is known about MIRAS, testing new medications demands frequent hospital visits, which is burdening for patient and medical expert. Technical support that may relieve part of this burden by replacing hospital visits with remote monitored tests. Assisted by a medical expert, The student will develop a distributed communication, sensing and AI framework to support remote care and monitoring. *Further information may be obtained from the Supervisors.*	Time sensitive networking is a concept to enable networking hardware to adhere strict timing constraints which might be specified, for instance, by industrial processes. The student will implement deterministic communication for the developed framework, which is required in industrial 5G scenarios. *Further information may be obtained from the Supervisors.*	Device localization is possible in 5G Ultra Dense Networks with an angular error of 1-2° and a localization error of 10cm. For professional IMU measurement units, the state-of-the-art accuracy in tracking of the rotation axis may achieve 1° error, with an altitude error below 5cm. However, IMU measurements are relative and not synchronized with the coordinate system of the localization system. The student will develop a framework towards exact localization, tracking and orientation of XR devices. *Further information may be obtained from the Supervisors.*
Supervisors: A/Prof. Stephan Sigg (Aalto) **and** Prof. Flora Salim (RMIT) **and** Jose Costa Requena (Cumucore)		

Research Fields: Artificial Intelligence, Communication design, Computer and network engineering, Data Analytics, Data Science

REDI

The REDI (RMIT European Doctoral Innovators) program is a unique opportunity offering excellent PhD conditions including enviable international experience, top-class research discipline and transversal skills training as well as networking with academic and industry leaders across 60+ supporting partners and 12 countries.

As a REDI researcher you will be:

- enrolled by two entities, with the chance to be awarded dual doctorates and gain alumni status from multiple institutions, including the Marie Curie Alumni Association.
- seeing the world and spending a year at RMIT University in Melbourne, Australia (ranked in the top 20 of universities under 50 years old in the world).
- part of a rich multidisciplinary network of researchers and supervisors who come together in annual, week-long training events in Barcelona.
- working closely with industry and gaining experience with the 40+ leading companies supporting the program.
- earning a salary above national standards for doctoral positions with full social security benefits (with further support available for eligible researchers with additional needs).
- receiving support and guidance from two highest-calibre, experienced supervisors with high PhD completion rates.
- enhancing your career prospects through comprehensive technical and transversal skills training from leading institutions, intersectoral and international experience and mentoring.
- working on innovative and exciting projects of high commercial and societal value with up to four years to complete your research.

For more information visit: rediprogram.eu

Are you REDI? (Expected Profile)

Project 1

Your background and skills: Communication networks are characterized by distributed, communicating computing devices with limited resources, where information is spread across devices. Federated learning and distributed machine learning may address such scenarios, prominently situated e.g. in remote healthcare, industrial automation, or ambient assisted living. The project will develop novel schemes for distributed machine learning in communication networks, covering unsupervised, self-supervised and adversarial learning.

Your work experience: Not required.

Your research experience: Not required.

Project 2

Background: Software Defined Networking, Network Function Virtualization, and Internet of Things created demand on network capabilities. Reliability and latency are reaching new dimensions, to enable remote or autonomous vehicles. The project shall develop novel communication mechanisms exploiting AI and multivariate time-series processing to support future communication. Deterministic communication in industry scenarios is a relevant direction, as well as further constrained networking paradigms.

Your work experience: Not required.

Your research experience: Not required.

Project 3

Background: The IoT is a networked ubiquitous sensing platform, supplemented by personal sensors (smartphones, wearables), precision sensors in building automation, autonomous vehicles or factory automation as well as remote

healthcare. This cornucopia of sensing sources and environmental perception generates tremendous opportunities but also a threat to privacy. The project will develop ethically compliant communication schemes. Concepts that achieve usable privacy & privacy by design are desired.

Your work experience: Not required.

Your research experience: Not required.

Employment Benefits and Conditions

Aalto offers a 36-month year position, extendable up to 48 months in duly justified cases. The position will be based in Espoo (Finland). International travel is foreseen, including to Australia (up to 12 months) and Spain (one week per year). The probation period is maximum of 6 months and there are 36,25 working hours per week.

