

Research topics	Foundations of Computing and Communication in Learning Systems
Position (M/F)	PhD, thesis offer
Reference offer	CS/PE/ learnsys/052025
Research Department	Communication Systems (CS)
Publication date	19/05/2025
Start date	Summer or Fall 2025
Duration	Duration of the thesis

Description

EURECOM, a prestigious French "Grande École" and research center located in Sophia Antipolis—the European Silicon Valley on the French Riviera—is offering a fully funded PhD position in the emerging field of computing and communicating in learning systems.

This interdisciplinary research lies at the crossroads of wireless communication, distributed computing, and machine learning, driven by the scientific and technological challenges of next-generation networks and large-scale AI systems.

The position is focused on rethinking how distributed computation and machine learning are performed over multi-user wireless systems, with emphasis on MU-MIMO, edge computing, and PHY-aware protocol design.

Research Focus Areas:

- **PHY-Aware Distributed Machine Learning:** Leveraging the physical layer (e.g., spatial diversity, interference alignment) to reduce latency and communication overhead, while increasing the reliability and scalability of learning protocols.
- **Communication-Computation Co-Design:** Developing novel distributed learning and data-processing protocols that are aware of and adapted to the wireless environment.
- **Sparse and Semantic-Aware Computing:** Designing distributed training protocols for large models (e.g., LLMs) that remain efficient under real-world constraints like device heterogeneity, straggler effects, and data correlation.

Requirements

▮ **Academic Level / Degree:** Master's degree (or equivalent) in Applied Mathematics, Computer Science, Telecommunications, or related fields.

▮ **Field of Specialization:** Distributed systems, machine learning, digital communications.

▮ **Technologies:** Wireless communication (e.g., MU-MIMO, edge computing), distributed learning systems.

▮ **Languages / Systems:** Python, MATLAB, or similar.

▮ **Additional Skills:** Strong background in probability, linear algebra, optimization, and information theory.

▮ **Other Requirements:** Excellent analytical thinking and a strong motivation to work on interdisciplinary research problems. Fluency in English (language of work).

Application

The application must include:

- Detailed curriculum,
- List of publications specifying the three most important publications,
- Motivation letter of two pages also presenting the perspectives of research and education (optional),
- Name and address of three references (Optional).

Applications should be submitted by e-mail to secretariat@eurecom.fr with the reference : CS/PE/ learnsys/052025



About EURECOM

EURECOM is a major Engineering School and a Research Center in digital sciences founded in 1991 as a consortium in the international technology park of Sophia Antipolis. The IMT is a founding member of the GIE. Teaching and research activities are organized around 3 promising fields: digital security, communication systems and Data Science.

EURECOM has a staff of 150 (researchers and support teams) and welcomes 400 international students on the Campus Sophia Tech, the largest information science and technology campus of the region. EURECOM enjoys a privileged geographical environment on the French Riviera (Côte d'Azur), between sea and mountains, at the heart of a dynamic and multidisciplinary ecosystem that promotes high-level scientific and technological innovation.

Social advantages

- International and multicultural environment
- Attractive salary - Corporate saving plans
- Private retirement plan (executive, employer participation of 100%)
- Employee profit sharing policy
- Company health insurance (mutuelle) with high levels of guarantees for the whole family (employer participation of 60%)
- Restaurant vouchers (employer contribution of 60%)

EURECOM is one of Europe's leading engineering schools specializing in digital technologies. It is located in the heart of the Côte d'Azur, in Europe's Silicon Valley (Tech Park Sophia-Antipolis). EURECOM's research teams work in an international, multicultural environment.

EURECOM has a dynamic policy in terms of inclusion and quality of life at work. We are committed to diversity and give equal consideration to all applicants, without discrimination. Above all, we look for competence and team spirit.

All our positions are open to people with disabilities. EURECOM has set up a disability advisor to provide support and advice, organize accommodation and make positive commitments to personal integration.

As part of its gender equality plan, EURECOM encourages gender diversity within its teams. As part of our gender equality action plan, we encourage male applications for administrative positions, traditionally held by women, and female applications for IT and research positions, traditionally held by men.

EURECOM is taking positive action as part of its CSR policy. A CSR representative oversees EURECOM's CSR and energy transition policies (electric charging stations, solar panels, waste sorting, etc.).

Web site EURECOM: <https://www.eurecom.fr/fr/eurecom/presentation>

EURECOM in VIDEO: <https://www.youtube.com/watch?v=u1IFcgNijnM>

Employee experience:

<https://www.youtube.com/watch?v=BHv9zlduzuQ>

<https://www.youtube.com/watch?v=hvbzzCBups8>