Lviv Polytechnic National University is the oldest technical educational institution in Ukraine and Eastern Europe. The history of Lviv Polytechnic University dates back to the foundation of the Technical Academy in Lviv in 1844.

Today about 30 000 students study here in 41 directions.

Over 185 doctors of science, professors and about 1000 candidates of science (PhD), associate professors work at the University.

University consists of 16 institutes (82 departments).

A lot of additional information on web site: www.lp.edu.ua
Institute of Computer Science and Information Technologies

5 Departments:
1. Automatic Control Systems;
2. Computer Aided Design Systems;
3. Software Engineering;
4. Information Systems and Networks;
5. Applied Linguistics

The Institute prepare specialists in:
1. computer science
2. information management systems and information technologies
3. Computer aided design technologies
4. software for automation systems
5. intelligent decision making
6. applied linguistics
7. computer-aided science and publishing
8. software engineering
Computer Aided Design Systems
Department

Established in 1989 on the base of the Radio Engineering and Manufacturing Department

Actual Department’s Staff includes:
• 2 professors;
• 15 associate professors;
• 6 senior lectures;
• 7 assistants;
• and 10 PhD students

Software tools, used for teaching and research:
• Electronic CADs (pCAD, OrCAD, etc);
• Mechanical CADs (AutoCAD, SolidWorks, etc.);
• Mathematical CADs (MathCAD, MathLab, etc.);
• Specialized tools and CADs (Ansys, Cadence, Coventor, etc.);
• Self-developed tools (Promis-IC, Promis-T, OmegaLP, StyleX, etc.).
International Scientific - Research Conferences

• THE EXPERIENCE OF DESIGN AND APPLICATION OF CAD SYSTEMS IN MICROELECTRONICS (CADSM) (since 1996)

• PERSPECTIVE TECHNOLOGIES AND METHODS IN MEMS DESIGN (MEMSTECH) (since 2005)

• CAD IN MACHINERY DESIGN: IMPLEMENTATION AND EDUCATIONAL PROBLEMS (CADMD) (since 1992)
CADSM Topics

MODELLING AND OPTIMIZATION FOR TECHNOLOGICAL PROCESSES

MODELS AND METHODS FOR RADIOELECTRONIC DEVICES AND SYSTEM DESIGN
Signal processing in radio-electronic system and telecommunications. Telecommunications and radio-electronic design tools. Electronic and computer tools in biomedical engineering. Methods and tools of digital signal processing

DESIGN OF SPECIALIZED SYSTEMS AND DEVICES

OPTIMAL DESIGN PROBLEMS

MODERN INFORMATION TECHNOLOGIES IN CAD

MODELS AND METHODS FOR MICROELECTROMECHANICAL SYSTEMS
Mathematical model of sensors and actuators. Microsystems modeling and design. New microelectronic technologies.
MEMSTECH Topics

- ANALYSIS, MODELING, RESEARCH AND DESIGN METHODS OF MICROSSENSORS AND MICROACTUATORS;

- SOFTWARE SYSTEMS, MODELS, ALGORITHMS, METHODS AND STRATEGIES OF EMBEDDED SYSTEMS DESIGN;

- FIELD ISSUES IN EMBEDDED SYSTEMS MODELING AND DESIGN;

- TESTING, VERIFICATION, RELIABILITY AND OPTIMIZATION IN EMBEDDED SYSTEMS MODELING AND DESIGN;

- SENSORS AND ACTUATORS SYSTEMS, NANO TECHNOLOGY;

- APPLICATIONS FOR ELECTRON DEVICE DESIGN;

- INFORMATION TECHNOLOGIES AND ENGINEERING EDUCATION IN MEMS DESIGN.
Department’s Scientific Activity

1. Automation of design of IC and electronic devices;
2. Design, modeling, simulation and optimization of MEMS and microsystems;
3. Automation of design of complicated organizational systems;
4. Development of complicated information systems for simulation of ecological and economic processes;
5. Design and simulation of complex technological processes.
1. Automation of design of microelectronic devices

- Algorithms and applications for topological synthesis of hybrid integral micro-assemblies and electronic circuits.
- Modern methods for defects analysis in microelectronic circuits
- Optimization tasks solution on graphs
- Research of graphs’ isomorphousness

Prof. Lobur M.

Dr Tkatchenko S.
Publications


2. Design, modeling, simulation and optimization of MEMS and other microsystems;

- Design and simulation of micro electro-mechanical systems (MEMS).
- Development of CAD tools for MEMS’ design.
- Mathematical simulation of MEMS’ technological processes - diagnosing deviations in technological processes based on functional control and system testing results.
Publications


AUTOMATED PROCESS ENGINEERING OF PIEZORESISTIVE MICROSENSOR’S PARAMETERS CALCULATION

The technology and subsystem for execution of automated calculation and creation of the technical documentation of the piezoresistive microsensors with the help CAD/CAM/CAE is presented. The associations between physical values and voltage out from a bridge circuit of piezoresistive microtransmitters are obtained.

Fig. 1. Constructions of microsensors of a piezoresistive type, where a, b, c - microsensors for measuring pressure, magnetic field and thermoelectric couple

Fig. 2. Finite-element models of a microsensor, where a, b, c - for measuring pressure, magnetic field and thermoelectric couple

Fig. 3. Stress state of piezoresistive microsensors for measuring:
a, b - pressure, c, d – magnetic field and e, f – thermoelectric couple
Automation Design Of Typical Mems Accelerometer

The method of rapid analysis of the typical MEMS-accelerometers in the ANSYS environment is presented in the work.

Fig. 1. ANSYS code to create the geometry
Non-linear Dynamic Systems Analysis
Publications


3. Automation of design of complicated organizational systems

- Software and hardware design for organizational and technical systems.
- Development of algorithms and applications in the field of transportation.
- Development of systems for city transport modeling and investigation of its influence upon city noise maps.
Publications


4. Development of complicated information systems for simulation of ecological and economic processes

- Development of complicated information systems for simulation of ecological and economic processes.
- Systems for distributed collaborative design
- Groupware and CSCW systems
- Commercial database design and programming
- Design of complicated information systems MRP/ERP;
- Simulation and design of complicated processes моделювання та аналіз складних процесів методами нечіткої логіки;

Dr Matviykiv O.

Dr Inż. Kernitsky A.
Publications


OmegaLP system
StyleX
5. Design and simulation of technological processes.

Microelectronic technological processes: Epitaxy; Diffusion; Deposition; Oxidation, Etching, etc.

Автоматизация технологической подготовки производства (радиотехническая и машиностроительная промышленность).

Dr Teslul W.

Dr Panchak R.
Publications


Perspectives of Participation in FP7-ICT-2007-5

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Thank you for attention!

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