The remuneration, in line with the European Commission rules for Marie Skłodowska-Curie grant holders, will consist of a gross annual salary of est. 31.625 EUR gross per year (gross amount before employee's taxes and contributions). Of this amount, the estimated net salary* to be perceived by the Researcher is est. 1.985 EUR per month. However, the definite amount to be received by the Researcher is subject to national tax legislation. For more information on the estimated net salary, please use the [net salary calculator](#).

Net salaries can fluctuate in accordance with an individual's personal circumstances (marital status, age, disability, family and dependents, etc. The above indicative net salaries offer an approximation of what a single person in their early 20s could expect to receive in their bank account after taxes.

Benefits include:
- Doctoral Candidates include in total working time in Aalto university. Total working hours are 1612h/y. Working hours exceeding the 1,612 hours/year is considered free time.
- Statutory insurance for all Aalto university employees. It covers accidents that occurred at work, at the workplace and during commute
- Aalto university employees are entitled to paid annual leave, sick leave and parental leave
- 1,000€ yearly travel allowance to cover flights and accommodation to participate in the annual workshop at RMIT Europe in Barcelona (Spain)
- 10,000€ allowance to cover flights and living expenses for up to 12 months in Australia

For more details, please see: [Perks and benefits for personnel | Aalto University](#)

REDI to apply? First a little more about us…

Aalto University

Aalto University is a Finnish multidisciplinary university in the fields of science and technology, economics, architecture, and art and design. Aalto University was established in 2010 as a merger of three established universities: The Helsinki University of Technology, the Helsinki School of Economics, and the University of Art and Design Helsinki. Aalto University was established as a priority project in the Finnish university renewal. The idea was to create a new innovative university merging science and technology, design and art, and business and economics.

Aalto University is where science and art meet technology and business. Our campus is located in Espoo, Greater Helsinki, Finland. The Aalto University community is made up of 12 000 students, 400 professors and close to 4 000 other faculty and staff over six schools. In the QS Top 50 under 50 ranking, Aalto University was listed as #9 in the world among young universities. We are an international community, working on top research, art and education. Join us in changing the world!

Aalto offers to their Doctoral Students a wide range of training and mentoring opportunities, including:
Courses and training opportunities: The student may participate in all PhD and MSc level courses offered at Aalto University. For MSc level courses, conditioned on topical relation to the PhD topic).
Language courses: The student may participate in all language courses offered by the Aalto language centre.

Relocation support: PhD students may apply to special student apartments on or close by the campus (https://www.aalto.fi/en/services/housing-for-students)

Cultural and social activities: Cultural and social activities are regularly organized by Aalto HR, such as social gatherings, joint visits to art exhibitions, group trips to Nuuksio (Nature reserve), etc. Furthermore, Unisport offers a large set of sport activities for a reduced rate to students.

Engagement with industry: The Doctoral Student will conduct a secondment at Cumucore (Finland) and work together with the professional experts as well as with health specialists on questions related to 5G+ that can enable basic communications for the different verticals that can be addressed in the frame of the project (remote health, AI/IOT, AR/VR for industrial/commercial applications

For more information, visit: https://www.aalto.fi/en ; Study at Aalto | Aalto University

RMIT University

RMIT is a global university of technology, design and enterprise, ranked in the top 20 of universities under 50 years old in the world. World-class people, leading edge resources, collaboration with industry partners and multi-disciplinary approaches are just a few of the trademarks of research at RMIT, which boasts almost 90,000 students and campuses in Australia, Vietnam, a centre in Barcelona, Spain and research and industry partners on every continent.

