

evorain.com

AI Powered Software

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Artificial Intelligence, data discovery, explainable **AI** and programming



in one Team



We can increase the effectiveness and efficiency of **your business**. How?

Using our **AI Agent** - best human assistant

- He is always willing to help
- He works 24 hours a day and 7 days a week
- He analyzes huge data sets rapidly with amazing precision
- He works hundreds of times faster
- He is always 100% efficient
- He may be more accurate than his teacher
- He can notice more than we can because of the enormous computing power



Where to **apply** our **AI Agent**?

Everywhere an expert can give knowledge to an **AI Agent**

- Medical tests based on image or numerical values
- Process monitoring, eg prediction of production line failures, monitoring of network traffic or detection of transaction frauds
- Recommendation of any things based on building an individual user profile
- Recognition of images, understanding of their contents and context
- Processing and understanding documents and large data sets
- Decision support systems based on thousands parameters
- Discovering new unique knowledge based on existing data



What is the **most valuable** in our Team?

- Many years of experience in creating applications and information systems. Rich scientific knowledge, experience in many research projects combined with experience in software development give unique value
- Our team has gained outstanding knowledge of AI algorithms based on the understanding of their atomic operations. We are constantly developing our own framework based on our knowledge as well as carefully selected scientific publications. As a result, we increase the efficiency of data processing in relation to popularly used frameworks
- We know how to build a bridge between science and industry
- We are both scientists and programming engineers, we understand the market needs and we can communicate with partners appropriately

Jakub Romanowski

EDUCATION

- PhD Candidate, Częstochowa University of Technology
- MSc in Computer Science, Częstochowa University of Technology

SKILLS

- Team management, work organization, business analysis
- Image processing, medical image processing, vision processing, algorithms development
- Recommendation systems
- C#, Web API, REST, EntityFramework, T-SQL, PL/SQL, JavaScript



About Jakub

- Ambitious and always persistently striving for a goal. The main interests are technology and artificial intelligence. Has several years of experience in programming IT systems. Designer of many systems and software modules both directly related to artificial intelligence as well as those of typical business
- Speaker at many industry events such as AI & Big Data Congress or Puls Biznesu CFO EXCELLENCE 2018
- Outside of work - road and mountain cycling, running, climbing and caves

LANGUAGES

- Polish
- English

OTHER

- Project patterns, ASP .NET MVC, Web API 2
- TFS, Microsoft Azure, MS SQL, REST API



Work experience

2017 - 01.2019

- Head of Research & Development - Senfino

2015-2017

- Team leader, .NET Full-Stack Developer, Business Analyst, System Architect - mPay Mobile Payments

2010-2015

- Project coordinator, .NET Full-Stack Developer
“Knowledge transfer platform for the scientific community and industry” - Częstochowa University of Technology
- .NET Full-Stack Developer - www.poJurze.pl

2005-2010

- .NET Full-Stack Developer - www.mojaBoboStrona.pl
- PHP developer at www.elitelady.pl

Paweł Staszewski

EDUCATION

- PhD Candidate, Częstochowa University of Technology
- MSc in Computer Science, Częstochowa University of Technology

SKILLS

- Artificial intelligence in medical and business applications (Machine learning & Deep learning)
- Image processing (objects segmentation and classification)
- Recommendation systems
- Big data processing
- C++ Developer



About Paweł

- Has many years of experience in the implementation of projects related to machine learning. He acquired valuable knowledge in the field of applying deep learning methods in practice. He deals with wide-image processing of images. Has skills related to the implementation of fuzzy logic in projects. He is an expert in the field of data processing.
- He participated in the quarterfinals of the international ImagineCup competition, carried out by Microsoft. The competition project concerned the project and the realization of the "MediGuard" application to detect loss of consciousness and epileptic seizures.
- His hobby is diving and sailing.

LANGUAGES

- Polish
- English - B2 level



Work experience

2017-01.2019

- R&D Developer, Senfino – Developing innovative methods for GPUs in case of medical image analysis. Implementation of deep learning algorithms in library for business projects. – (used technologies: C++ threading; CUDA).

2016

- R&D engineer, Passus S.A – Project and implementation of deep learning library for CPU processing purposes.

