Politechnika Wrocławska

Specjalność : Advanced Informatics and Control (**AIC**)

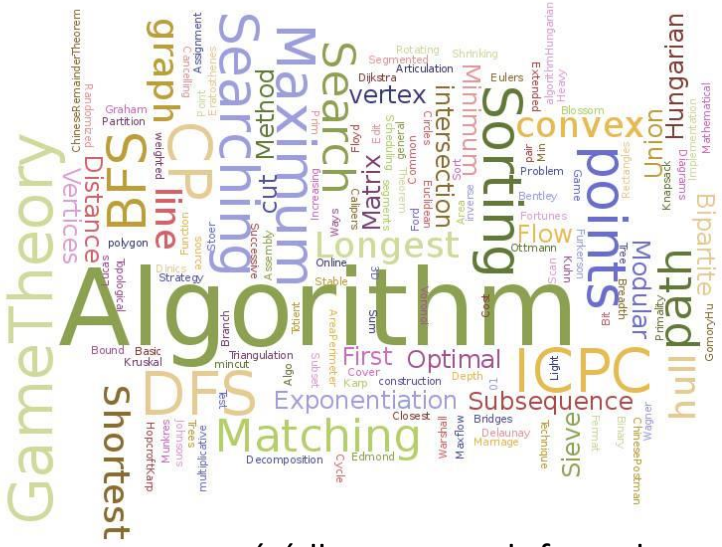
Studia magisterskie
na Wydziale Elektroniki

Dr inż. Wojciech Kmiecik

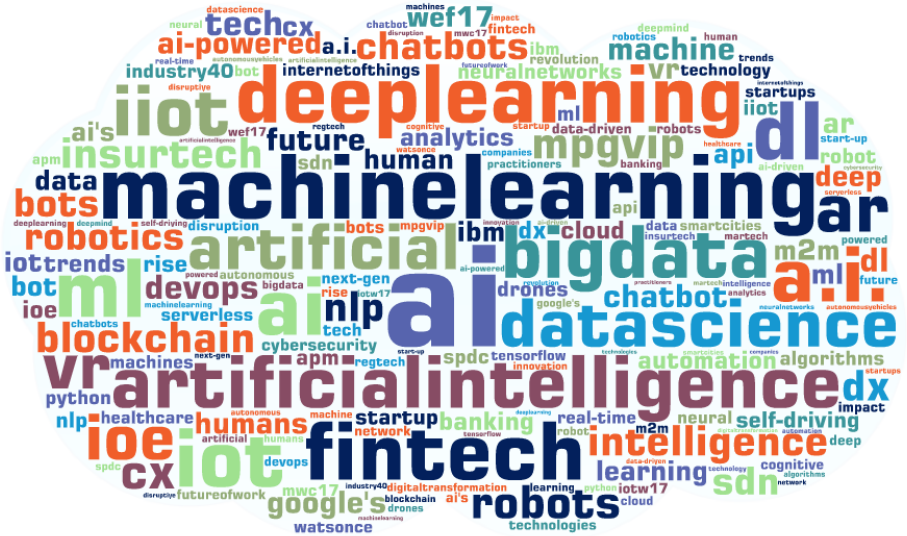
Wrocław, 2020

Specjalność „badawcza”

- Uczenie maszynowe
- Sieci neuronowe
- Optymalizacja sieci komputerowych
- Algorytmy metaheurystyczne
- Programowanie dynamiczne
- ….
- Projekty realizowane w grupach
- Prezentacja efektów badań, publikacje naukowe



źródło: www.geeksforgeeks.org



źródło: www.medium.com

Siatka zajęć

Politechnika Wrocławska

Semester 1

- Elective module A (one of two): *Computer Games Designing , Signal Systems and Control*
- Computer Project Management
- IT Applications in Business and Commerce
- Information Systems Modeling
- Discrete Mathematics
- **Research Skills and Methodologies 1**
- Physics
- Social Communication
- English B2+/C1

Semester 2

- **Modeling and Optimization of Computer Networks**
- **Advanced Informatics and Control Seminar -1**
- **Methods of Computational Intelligence and Decision Making**
- **Optimization Methods: Theory and Applications**
- **Research Skills and Methodologies 2**
- Secure systems and networks
- Foreign/Polish Language A1 (other than English, A1)
- *Elective module B*: (one of three required)

