Postdoc Position in Cooperative Perception & Multiterminal AI for Autonomous Vehicles

We invite applications for a fully-funded postdoctoral researcher within the prestigious European Research Council (ERC) Consolidator Grant "Reinventing Multiterminal Coding for Intelligent Machines (IONIAN)."

Why cooperative perception?

State-of-the-art autonomous vehicles can miss a critical obstacle when their camera is blinded by sun glare, or their LiDAR beam is blocked by a truck. To reach level-4/5 autonomy, we need teamwork: nearby vehicles, drones, and roadside units must co-perceive their environment, sharing and fusing complementary sensor views in real time. Yet raw video and point-cloud streams are massive, wireless links are unreliable, and safety demands that information be both timely and trustworthy.

IONIAN tackles this bottleneck head-on. We will re-invent multi-agent AI, cooperative vision, and compression protocols so fleets of intelligent machines can perceive the world—robustly, efficiently, and in a trustworthy manner—even when individual sensors fail or are occluded.

Position Overview

As a postdoctoral researcher, you will forge a **novel framework for cooperative perception** by disrupting today's most vibrant research threads in AI:

- Generative Diffusion & 3D/4D Scene Synthesis: Re-design diffusion and NeRF-style models so multiple agents jointly reconstruct a scene.
- Cooperative Scene Understanding: Re-design semantic segmentation and object-detection models in a cooperative perception setting.
- Semantic-Aware Compression & Network Information Theory: Derive new rate–distortion–reliability bounds, design adaptive codecs that prioritise safety-critical bits, and close the loop between information theory and AI models for cooperative perception.
- Real-World Validation: Deploy and benchmark your algorithms on our autonomous vehicle, mobile robots, and UAV testbeds.

You will:

- Publish in CVPR/ICCV/ECCV, NeurIPS/ICLR, INFOCOM/ISIT and leading IEEE journals (T-PAMI, T-IP, T-IT, T-CSVT and T-SP).
- Collaborate with top EU & US labs and industry partners.
- Mentor PhD and Master's students and assist in project follow-up.

Required Qualifications:
- PhD degree in Electrical Engineering, Computer Science, Applied Mathematics, or related field.
- Solid grounding in computer vision, machine learning, image, video, or point cloud processing.
- Record of first-author publications in reputable conferences like NeurIPS, ICLR, ICML, CVPR, and top-tier journals like IEEE T-IP, T-SP, T-PAMI.
- Proficiency with deep learning (PyTorch/TensorFlow/JAX).
- Genuine interest in: deep learning for generative AI, 3D vision, and compression.
- Strong programming skills; analytical rigour; excellent English.

Nice-to-Haves
- Prior work on cooperative perception, vision-language models, or compression algorithms.
- Experience with robotics, autonomous vehicles, and multi-agent AI.

Offer:
- Postdoctoral position (annual renewal upon positive evaluation) at ETRO, Vrije Universiteit Brussel (VUB).
- Competitive salary, hospital insurance, transport coverage, and generous leave.
- Daily collaboration with an international team of experts in computer vision, signal processing, machine learning, and autonomous vehicles.
- Access to state-of-the-art sensing platforms and the imec ecosystem.
- Support for conference travel, specialised training, and broad networking.

Workplace: VUB Etterbeek campus, Pleinlaan 2, 1050 Brussels, Belgium.

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 signal processing, AI, computer vision, NLP, electronics, and computing. We are a 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

Combine the following into one PDF and email it to nikos.deligiannis@vub.be:
- Cover Letter (1-2 pages) - motivation and fit.
- Curriculum Vitae - education, publications, skills, GitHub / software portfolio link
- References - contact details of 2-3 referees.

Start Date: 1 September 2025 (or as soon as possible thereafter).

More on the ERC IONIAN project: https://shorturl.at/dTG0q

Join us to redefine how machines see, communicate and decide— together.