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Інформаційних технологій

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# Scientific Schools of SE&MIT Department Professors



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## Andrii Mykhailovych KOPP,

Head of the Department of Software Engineering and  
Management Intelligent Technologies, PhD, Associate Professor



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## Research areas and topics

### 1: Using Machine Learning methods and the probability of errors in business process models :

- Evaluating the effectiveness of machine learning algorithms in business process models.
- Investigating the impact of different training methods on the accuracy of business process models.
- Development and evaluation of new methods for predicting errors in business processes based on Machine Learning.
- Determining optimal strategies for correcting errors in business process models using Machine Learning algorithms.

### 2: Using Natural Language Processing to analyze the compliance of textual descriptions of business processes with models :

- Development of methods for automatic analysis of textual descriptions of business processes and their transformation into models using NLP.
- Assessing the quality and accuracy of text analysis for building business process models.
- Researching the impact of different natural language processing methods on the efficiency of analyzing textual descriptions of business processes.
- Development of intelligent decision support systems for building business process models based on NLP.

### 3: Estimation of efforts and costs for business process modeling based on well-known software engineering models :

- Analysis and comparison of business process modeling methods using software engineering tools.
- Determining the best strategies for using existing software engineering models to model business processes.
- Development of metrics and tools for evaluating the effectiveness of business process modeling based on software engineering.



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**Mykhailo Dmytrovych GODLEVSKYI,**  
Doctor of Technical Sciences, Professor

## Research areas and topics



- **Research areas:** decision-making support in the tasks of managing the development of distributed systems; system optimization; quality of the software development process.
  - Models and information technology for planning to improve the quality of a subset of processes of the SPICE maturity model
  - Synthesis of the structure of the SPICE INTEGRATION maturity model based on the SPICE reference model

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**Valentyna Volodymyrivna MOSKALENKO,**  
Doctor of Technical Sciences, Professor

## Research areas and topics



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### •Analysis and evaluation of the effectiveness of virtual promotion:

- Development of software components for overall evaluation of the effectiveness of the virtual promotion cycle.
- Modeling and analyzing the impact of different promotion strategies on results.
- Development of software for evaluating the effectiveness of a node in the process of promoting goods on the Internet.
- Development of software to implement the method of synthesizing a map of product promotion on the Internet.

### •Semantic analysis and data processing:

- Development of software components for clustering semantic cores of digital content.
- Synthesizing the semantic core of an HTML document and analyzing it.
- Development of software components for implementing the algorithm of HTML document representation as a semantic network.
- Analyze and process the structure of HTML documents for further use in semantic analyzers.

### •Financial analysis and resource management:

- Development of software components for assessing the financial condition of the Internet node.
- Analysis of financial indicators and resources to optimize promotion strategies.



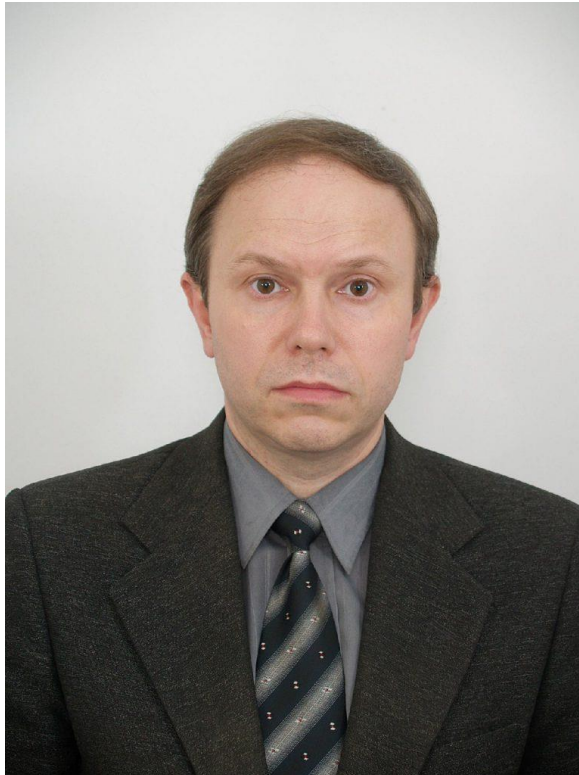


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**Dmytro Leonidovych ORLOVSKYI,**  
PhD, Professor



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[ORCID](#) / [Google Scholar](#)

## Research areas and topics

- **Research areas:** databases and data warehouses, analytical data processing, software design and development, engineering and re-engineering of business systems and business processes.
  - Design and development of software for an information system for analyzing client activities
  - Development of algorithmic and software to solve the problem of supply chain management
  - Development of algorithmic and software for solving the problem of pricing (on the example of a trading company)
  - Development of algorithmic and software for solving the problem of predicting the risk of forest fires



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**Olga Yuriivna CHEREDNICHENKO,**  
Doctor of Technical Sciences, Professor



