Postdoctoral Researcher Position in Learned Multiterminal Coding for Cooperative Intelligent Machines

We invite applications for a postdoc researcher position within the prestigious European Research Council (ERC) Consolidator Grant "Reinventing Multiterminal Coding for Intelligent Machines (IONIAN)." As data volumes captured by intelligent machines (such as video and point cloud signals) surge, traditional storage and communication approaches struggle to keep pace. IONIAN disrupts compression and communication systems for autonomous vehicles, smart transportation systems, and unmanned aerial vehicles by creating a groundbreaking framework underpinned by interpretable and explainable AI.

Position Overview

You will pioneer semantic multiterminal compression theory and code design, and their real-world deployment in autonomous systems such as ground and aerial vehicles, and mobile robots. This includes:

- Formulate and solve semantic multiterminal compression problems by integrating information theory with state-of-the-art machine learning.
- Design, implement, and experimentally validate learning-based methods for semantic multiterminal data compression and communication.
- Collaborate with an interdisciplinary team to test solutions on real-life testbeds, including an autonomous vehicle.
- Publish research findings at top-tier conferences and journals.
- Interact with academic collaborators, industrial partners, and researchers within the IONIAN consortium.
- Organize and participate in project meetings, present research findings, and contribute to project reports.
- Participate in the follow-up of PhD and master thesis students.

Required Qualifications:

- A PhD in Electrical Engineering, Computer Science, Applied Mathematics, or a related field.
- Solid knowledge of information theory and coding, and experience with learned compression methods for image, video, or point cloud.
- Record of first-author publications in reputable journals or conferences such as IEEE Transactions on Information Theory / Communications / Signal Processing / Image Processing or NeurIPS, ICLR, ICML, CVPR, etc.
- Advanced programming skills (Python, C++) and proficiency with deep learning frameworks such as PyTorch, TensorFlow, or JAX.
- Aptitude for analytical thinking, problem-solving, and mathematical rigor.
- Excellent verbal and written communication skills in English.
- Strong team spirit and capacity to work both independently and collaboratively.

Nice-to-Haves
- Experience with multiterminal source coding or network information theory.
- Experience with cooperative communication in autonomous platforms.
- Experience with experimental or simulation-based research involving real-world multimedia data.

Offer:
A postdoctoral position with a competitive salary, renewed annually following positive evaluations. You will join an inspiring, dynamic, international team of researchers, post-docs, and professors at ETRO, part of the Vrije Universiteit Brussel (VUB). You will work closely with leading experts in information theory, signal processing, and computer vision and collaborate with partners across Europe and beyond. You will grow professionally through presenting at major conferences, receiving specialized training, and building a global network in academia and industry. We offer an attractive remuneration package that includes a competitive salary, holiday pay, hospital insurance, public transport coverage, and generous annual leave. The principal place of work is the VUB campus (Etterbeek) at Pleinlaan 2, 1050 Brussel.

About ETRO-VUB:
ETRO, the Department of Electronics and Informatics (http://www.etrovub.be/) of the Vrije Universiteit Brussel (VUB), performs fundamental and applied research in Micro- & Optoelectronics, multidimensional signal processing, and audiovisual computing. We are a core member of imec, the world-leading research and innovation hub in nano-electronics and digital technologies. English is our primary working language, and we foster a welcoming, multicultural environment.

Application Procedure
Please compile and submit the following documents into a single PDF:
- Cover Letter (1-2 pages): Describe your motivation, relevant background, and how your interests align with the position.
- Curriculum Vitae: Highlight academic qualifications, top-tier publications, relevant research, technical skills, and awards.
- Research Statement (optional if covered in the cover letter): Outline past research experiences and future research interests, research collaborations, and vision in semantic multiterminal compression theory and code design.
- Key Publications: provide links to 3–5 of your most representative publications and include a brief annotation describing the significance of each work.
- References: Contact details of 2–3 referees who can attest to your academic or professional capabilities.

Application Deadline: May 11, 2025.

Contact Information:
For more information, please contact Prof. Dr. Ir. Nikos Deligiannis, Email: nikos.deligiannis@vub.be

Start Date: September 1, 2025.

You may also find additional details about the ERC IONIAN project at https://shorturl.at/dTG0q and about ETRO at https://www.etrovub.be