

TOPICS OF THE SEMINARS

Data Science II^o

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Mariusz Kicia, PhD, Associate Professor

Proposed areas:

1. Data analysis and ICT solutions for the Faculty of Economics (e.g. dashboards, data integration, data analysis, apps)
2. Capital market data analysis and application (e.g. testing investment strategies, portfolio management tools, market volatility analysis)
3. Analysis of investment risk tolerance (KYC / MiFID)
4. Bankruptcy risk prediction (with/without ML)
5. Fintech
6. Data analysis and ICT solutions for automated business valuation
7. Agent-based modeling
8. Road traffic data analysis in Lublin (data provided by Lublin City Hall)
9. Other, not included

Remarks: The seminar topics focus on financial market, corporate finance and financial behavior, but are not limited to it. Detailed topics are determined individually so that they are in line with your interests. The following sample topics have been conducted under my guidance: The role of experts in investment decision-making by customers of retail financial institutions; Analysis of the effectiveness of selected models for predicting corporate bankruptcy; Analysis of the importance of context for the perception of relevance of financial information in the light of the narrative economics; Culture and the level of financial crime - a cross-country analysis; Analysis of vehicle traffic at a selected intersection in Lublin using machine learning algorithms; Estimating Beta coefficients for banking industry stocks listed at the Warsaw Stock Exchange; Application of the Modern Portfolio Theory to solve stock portfolio optimization problem. To pass each semester you should deliver: Semester 1 - at least thesis concept (research area and problem to be



solved, state-of-the-art review, methods, thesis structure, schedule, working topic). Semester 2 – at least data collection, data cleaning, preliminary or complete data analysis. Semester 3 – complete data analysis, the final solution & thesis (core text up to 30 pages, plus introduction, summary, lists of contents, appendix if applicable). You are invited to ongoing individual contact and thesis consultation despite regular seminar meetings. See [presentation](#).

Kamil Filipek, PhD

Proposed areas:

1. Natural Language Processing (different languages allowed)
2. Classification and clustering methods (binary, multiclass, multilabel classification)
3. Fine-tuning and use of large models
4. Statistical modeling (regression, structural equation models, actor-partner interdependence models, factor analysis)

Beata Żukowska, PhD

Proposed areas:

1. Building predictive models for classification problems (especially in the field of business, finance, social sciences, but not limited to them)
2. Building predictive models for regression problems (especially in the field of business, finance, social sciences, but not limited to them)
3. Evaluation of various clustering methods and their application (especially in the field of business, finance, social sciences, but not limited to them)
4. Explaining relationships within the data using various explanatory statistical models, including regressions, structural equation modeling, and others.
5. Feature engineering and feature selection for predictive and explanatory models.
6. Web scraping methods for obtaining valuable datasets and analyses on scraped data.