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## Research areas and topics

- **Research areas:** models for searching and collecting business information based on multi-agent technologies.
  - Research of models and program components of the recommendation system for educational process support
  - Research of models and software components of the recommender system for event search
  - Researching models and software components for collaborative business intelligence
  - Research and development of models and software solutions for investment project evaluation
  - Research of models and software solutions for solving the problem of predicting student performance



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**Serhii Vasylovych SHEVCHENKO,**  
PhD, Professor

## Research areas and topics



- **Research areas:** tasks of dynamic management of electricity production and supply, system management of the development of distributed data processing systems; system optimization; improving the efficiency of parallel computing processes management.
  - Research, design and development of software components for the formation and analysis of product clusters on the Internet

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**Mariia Oleksiivna BILOVA,**  
Candidate of Technical Sciences, Associate Professor

## Research areas and topics



- **Research areas:** quality assessment of complex objects, quality training of IT company personnel.
  - Design and development of software components for verification of learning outcomes in the startup management system
  - Design and development of software components for a web-based project management system
  - Design and development of software components for a decentralized voting system
  - Design and development of a software component for e-learning support with elements of artificial intelligence
  - Design and development of software components for building an individual student learning trajectory in a learning management system
  - Design and development of software components for an automatic system for evaluating e-learning results
  - Design and development of software components for a gas station search system
  - Design and development of software components for a gaming platform for tracking and placing bets on gaming events
  - Design and development of software components for a web-based system for providing consultations
  - Design and development of software components for a discount system for service establishments

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**Volodymyr Petrovych BURDAEV,**

PhD in Physics and Mathematics, Associate Professor



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## Research areas and topics

- **Research areas:** open systems, expert systems, expert learning systems, multi-agent systems, intelligent analysis, cloud technologies, chatbots, mobile technologies.
  - Design and development of software components for software distribution and sales forecasting
  - Development and testing of a knowledge base model for choosing a software platform for creating web applications
  - Software implementation of a neural network for analyzing and evaluating user reviews of products in online stores.



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**Valerii Yuriyovych VOLOVSHCHYKOV,**

Candidate of Technical Sciences, Associate Professor

## Research areas and topics



- **Research areas:** information technologies of systems management under conditions of uncertainty.
  - Design and development of software components for software distribution and sales forecasting
  - Development of models and software solutions for assessing the reliability of native mobile applications using static methods
  - Development of models and software solutions for extracting metadata of scientific articles
  - Development of models and software solution for generating recommendations of online store products based on machine learning methods
  - Development of models and software solutions for assessing the reliability of software systems using dynamic methods
  - Development of models and software solution for aggregation of data from Internet sources to form a catalog of household devices

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**Dmytro Eduardovych DVUKHHLAVOV,**  
PhD, Associate Professor

## Research areas and topics



- **Research areas:** information systems software; image processing, information support of the educational process.
  - Design, development and research of a software solution for recording attendance in distance learning
  - Design, development and research of software application for analyzing the correctness of text documents in the field of educational process
  - Design, development and research of a system for generating documentation for maintaining a list of employees registered with the military
  - Design, development and research of a web application for maintaining a list of information sources for the preparation of educational documentation of the department
  - Design, development and research of a system for selling goods based on cloud architecture
  - Design, development and research of a software component for analyzing the accessibility of Spring web pages for blind users

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**Svitlana Mykolaivna KOVALENKO,**

Candidate of Technical Sciences, Associate Professor

## Research areas and topics



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- **Research areas:** Information technology, economic and mathematical modeling, software of modeling and optimization methods, data analysis.
  - Design and development of an online store with elements of personalized online shopping based on artificial intelligence
  - Design and development of a web-based personalized fitness platform
  - Design and development of software components for a web-based photo identification system
  - Design and development of a software solution for recognizing handwritten characters
  - Design and development of software components for a computer vision-based parking metering system





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**Mariia Mykhailivna KOZULYA,**

Candidate of Technical Sciences, Associate Professor

## Research areas and topics



- **Research areas:** system analysis, environmental monitoring, information technology.
  - Development and design of software components for a mobile application for work planning
  - Development and design of a software application for learning a foreign language
  - Development and design of a web application for finding housing for families in difficult life situations
  - Development and design of a web application for an interactive map of historical monuments
  - Development and design of a web application for finding and providing volunteer assistance
  - Development and design of a software application for efficient administration of dental services

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**Uliya Serhiivna LITVINOVA,**

Candidate of Technical Sciences, Associate Professor

## Research areas and topics



- **Research areas:** mathematical modeling, 3D printing, creation of mathematical models for the implementation of 3D printing.
  - Design and development of software for an interactive web-based training system
  - Design and development of a mobile application for vehicle inspection.
  - Design and development of software for a web-based system for selecting online courses.
  - Design and development of software for a mobile application for automating the activities of a robotic store.
  - Design and development of software for routing USSD requests
  - Design and development of software for a web-based system for selecting a rehabilitation complex of exercises taking into account the individual characteristics of the patient.
  - Design and development of software for a web application for real-time messaging