2015

- Research project – Innovative methods of searching and indexing multimedia with computational intelligence techniques, Czestochowa University of Technology.

2015

- Participation in quarter-final of Imagine Cup 2015 contest, NeuroVision team, mobile neuro-fuzzy system „MediGuard” for detecting loss of consciousness and epileptic seizures.



Piotr Woldan

EDUCATION

- PhD Candidate, Częstochowa University of Technology
- MSc in Computer Science, Częstochowa University of Technology

SKILLS

- Programming Machine Learning (especially Deep Learning) algorithms using CUDA technology
- Image processing (especially medical images)
- Recommendation systems
- Natural Language Processing
- Data Visualization
- Programming games in Unity 3D

About Piotr

- Passionate about new technologies. For many years, he has been programming machine learning algorithms using the potential of GPUs. Has a lot of experience in the field of application and the development of new Deep Learning methods.
- He made projects based on AI related to image processing (processing ImageNet database and detecting diabetic retinopathy on fundus images), natural language processing or recommendation systems. He is also a co-author of the MediGuard application, used to detect loss of consciousness and attacks of epilepsy, which allowed him to reach the quarterfinals of the ImagineCup contest.
- His greatest hobby is aviation, especially gliding.

LANGUAGES

- Polish
- English - B2 level
- German - A1 level

OTHER

- ISTQB Certificate - foundation level



Work experience

2017-01.2019

- R&D Developer, Senfino – Developing of the innovative methods for GPUs in case of medical image analysis. Developing CNN structures for data analysis, project and implementation of deep learning system – (used technologies: C++ threading; CUDA).

2016

- R&D engineer, Passus S.A – Project and implementation of deep learning library for CPU processing purposes.

2015

- Research project – Innovative methods of searching and indexing multimedia with computational intelligence techniques, Czestochowa University of Technology.

2015

- Participation in quarter-final of Imagine Cup 2015 contest, NeuroVision team, mobile neuro-fuzzy system „MediGuard” for detecting loss of consciousness and epileptic seizures.

Maciej Orzechowski

EDUCATION

- MSc in Computer Science, Częstochowa University of Technology

SKILLS

- Team management
- Work organization
- Business adviser
- Multidomain solution adviser
- PSD2, payments industry



About Maciej

- Fintech and IT consulting - building custom software
- Moderator at a cyclical conference on payment innovations
- Ex-mPay SA CEO
- Ex-CTO & co-founder online currency exchange CashBroker
- Ex- Central Anticorruption Bureau Special Agent
- Ex-Assistant at Jan Długosz University Institute of Mathematics and Computer Science
- Ex-Forensic expert in the field of computer science at the county court in Częstochowa

LANGUAGES

- Polish
- English

OTHER

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Piotr Kowalik

EDUCATION

- MSc in Computer Science, Częstochowa University of Technology

SKILLS

- The integrator of external web services with the AI core module
- Cleaning and preparation of big data sets
- C#, .NET, .NET Core, Entity Framework, T-SQL, JavaScript,
- jQuery, Full-stack Development
- Data modeling, business analysis, Recommendation systems
- Continuous integration, optimization of the implementation process

About Piotr

- Extensive experience in the production of software constituting a layer just above the AI, which allows communication with other software
- The main interest is the programming of business applications, data processing, business analysis, project planning
- Implementation of various customer needs
- Participation in large business projects, cooperating with developers team
- Work as Full Stack Developer with various technology
- Outside of work - road cycling, swimming, football

LANGUAGES

- Polish
- English

OTHER

- Project patterns, .NET MVC, Web API 2
- React, Redux, Team Foundation Server, Microsoft Azure, MS SQL, REST API, Swagger, Typescript, SQL Server Integration Services



