SYLLABUS DEL CORSO

Neuromorphic computing: materials and devices

2223-116R-M6

Title

Neuromorphic computing: Materials and devices

Teacher(s)

Dr. Sabina Spiga, CNR-IMM

Language

English

Short description

The course aims at introducing neuromorphic computing by providing examples of materials and devices for this key enabling technology.

The following topics will be discussed:

1: Introduction to Neuromorphic computing: basics concepts and role of novel materials and devices
2: Resistance based memories: materials, type of devices, working principles and programming schemes
3. Implementing neuromorphic functionalities in hardware by exploiting devices dynamics and stochasticity:

synapses, neurons, dendrites, biological- inspired learning rules

4: Type of neural networks and novel applications for neuromorphic computing systems: deep neural network (DNN), spike neural networks (SNN), reservoir computing, implementing neuromorphic functionalities in real circuit, applications enabled by neuromorphic computing.

CFU / Hours

1 CFU / 8 hours

Teaching period

September (2023) 12,13,14,15 from 15.30 to 17.30

One of the above could be shifted (check for emails from Prof. Montalenti or Di Valentin) on September (2023) 19th from 15.30 to 17.30

All lectures will be given in Aula Seminari (U5, I floor)

Sustainable Development Goals

QUALITY EDUCATION