# HYBRAIN

Learn more about the project!

**HYBRAIN aims to develop a hybrid electronic-photonic super-fast and energy-efficient computing system inspired by the human brain to enable innovative Edge Computing and Artificial Intelligence solutions.**

## Key Exploitable Results

- Analog Hardware Acceleration Kit for enhancing AI experiments and drive AI advances.
- Python package for designing photonic integrated circuits on semiconductor development processes.
- Specialised surrogate models, in the form of a software framework - brains-py package - for implementing deep-learning neural networks and studying dopant-network processing units.
- Method for automatic speech recognition.

**15+ Papers created with financial support from HYBRAIN. Explore the publications!**

## Technologies leveraged in the Project

**Photonic Convolution Processor (PCP)**
Employs light for data processing, offering high bandwidth and low latency, revolutionizing big data handling with increased speed and energy efficiency.

**Analog In-Memory Computing (AIMC)**
Integrates computation within memory for reduced latency and enhanced parallel processing capabilities, ideal for handling extensive data tasks.

**Dopant Newtork Processing Units (DNPUs)**
Utilises dopants within semiconductors to create energy-efficient processors that enhance computational speed and reduce neural network complexity.

Project coordinator

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