Work experience

2017-01.2019

- AI integrator, .NET Full-Stack Developer at Senfino 2017

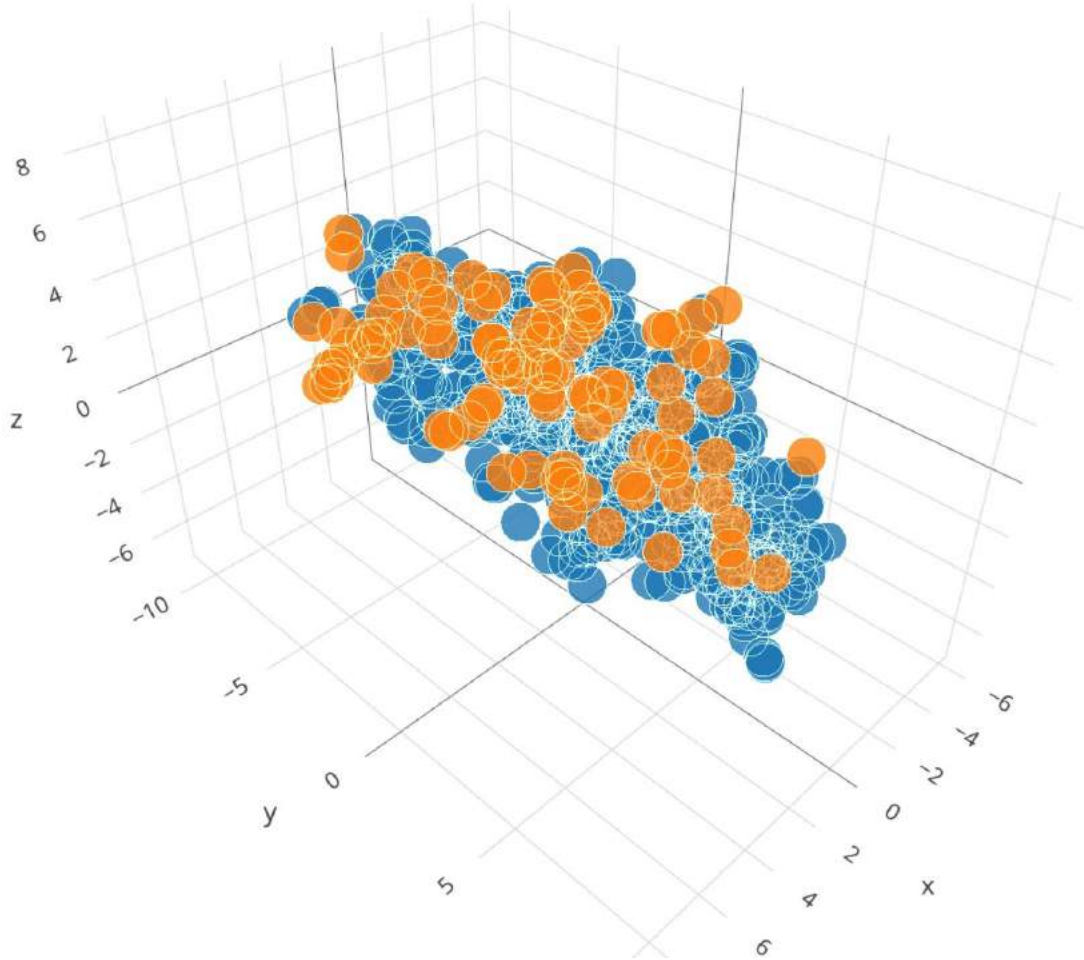
- .NET Backend Developer at Wincor Nixdorf 2014-2017

- .NET Full-Stack Developer at OnexGroup - www.CentrumXP.pl

Some **projects**

Patient's health condition

Amazing research based on a unique database on the health of patients. Based on the lipidogram study, we are able to determine your health condition at a given time.



Hypertension and diabetes can be diagnosed very individually. Using our method, the similarity of each individual case can be examined in the context of patients who are not diagnosed and without the diagnosis of diseases.

Despite the three-dimensional presentation, each patient (point on the graph) is described by 46 parameters.

Our AI methods build networks of relationships between health parameters and patients, allowing us to suggest medical tests and treatment directions tailored to a very individual patient profile.

