NEURAL NETWORKS AND NEURAL COMPUTERS

The programme is designed to orient the students with the domain of computation science, neural network and their implementation in modern computer architectures with the application in the area of:

- Information Security;
- Image Processing (2D and 3D);
- Signal Processing (voice, radar, etc.);
- Data Processing (text and other);
- Modern computing hardware;
- Parallel, distributed and cloud computing.

KEY ADVANTAGES:

- Wide range of foreign partners and world-known Professors;
- Focused on students projects;

STUDIED COURSES:

1st semester:
- Introduction to Neural Networks Theory;
- Introduction to Hybrid Systems;
- Introduction to Statistics;
- Introduction to Cyber Security/ Information Security;
- Introduction to Image and Text Processing;
- Introduction to Matlab;
- Startups in Intelligent Technology Area;

2nd semester:
- Neural Networks and Hybrid Systems for Modeling, Control and Pattern Recognition. Part 1;
- Special Neural Networks Architectures;
- Neurocomputers;
- Neural Network in Cyber Security and Intelligent Methods for Information Security. Part 1;
- Neuromathematics;
- Introduction to Distributed and Parallel Computing;
- Introduction to Cloud Computing;

3rd semester:
- Neural Networks and Hybrid Systems for Modeling, Control and Pattern Recognition. Part 2;
- Neural Network in Cyber Security and Intelligent Methods for Information Security. Part 2;
- Spiking Neural Network with Memristors;
- Neural Networks for Gaps Filling in Tabulated Data;
- Neural Networks for Text Processing;
- CUDA Accelerated Neural Network;
- Hadoop-based Neural Networks.

4th semester:
- Student’s Projects in the area of:
  - Research and development of memristors models
  - Neural networks for computer intrusion detection
  - Neural networks for image processing (2D and 3D)
  - Neural networks for text processing
  - Neural networks for signal processing
  - and other

TEACHING METHODS:

- Lectures;
- Lot of Seminars and Computer Lab;
- Required Courseworks;
- 4th semester – students own Project with Lecturer’s advice;
- Wide literature overview.

PROGRAMME PARTNERS:

- Centre of Information Technology and Systems (Russia);
- Czestochowa University of Technology (Poland);
- VNU University of Engineering and Technology (Vietnam);
- Le Quy Don University of Science and Technology (Vietnam);
- Indian Institute of Information Technology-Allahabad (India);
- Tsinghua University (China);
- St. Xavier’s College (India).

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