

Jobbnorge ID: 289000
Deadline: 12/5/2025
Website: <http://www.ntnu.no>
Scope: Fulltime
Duration: Temporary

The Department of Electronic Systems has a vacancy for a

PhD Candidate in Communication Technology

This is NTNU

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 9,000 employees and 43,000 students work to create knowledge for a better world.

You will find more information about working at NTNU and the application process [here](#).

Video: <https://youtu.be/Xt-yHCN5QS0>

About the position

PhD project: Intra-body Semantic Communication Theory and Principles for Receiver Design

This PhD project aims to develop a theoretical framework for biocommunication using semantic communication theory and principles. The foundational framework will provide insights into developing a receiver system that can continuously and precisely sense and process molecular signals among infectious bacteria colonies for diagnosis. The receiver development will consider novel design principles combining approaches in biosensors, communication systems, and machine learning.

Are you motivated to take a step towards a doctorate and open up exciting career opportunities? As a PhD Candidate with us, you will work to achieve your doctorate, and at the same time gain valuable experience that qualifies you for a further career in higher education and research, in and outside academia.

Your immediate leader will be the Head of Department.

About the project

CLIFEUS aims at creating a communications network among man-made implantable devices and the natural cells inside the body under the novel communication paradigm called **Internet of Bio-NanoThings**, where sensing, actuation, and computing processes are tightly coupled to pervasively, perpetually, and precisely sense, process, control, and exchange health information of the body in real-time to defend it against infections. The project focuses on detecting bacterial infections inside the body based on biosensors. The biosensor will be extensively tested and ameliorated in-vitro cell culture experiments as a first step before in vivo experiments. The CLIFEUS project has a PhD student, a Postdoc, and a Researcher, and is looking to recruit a new PhD student to complete the team. The Research Council of Norway and NTNU fund the project.

Duties of the position

- Complete the doctoral education until obtaining a doctorate
- Carry out research of good quality within the framework described above
- Academic publications and popular science dissemination
- Participate in the research group of [Prof. Ilango Balasingham - NTNU](#)
- Participate in international activities such as conferences and/or research stays at foreign educational institutions
- Other career-promoting work

Be prepared for changes to your work duties after employment.

Required selection criteria

- You must have a relevant Master's degree in electrical/electronic engineering with specialization in signal processing, communication theory, and/or information theory. Your course of study must correspond to a five-year Norwegian course, where 120 credits have been obtained at master's level. Master students can apply, but the master's degree must be obtained and documented before starting the position.

- You must have a strong academic background from your previous studies and have an average grade from your Master's degree study, or equivalent education, which is equal to B or better compared to [NTNU's grading scale](#). If you do not have letter grades from previous studies, you must have an equally good academic foundation. If you have a weaker grade background, you may be considered if you can document that you are particularly suitable for a PhD education.
- You must meet the requirements for admission to the [Electronics and Telecommunication - PhD programme \(doctoral education\) - 3 years - Trondheim - NTNU](#).
- Good oral and written presentation skills in Norwegian or another Scandinavian language equivalent.
- Applicants who do not master a Scandinavian language must provide evidence of good written and spoken English language skills. The following tests can be used as documentation: TOEFL, IELTS, Cambridge Certificate in Advanced English (CAE), or Cambridge Certificate of Proficiency in English (CPE). Minimum scores are:
 - TOEFL: 600 (paper-based test), 92 (Internet-based test)
 - IELTS: 6.5, with no section lower than 5.5 (only Academic IELTS test accepted)
 - CAE/CPE: grade B or A.

PLEASE NOTE: For detailed information about what the application must contain, see paragraph "About the application".

The appointment is to be made in accordance with [NTNUs guidelines for recruitment positions](#) and [Regulations for the degrees philosophiae doctor \(ph.d.\) and philosophiae doctor \(ph.d.\) in artistic development work at the Norwegian University of Science and Technology \(NTNU\)](#) for general criteria for the position.

Personal characteristics

To complete a doctoral degree (PhD), it is important that you are able to:

- Work independently
- Work in a structured way, set goals and make plans to achieve them
- Work constructively under pressure or in the face of adversity
- Show curiosity and strong motivation for the subject
- Be flexible and open to adjusting the plan for the project as needed
- Be a team player
- Be honest and trustable
- Be social and pleasant to work with.

Emphasis will be placed on personal qualities.

We offer

Evaluate and remove/add what is relevant for the position.

- An exciting job with an important [mission](#) in society
- Developing tasks in a strong and international professional environment
- Career guidance and [follow-up during the PhD period](#)
- Open and inclusive working environment with committed colleagues
- [Working capital](#) that can be used to implement the project
- [Mentor programme](#) as a [new employee at NTNU](#)
- Favorable terms as a member of the [Norwegian Public Service Pension Fund \(SPK\)](#).
- Free Norwegian language training at a basic level ([A2](#)).

As a PhD Candidate at NTNU, you will have access to [employee benefits](#).