Detection of fundus layers

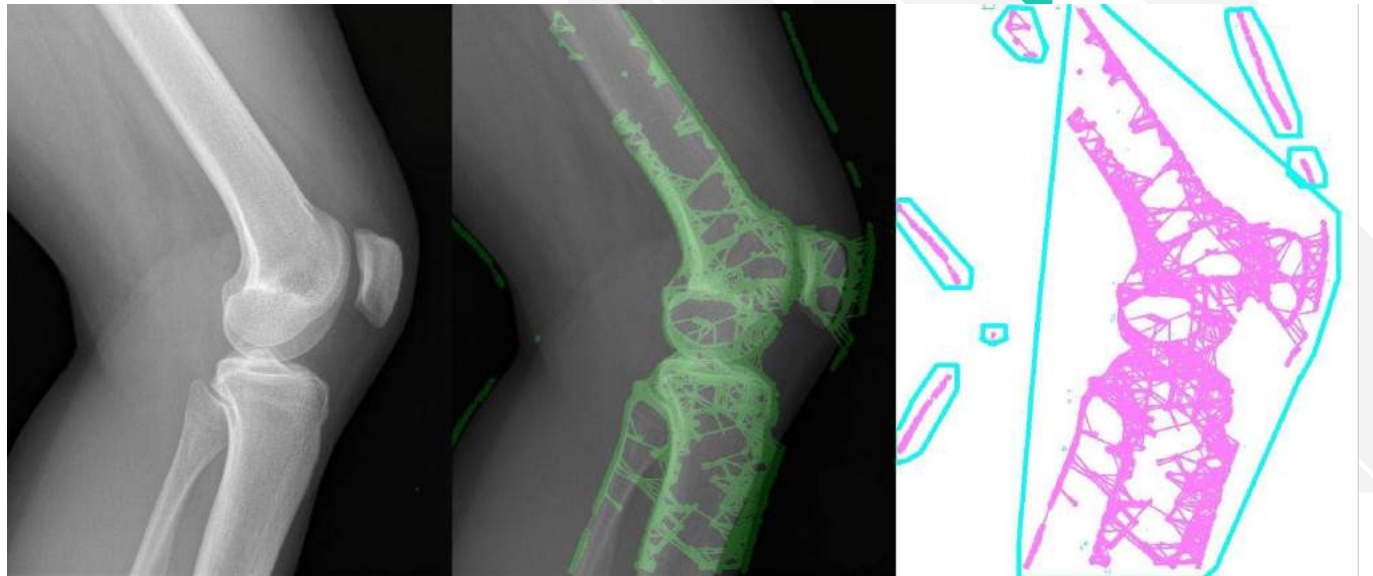
Research and development of methods for automatic detection of fundus layers. The solution is intended for ophthalmic machines with OPC technology.

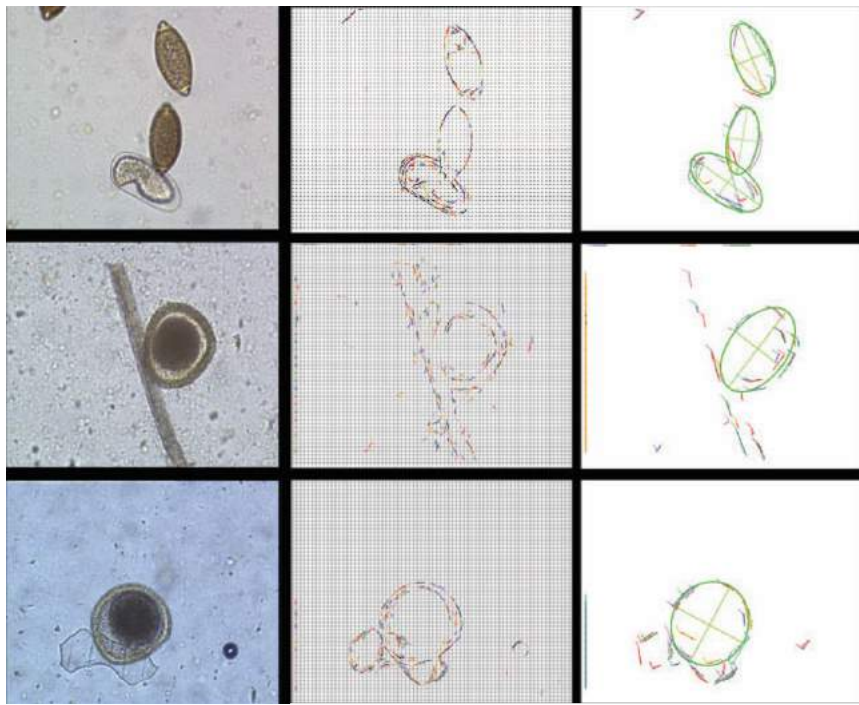
Research and development of methods based on machine learning, calculations on graphics cards (CUDA)

Detection of bone areas on X-ray

Software for detection of bone areas in low-quality X-ray images based on one X-ray image. Separation of soft tissues from bone tissues.

