Informatyka techniczna, Advanced Computer Science

Zakres egzaminu dyplomowego (Range of the diploma exam)

1. The requirements and tasks of the main design patterns of each layer of

the multilayer information systems.

2. Graphs: definition, classification, algorithms, applications.

3. Enterprise and corporate applications - characteristics

and technical aspects.

4. Payment card transactions: types of transactions, technological solutions, security.

5. Investigations using computer simulation: rules of experiment design, simulation tools, analysis of results, examples.

6. Project management – main groups of the processes.

7. Requirements description methods – the most popular ones, their pros and cons.

8. Users authentication in computer systems – methods, advantages, drawbacks.

9. Optimization using nature inspired algorithms

10. Inductive learning task and problem of overfitting.

11. The idea of multilayer perceptron learning.

12. Algorithms of pattern recognition.

13. Convolutional neural network.

14. Methods of image processing.

15. Computer vision applications in quality monitoring.

16. Modeling and optimization of survivable computer networks.

17. Modeling of computer networks using multi-commodity flows.

18. Stages of natural language processing.

19. Planning and conducting of scientific research.

20. Storage technology solutions (e.g. DAS, NAS, SAN).

21. Replication methods in storage systems.

Informatyka techniczna, Internet Engineering

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and technical aspects.

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6. Project management – main groups of the processes.

7. Requirements description methods – the most popular ones, their pros and cons.

8. Users authentication in computer systems – methods, advantages, drawbacks.

9. Optimization using nature inspired algorithms

10. XSLT concept, area of applications. Describe language directives.

11. XML documents processing in Java: describe and compare available techniques.

12. Information systems analysis using Petri nets.

13. Privacy, access control and security management in relational database management systems.

14. XML extensions to relational database management systems and non-relational databases.

15. Purpose and short characteristics of main methods of data mining.

16. Security problems related to network communication.

17. Artificial neural networks: learning algorithms

18. Describe the color model "luminancechrominance" and its application

19. Discuss the JPEG compression algorithm

20. Data warehouse – purpose, characteristics and architectures.

21. Characteristic limitations of mobile systems related to hardware, software, user interface and networking