Information Storage and Management, Computer Games Programming, Adaptive Control and Industrial Systems

Semester 3

- Introduction to Comp Vision in Quality Control
- **Research Skills and Methodologies -3**
- **Advanced Informatics and Control Seminar -2**
- **Master Thesis - Final Project**
- Entrepreneurship
- *Elective module C* (one of three required): *Computer Games Programming , Adaptive Control and Industrial Systems, Modern Software and Hardware Management Platform*

https://weka.pwr.edu.pl/studenci/plany-i-programy-studiow

AIC - prowadzący

- prof. dr hab. inż. Michał Woźniak
- prof. dr hab. inż. Krzysztof Walkowiak
- dr inż. Róża Goścień
- dr inż. Piotr Lechowicz
- dr inż. Marcin Markowski
- dr inż. Paweł Trajdos
- dr inż. Wojciech Kmiecik

https://www.kssk.pwr.edu.pl/

AIC a koła naukowe

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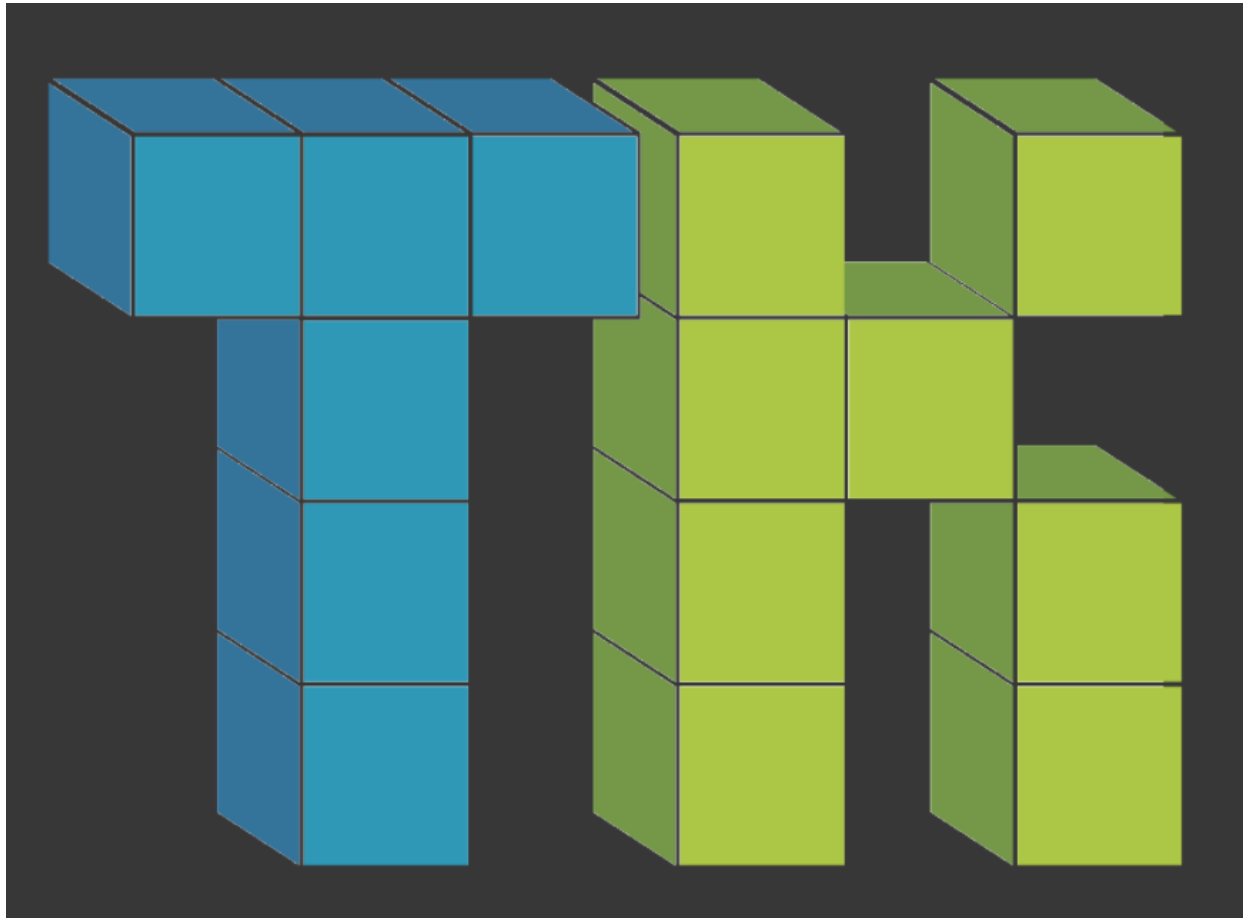
SISK