Diversity

Diversity is a strength, and at NTNU we aim to be an employer that reflects the diversity in society and that makes use of the potential of the population's collective skills. Our vision is [Knowledge for a better world](#) and [our values are creative, critical, constructive and respectful](#). We believe that an organization that is equal, diverse and gender-balanced is essential for us to achieve our goals.

We strive to attract employees with different skills, life experiences and perspectives to contribute to even better problem solving of our societal mission in research and education.

If you think this position is relevant and interesting, we encourage you to apply, regardless of gender, functional ability and cultural background, or whether you have been out of work for a period of time.

At NTNU we want to increase the proportion of women in scientific positions. We have a number of [measures](#) to promote equality.

Salary and conditions

In the position of PhD Candidate, code 1017, your gross salary will normally be NOK 550 800,- per annum depending on qualifications and seniority. A 2% statutory contribution to the State Pension Fund is deducted from the salary.

The employment period is 3 years.

For employment as a PhD Candidate, it is a prerequisite that you gain admission to the [PhD programme in Electronics and Telecommunication - PhD programme \(doctoral education\) - 3 years - Trondheim - NTNU](#) within three months of your employment contract start date, and that you participate in an organized doctoral programme throughout the period of employment.

As an employee at NTNU, it is important that you keep yourself up to date with academic and organizational changes and adapt to them.

For the necessary professional and social interaction, it is a prerequisite that you are physically present and available to the institution on a daily basis.

The appointment is carried out in accordance with the principles of the [State Employees Act](#), and [Export control](#) (legislation that regulates the export of knowledge, technology and services). Candidates who, after assessment of the application and attachments, are considered to be in conflict with the criteria in the latter act, will not be able to be employed.

About the application

The attachments (including a description of your scientific work) must accompany the application as these documents form the basis of the application assessment. The documents must be in Norwegian/a Scandinavian language or English.

Please note: the application will only be assessed on the basis of the information we have received by the application deadline. Therefore, make sure that your application clearly shows how your skills and experience meet the criteria described above. The application and all attachments must be sent electronically via [Jobbnorge.no](#). If you are invited to an interview, you must bring certified copies of certificates and diplomas upon request.

The application must include:

- Transcripts and diplomas for Bachelor's and Master's degrees.
- CV.
- Copy of Master's thesis. If you have recently submitted your Master's thesis, you can attach a draft of the thesis. Documentation of a completed Master's degree must be presented before taking up the position.
- Project outline containing proposals for an overall description of research questions, theoretical perspectives, methodological design for the project and progress plan (maximum 1500 words/4 pages).
- Short letter of motivation (400 words/1 page).
- Possibly publications etc. of other relevant research work.
- Possibly certificates.
- Names and contact information of three relevant referees.

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education, both Bachelor's and Master's education, in addition to other higher education. If your institution uses "diploma supplement" (normal for most European institutions), you must attach this. A description of the documentation required can also be found [here](#). If you already have a statement from [Norwegian Directorate for Higher Education and Skills \(HK-dir\)](#), please attach this as well.

Joint work will be considered. If it is difficult to identify your contribution to joint work, you must attach a brief description of your participation.

When assessing the best qualified, we emphasize necessary qualifications such as education, experience and personal suitability. Motivation for the position, ambitions, and potential for research will also count when assessing the candidates.

NTNU recognizes a wide range of academic contributions and has committed itself to [The San Francisco Declaration on Research Assessment](#) and [CoARA](#) (responsible assessment of research and recognition of a greater breadth of academic contributions in accordance with NTNU's social mission).

General information

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you wish to be exempt from entry on the public applicant list, this must be justified. Assessment will be made in accordance with [current legislation](#). You will be notified if the exemption is not granted.

If you think this position looks interesting and in line with your qualifications, you are welcome to apply

If you have any questions about the position, please contact Professor Ilangko Balasingham, email: ilangko.balasingham@ntnu.no. If you have any questions about the recruitment process, please contact HR at email hr@ies.ntnu.no.

Application deadline: 05.12.2022

For practical information about [working at NTNU](#), please visit [this webpage](#).)

[The city of Trondheim](#) is a modern European city with a rich cultural scene. [Trondheim is the tech capital of Norway](#) with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

NTNU - knowledge for a better world

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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of Electronic Systems

The digitalization of Norway is impossible without electronic systems. We are Norway's leading academic environment in this field, and contribute with our expertise in areas ranging from nanoelectronics, phototonics, signal processing, radio technology and acoustics to satellite technology and autonomous systems. Knowledge of electronic systems is also vital for addressing important challenges in transport, energy,

the environment, and health. [The Department of Electronic Systems](#) is one of seven departments in the [Faculty of Information Technology and Electrical Engineering](#).

Additional information

Contact person:

Ilangko Balasingham, Professor

Phone: | E-mail: Ilangko.balasingham@ntnu.no

Place of service:

Høgskoleringen 1 7491 Trondheim (Trondheim Municipality)