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**Iryna Viktorivna LIUTENKO,**

Candidate of Technical Sciences, Associate Professor

## Research areas and topics



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- **Research areas:** decision-making support in the tasks of managing the development of complex systems, evaluation of multi-attribute objects, quality assessment of software tests.
  - Research, design, and development of software components for quantitative evaluation of tests and the testing process
  - Development and research of models and software solutions for evaluating online shopping sites
  - Research, design, and development of software solutions for comprehensive evaluation of automated testing
  - Development and research of software solutions for evaluating applications of trading enterprises
  - Research, design, and development of software components for evaluating recommender systems in the field of trade
  - Research and development of models and software solutions for evaluating investment projects in the social sphere
  - Development and research of models and software solutions for real-time medical data processing
  - Development and research of models and software solutions for planning and tracking physical activity
  - Research and development of models and software solutions for evaluating RNG frameworks





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**Karina Volodymyrivna MELNYK,**  
Candidate of Technical Sciences, Associate Professor

## Research areas and topics



- **Research areas:** information technology, medical decision support systems, data mining.
  - Design and development of a software solution for scoring a client
  - Development of software components for evaluating candidates for a vacant position
  - Design and development of a web application for adaptive assessment of students' knowledge
  - Development of software components for patient assessment and monitoring

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**Volodymyr Yevhenovych SOKOL,**  
PhD, Associate Professor



## Research areas and topics

- **Research areas:** knowledge management systems, training and retraining of IT companies' personnel, life-long learning, quality of software development process.
  - Design and development of a software solution for finding and visualizing the necessary pathways to fulfill the requirements of the European Competence Matrix
  - Design and development of a software solution for finding the correspondence between courses and competencies using the European Competence Matrix
  - Design and development of a software solution for an interactive recommendation system for course selection using the European Competence Framework
  - Design and development of a software solution for the selection of candidates according to the requirements of the target position profile

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**Nataliia Hryhorivna FONTA,**  
PhD, Associate Professor



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## Research areas and topics

- **Research areas:** system analysis, development of information systems for management automation in hierarchical distributed socio-economic systems.
  - Design and development of software for personnel evaluation and selection
  - Design and development of a software component of the port logistics system with the function of recognizing the numbers of sea containers
  - Design and development of software for monitoring financial transactions to detect fraud
  - Design and development of a software component for assessing the borrower's credit risk using AI/ML
  - Design and development of a software module for forecasting exchange rates using machine learning
  - Development of algorithmic and software for recognizing documents and numbers of sea containers



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**Serhii Valeriyovych OREKHOV,**  
PhD, Associate Professor



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## Research areas and topics

### •Analysis and evaluation of the effectiveness of virtual promotion:

- Development of program components for the overall assessment of the effectiveness of the virtual promotion cycle.
- Modeling and analysis of the impact of different promotion strategies on the results.
- Development of software for evaluating the effectiveness of a node in the process of promoting goods on the Internet.
- Development of software to implement the method of synthesizing a map of product promotion on the Internet.

### •Semantic analysis and data processing:

- Development of software components for clustering semantic kernels of digital content.
- Synthesis of the semantic core of an HTML document and its analysis.
- Development of software components for implementing the algorithm of HTML document representation as a semantic network.
- Analysis and processing of HTML document structure for further use in semantic analyzers.

### •Financial analysis and resource management:

- Development of software components for assessing the financial condition of an Internet node.
- Analysis of financial indicators and resources to optimize promotion strategies.



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**Natalia Leonidivna CHERNOVA,**  
Candidate of Technical Sciences, Associate Professor

## Research areas and topics



- **Research areas:** complex models of support and decision-making for the management of complex systems.

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**Oleksandr Vitaliyovych SHMATKO,**  
PhD, Associate Professor



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## Research areas and topics

- **Artificial intelligence and machine learning:**
  - Developing intelligent systems such as chatbots, recommender systems, and classification systems using machine learning techniques.
  - Use of supervised and unsupervised learning algorithms for data analysis and decision making.
- **Cybersecurity and information protection:**
  - Development of fraud detection, security assessment and intrusion detection systems for financial and information systems.
  - Use of cryptographic methods, such as zk-SNARK, to ensure data confidentiality and verify its correctness.
- **Medical informatics and medical data processing:**
  - Development of software components for analyzing medical images (e.g., MRI) and diagnostic systems.
  - Use of machine learning technologies for automatic processing and analysis of medical data.
- **Financial technologies and blockchain:**
  - Development of software components for creditworthiness assessment, movie recommendation system, financial flow management system, etc. using blockchain technologies and smart contracts.