

## List of supervisors and dissertation topics FIS 2025/2026

### Study Programme Applied Informatics

#### Department of information technology (KIT)

##### prof. Ing. Josef Basl, CSc.

- Methodological framework for innovation of information systems of enterprises and organizations
- Optimization approaches to deployment and use of information systems of enterprises and organizations
- Application of rationalisation methods to increase the benefits of information systems
- Applying the principles of the theory of constraints (TOC) to increase the benefits of information systems
- Automation, robotics and integration of information systems applications

##### prof. Ing. Alena BuchalcevoVá, Ph.D.

- Use of large language models and machine learning for autonomous software testing (co-supervisor Dr. M. Doležel)
- Exploiting the potential of personal health information systems and consumer informatics to support healthy lifestyles and disease prevention (co-supervisor Dr. Michal Doležel)
- Potential of digital technologies for the development of mindfulness techniques based on monitoring physiological indicators of stress (co-supervisor Dr. Michal Doležel)
- Use of large language models and wearable electronics in the field of P4 (Predictive, Preventive, Personalized, Participatory) healthcare (co-supervisor Dr. Michal Doležel)

##### doc. Ing. Miloš Maryška, Ph.D.

- Internet of Things and Industry 4.0
- Corporate Performance Management
- Design of a model for performance management of corporate informatics with BI support
- IoT system architecture
- Predictive maintenance

##### prof. Ing. Václav Řepa, CSc.

- Business Process Management
- Information Modeling
- Conceptual Business Analysis

##### Consultants (co-supervisors) at KIT:

- Ing. et Ing. Michal Doležel, Ph.D.
- Ing. Martin Potančok, Ph.D.

## Department of information and knowledge engineering (KIZI)

prof. Ing. Petr Berka, CSc.

- Knowledge representation and inference methods in knowledge-based systems
- Machine learning methods
- Rule-based and case-based reasoning in knowledge-based systems
- Data pre-processing for knowledge discovery tasks

doc. Ing. Tomáš Kliegr, Ph.D.

- Utilization of psychological phenomena in machine learning
- Bias detection in knowledge graphs using active learning
- Development and evaluation of classification algorithms for interpretable machine learning

prof. RNDr. Jan Rauch, CSc.

- Knowledge discovery from databases (consultant RNDr. Petr Máša)

doc. Ing. Vilém Sklenák, CSc.

- Information retrieval

prof. Ing. Vojtěch Svátek, Dr.

- Explainable Artificial Intelligence based on ontologies and knowledge graphs
- Construction and management of knowledge graphs in support of detection and explanation of misinformation
- Graph visualization for misinformation explanation

doc. Ing. Mgr. Miroslav Vacura, Ph.D.

- Ontology engineering

Ing. Jiří Vomlel, Ph.D.

- Bayesian networks for Educational Applications
- Bayesian Network Analysis of Conspiracy and Disinformation Narratives

doc. Ing. Ondřej Zamazal, Ph.D.

- Complex ontology alignment

Consultants (co-supervisors) at KIZI:

- RNDr. Ing. Petr Máša, Ph.D.
- Ing. Ondřej Vadinský, Ph.D.
- Ing. et Ing. Stanislav Vojíš, Ph.D.

## Department of multimedia (KME)

doc. Ing. Stanislav Horný, CSc.

- Multimedia communication process and system
- Semiotics of multimedia
- Multimedia theory
- User interfaces of information systems and multimedia aspects of information systems

- Information interpretation in relation to different types of media; relationships between content and form of multimedia communication; narrative and non-narrative ways of communication
- Use of IT and multimedia in education
- Multimedia content production and distribution: business models, technologies and targeting

### Department of systems analysis (KSA)

#### doc. Ing. Mgr. Zdeněk Smutný, Ph.D.

- Research in social informatics (or related fields: computer-mediated communication; human-computer interaction; ICT and society; internet studies; science, technology and society) – *also suitable for graduates of Master's programmes in sociology, psychology, anthropology, media and communication studies or statistics*
- Research on the acceptance, adoption or resistance to implementation of information and communication technologies relevant to the field of health informatics – *also suitable for graduates of health-related master programmes*
- Designing a solution to a problem in a selected application area using computing, information or communication technology
- Research on the acceptance or adoption of technology (based on ICT) by a selected social group or category
- Research on the acceptance of ambient intelligent systems or single-purpose assistive technologies by disadvantaged people (e.g., the elderly or people with blindness)

#### doc. Ing. Vlasta Svatá, CSc.

- IT Audit (regulations, case studies, software support, challenges, trends)
- IT Process Assessment (CMMI, COBIT, maturity levels, capability levels, process automation)
- EGIT: Enterprise Governance of IT (frameworks, implementation, measures, assessment)
- Internal Audit (challenges, regulations, quality assessment, trends)

#### Consultants (co-supervisors) at KSA:

- Ing. PhDr. Antonín Pavlíček, Ph.D.

## Study Programme Econometrics and Operations Research

#### prof. RNDr. Ing. Petr Fiala, MBA, CSc

- Analysis of network economy and supply chains
- Models of revenue management
- Models of auctions
- Biform games - theory and practice

#### prof. RNDr. Jan Pelikán, CSc

- Discrete models in operations research
- Models of production and logistics

prof. Ing. Josef Jablonský, CSc

- Intertemporal data envelopment analysis models
- Data envelopment analysis network models

prof. Ing. Mgr. Martin Dlouhý, Dr., MSc

- Operational research applied to health service
- Resource allocation and data envelopment analysis

prof. RNDr. Ing. Michal Černý, Ph.D

- Econometric analysis of special data: symbolic, interval, high-frequency, streams etc.
- Inference in partially identified models
- Imprecise inputs in optimization models
- Financial data and risk-management applications

doc. Ing. Tomáš Formánek, Ph.D.

- Modelling macroeconomic impacts of the potential euro introduction in the Czech Republic
- Credit risk analysis in the banking sector
- Semi-parametric methods in spatial econometric analysis applications

## Study Programme Statistics

doc. RNDr. Ivana Malá, CSc.

- Statistical Analysis of Interval Censored Data
- Regression models for censored data
- Robust models and their application in statistical modelling

prof. Ing. Jakub Fischer, Ph.D.

- Regional Statistical Indicators

doc. Ing. Jaroslav Sixta, Ph.D.

- Input-Output Accounts: Development and Extensions