As Doctoral Student at RMIT you will be able to benefit from a wide range of training and mentoring opportunities including:

- **The PhD Up** program offering a huge range of workshops, seminars and short courses to build research knowledge and skills, including research writing, publishing, research methods, ethics, project management and careers (see more at: https://www.rmit.edu.au/students/student-essentials/information-for/research-candidates/enriching-your-candidature/phd-up-program)
- **RMIT PhD Online Modules**, designed specifically for PhD students, including *Researching your literature review, Writing a research proposal, Choosing where to publish, Writing for Publication, Research Integrity*, etc.
- **RMIT Creds**, RMIT's Digital Credentials Platform, which includes over 80 credentials covering a wide range of topics such as *Understanding Responsible Research and Innovation, Academic Integrity Awareness, Emotional Intelligence, Diversity Matters, Agile Ways of Working, Why Gender Matters, Cross Cultural Communications*, etc. (see more at: https://www.rmit.edu.au/study-with-us/levels-of-study/short-courses);
- **The e-Grad School**, the online learning modules of the Australian Technology Network (ATN) of Universities' covering a multitude of transferrable skills such as *Critical and Creative Thinking, Leadership and Communication, Entrepreneurship, Research Commercialisation, Public Policy*, etc.
- **The RMIT Mentoring platform also** gives you access to mentoring from trained professionals and experts, including:
  - *Career Mentoring* - career guidance from industry professionals from all disciplines and global locations.
  - *Women@RMIT Mentoring* - career guidance from industry professionals who are committed to gender diversity and equality in the workplace (especially for female students in male dominated industries)
  - *Pride Mentoring* - a chance for students who identify as LGBTIQ+ to receive professional and social guidance from industry professionals who also identify as LGBTIQ+ or are familiar with the additional challenges these groups face in the workforce.

Find out more: rmit.edu.au

A little more about you…

Eligibility

You need to fulfil criteria of the REDI program and both universities to be recruited.

To apply for REDI, you must comply with the MSCA-COFUND eligibility criteria by the application deadline:

- **Be in the first four years (Full-Time Equivalent (FTE) research experience** of your research career and not yet have been awarded a doctoral degree. FTE Research Experience is measured from the date when a researcher obtained the degree entitling him/her to embark on a doctorate, **AND**

- **Not have resided or carried out your main activity (work, studies, etc.)** in the country of your research host for more than 12 months in the 3 years immediately before this call's deadline. Time spent as part of a procedure for obtaining refugee status under the Geneva Convention (1951 Refugee Convention and 1967 Protocol), compulsory national service and/or short stays such as holidays is not taken into account.

AND the following criteria:

- **Hold a bachelor's degree requiring at least 4 years of full-time study** in a relevant discipline awarded with honours and including a research component; **OR**

- **Hold a master's degree that includes a research component** or a master degree without a research component with at least a high distinction average; **OR**

- **Have evidence of appropriate academic qualifications and/or professional experience** demonstrating that the applicant has developed knowledge of the field of study or cognate field and the potential for research sufficient to undertake the chosen project.

  AND

- Have **English level C1 language proficiency**.

In addition to the above, if your application is successful, you will be required to:
- Apply for a working/student visa in Finland (More information: http://www.aalto.fi/en/services/preparing-for-arrival)
- Apply for a student visa in Australia (More information: https://www.rmit.edu.au/study-with-us/international-students/apply-to-rmit-international-students/student-visas/apply-for-a-visa)

In addition to meeting the eligibility criteria for the REDI Program, you will also need to meet the admission criteria of both institutions:

Admission at Aalto University:

You will be enrolled as Doctoral Student at Aalto University for the entire duration of the assignment. At admission, you will need to supply:

- Degree certificate and the transcript of records of a Master Degree in a related field. An official translation into Finnish or English is required in the case of Candidates with a foreign academic degree. Qualification obtained abroad are accepted if written in Finnish, English, German, French, or Spanish. Otherwise, candidates must present a certified translation of their qualifications in Finnish or English.
- Proof of English proficiency (certificates from IELTS or Cambridge English Advanced, level C1 is expected – native speakers are exempt from the certificate requirement).

More information: https://www.aalto.fi/en/research-art/how-to-apply-for-doctoral-studies

Admission at RMIT University

You will also be enrolled as Doctoral Student at RMIT University for the entire duration of the assignment. At admission, you will need to supply:

- CV
- Complete transcripts for all academic qualifications
- Research proposal or statement of interest in an available research project
- Language certificates
- List of referees

More information**: https://www.rmit.edu.au/research/research-degrees/how-to-apply

Apply now (https://www.rediprogram.eu)