https://www.facebook.com/knsisk



https://www.facebook.com/pwrtkgames/

Konferencja **Advanced Informatics and Control (AIC)**

Politechnika Wrocławska

The 5th Advanced Informatics and Control Conference

ORGANIZED BY

Students Scientific Association of Computer Systems and Networks (SISK) at the Department of Systems and Computer Networks, at Faculty of Electronics, at Wroclaw University of Technology, Wroclaw, Poland

SCIENTIFIC COUNCIL

Ph.D. Iwona Poźniak-Koszałka
Wroclaw University of Technology, Poland

Ph.D. Leszek Koszałka
Wroclaw University of Technology, Poland

ORGANIZING COMMITTEE

Przemysław Mazur, Kamil Burda, Mariusz Waszczyński, Paweł Głowacki, Tomasz Grochmal, Dawid Jachowicz, Piotr Lechowicz, Rafał Straszewski

SCHEDULE

Time	Topic
10.00 to 10.15	Welcome and introduction
10.15 to 10.40	Optimizing Warehouseman Performance by Dawid Jachowicz
10.40 to 11.05	Modular Exponentiation for Big Numbers by Paweł Głowacki
11.05 to 11.30	Metaheuristic Chess Artificial Intelligence by Mariusz Waszczyński
11.30 to 11.55	Lunch break
11.55 to 12.20	Implementation of TextRank algorithm for polish language by Przemysław Mazur
12.20 to 12.45	Finding a tour itinerary using real life data by Tomasz Grochmal
12.45 to 13.10	Path Optimization in 3D Printer by Piotr Lechowicz
13.10 to 14.00	Coffee and networking

SESSION I

Dawid Jachowicz
Optimizing Warehouseman Performance

This paper concerns methods for finding find the shortest path in a graph taking into account the weight of each vertex. Two algorithms have been evaluated, including Ant Colony Optimization(ACO) and Particle Swarm Optimization(PSO). The objective of the paper was a comparison of algorithms efficiencies on the basis of the results of simulations designed and implemented in Java environment. The reported investigations have shown that the PSO algorithm seems to be the most promising. Finally, the results of the experiments are presented and summarized with necessary conclusions and new ideas for further research.

Paweł Głowacki
Modular Exponentiation for Big Numbers.

The paper proposes alternative methodologies for finding result of modular exponentiation for numbers, which are 1000 bits and more long. They are based on Barret reduction. The simulation compare naive modular exponentiation, fast modular exponentiation and two novel algorithms. Results of the experiments points that presented methods could significantly decrease computational time of performing cryptographic algorithms and furthermore improve public-key cryptosystems and safety in cyberspace.

Mariusz Waszczyński
Metaheuristic Chess Artificial Intelligence

The paper reflects on metaheuristics algorithms (genetic algorithm and simulated annealing) implemented for playing chess for standard and arbitrary initial arrangement of the chessboard. It is a new idea, especially the possibility of starting the game from an arbitrary initial arrangement of the chessboard which allows to consider certain close to the end of the game situations. External artificial intelligence is used for learning of implemented algorithms. The new software experimentation system is developed and described with

Konferencja **International Student Workshop ISW**

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AIC w liczbach

Politechnika Wrocławska

- Doktoraty na współpracujących uczelniach zagranicznych – 11
- Podwójne dyplomy – 25
- Wyjazdy na studia zagraniczne – 20

AIC - możliwości zatrudnienia

Dziękuję!

W razie pytań można śmiało pisać: MS Teams lub wojciech.kmiecik@pwr.edu.pl