Development of own algorithms for edge detection and bone descriptor.





Detection of parasites eggs

Detection of parasitic eggs in microscopic samples, allowing automatic identification of the species of the parasite.

The project operation is based on the author's method of edge detection.

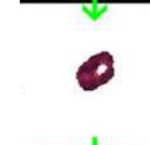
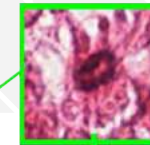
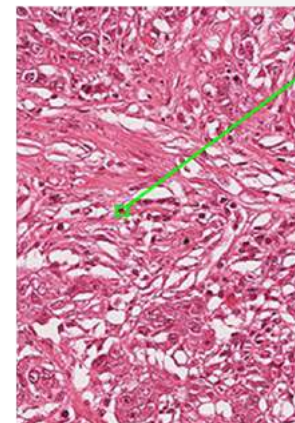
Project in cooperation with the University of Nature in Wrocław

Detection of mitosis

Detection of cell division areas - mitosis in histopathological specimens.

Research and algorithms developed for the counting of cell division areas as a specialist in histopathology.

Project in cooperation with the University of Geneva





Detection of diabetic retinopathy

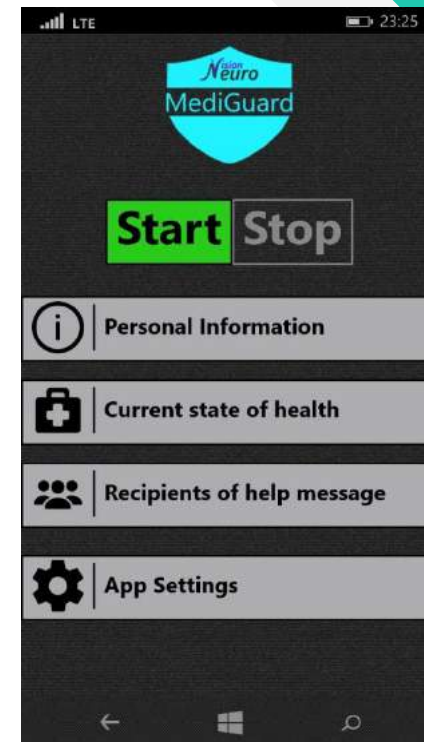
Algorithms developed for detection of the diseased areas of the eye fundus.

This research was realized in case of detecting diabetic retinopathy.

MediGuard

Application, used to detect loss of consciousness and epileptic attacks.

Quarterfinals in the ImagineCup contest.



Recommendation system

The system allows you to prepare a ranking list such as movies, real estate, startups
The ranking is based on the user's preferences - his likes and activity in recommendation system.

The system learns about the the user, his new trends or beliefs through how he evaluates videos, real estate or startups

Analysis and monitoring activities of the production line equipment (live)

Detecting the failure before it occurs prevents losses due to downtime of the production line
Using the AI we teach the system about behavior of individual machines and the interdependence between them

The system receives data streams from machines and databases in real time

Analysis of IT network traffic(live)

Detecting atypical behavior in the IT infrastructure.
The software learns the behavior of both the correct and the one that can potentially be a network attack.
Real time monitoring about occurrence of threats and anomalies in network traffic in order to intervene as quickly as possible.
The main purpose of this is to increase the security of information

Contest project- MediGuard - ImagineCup 2015

Mobile application for detecting unconsciousness and epilepsy
The solution is based on the processing of accelerometer readings and computational intelligence (neural fuzzy network) and own developed methods.
The application qualified for the country quarterfinals

Experience in **research**



Scientific Research Projects at Czestochowa University of Technology

- *Innovative Intelligent Data Analysis and Computational Paradigms for Industry and Healthcare*
- *New perspectives on intelligent multimedia management with applications in medicine and privacy protecting systems*
- *Innovative methods for searching and indexing of multimedia data using computational intelligence techniques*
- *Learning algorithms for convolutional structures for the detection of steganography in images*
- *New structures of convolutional networks and methods of teaching them*



Publications (1/3)

- *A Content-Based Recommendation System Using Neuro-Fuzzy Approach*, T Rutkowski, J Romanowski, P Woldan, P Staszewski, R Nielek, L Rutkowski, 2018, IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)
- *Towards Interpretability of the Movie Recommender Based on a Neuro-Fuzzy Approach*, T Rutkowski, J Romanowski, P Woldan, P Staszewski, R Nielek, 2018, International Conference on Artificial Intelligence and Soft Computing
- *Efficient Bone Detector and Geometric Descriptor for X-Ray Imaging*, J Romanowski, M Korytkowski, R Scherer. Computational Intelligence, 2015 IEEE Symposium Series on, 1337-1342
- *Fast Dictionary Matching for Content-based Image Retrieval*, P Najgebauer, J Rygał, T Nowak, J Romanowski, L Rutkowski. International Conference on Artificial Intelligence and Soft Computing, 747-756
- *Content-based image retrieval by dictionary of local feature descriptors*, P Najgebauer, T Nowak, J Romanowski, M Gabryel, M Korytkowski. Neural Networks (IJCNN), 2014 International Joint Conference on, 512-517
- *Novel algorithm for translation from image content to semantic form*, J Rygał, J Romanowski, R Scherer, S Ferdowski. International Conference on Artificial Intelligence and Soft Computing, 783-792
- *Spatial keypoint representation for visual object retrieval*, T Nowak, P Najgebauer, J Romanowski, M Gabryel, M Korytkowski. International Conference on Artificial Intelligence and Soft Computing, 639-650



Publications (2/3)

- *Improved digital image segmentation based on stereo vision and mean shift algorithm*, R Grycuk, M Gabryel, M Korytkowski, J Romanowski, R Scherer. International Conference on Parallel Processing and Applied Mathematics, 433-44
- *Improved X-ray Edge Detection Based on Background Extraction Algorithm*, J Romanowski, T Nowak, P Najgebauer, S Litwiński. International Conference on Artificial Intelligence and Soft Computing, 309-319
- *Extraction of objects from images using density of edges as basis for GrabCut algorithm*, J Rygał, P Najgebauer, J Romanowski, R Scherer. International Conference on Artificial Intelligence and Soft Computing, 613-623
- *Representation of Edge Detection Results Based on Graph Theory*, P Najgebauer, T Nowak, J Romanowski, J Rygał, M Korytkowski. International Conference on Artificial Intelligence and Soft Computing, 588-601
- *Properties and structure of fast text search engine in context of semantic image analysis*, J Rygał, P Najgebauer, T Nowak, J Romanowski, M Gabryel, R Scherer. International Conference on Artificial Intelligence and Soft Computing, 592-599
- *Novel method for parasite detection in microscopic samples*, P Najgebauer, T Nowak, J Romanowski, J Rygał, M Korytkowski. Artificial Intelligence and Soft Computing, 551-558
- *Bag-of-features image indexing and classification in Microsoft SQL server relational database*, M Korytkowski, R Scherer, P Staszewski, P Woldan, 2015, In Cybernetics (CYBCONF), 2015 IEEE 2nd International Conference on (pp. 478-482). IEEE



Publications (3/3)

- *Query-by-example image retrieval in microsoft SQL server*, P Staszewski, P Woldan, M Korytkowski, R Scherer, L Wang, 2016, International Conference on Artificial Intelligence and Soft Computing (pp. 746-754). Springer
- *Fast Computing Framework for Convolutional Neural Networks*, M Korytkowski, P Staszewski, P Woldan, R Scherer, 2016, Big Data and Cloud Computing, Social Computing and Networking, Sustainable Computing and Communications, 2016 IEEE International Conferences on (pp. 118-123), IEEE
- *Mobile fuzzy system for detecting loss of consciousness and epileptic seizure*, P Staszewski, P Woldan, S Ferdowski, 2015, International Conference on Artificial Intelligence and Soft Computing (pp. 142-150). Springer