



The GRADIS Team

Professor Leszek Kotulski – CEO

Leszek Kotulski holds the title of Professor in Computer Science. He specializes in data warehousing, big data, and graph databases. Professor L. Kotulski is also a world-class specialist in the rapidly developing IT field of processing incomplete or uncertain data called "soft computing". He is the author of 137 innovative scientific studies including:

- Three books
- 22 papers published in foreign journals (including 16 on Philadelphia List)
- 32 papers published in national magazines
- 81 papers published at international conferences
- Six papers published at local conferences

Employment history:

- Co-founder of GRADIS Co. Ltd. – currently President of the Gradis Board.
- Head of the Department of Applied Computer Science at AGH University since October 2012
- Secretary of the Commission of Electrical Engineering and Automation, Polish Academy of Sciences (2011-2015)
- Head of the Distributed Systems Department at the Institute of Computer Science, Jagiellonian University (October 2005- September 2006)
- Deputy President of the Scientific Council of the Institute of Computer Science, Jagiellonian University (October 2004- September 2006)
- Manager of eight national and two international grants (including under Horizon 2020)
- Founder (1993) and President of the Management Board (until 2004 - when he resigned from commercial operations) of the SAWAN Company – member of SOFTBANK SA GROUP, specializing in the implementation of management support systems (MIS) based on data warehouse technology. Implementation of the above-mentioned systems for the largest, at that time, commercial banks in Poland, such as: PKO BP S.A., Bank PeKaO

S.A., Bank BPH S.A., BRE Bank S.A., BIG Bank Gdański S.A., Commercial Bank S.A., Kredyt Bank S.A. confirmed the company's leader position in the field of creating data warehouses in Poland. Among others, customers of the company included the National Bank of Poland, CIECH S.A., Office for Health Insurance Supervision (UNUZ) and FIN S.A. (owner of a financial portal Expander.pl).

Most important, street lighting related scientific publications:

- Igor Wojnicki, Konrad Komnata, Leszek Kotulski: “Comparative Study of Road Lighting Efficiency in the Context of CEN/TR 13201 2004 and 2014 Lighting Standards and Dynamic Control” – 2019.
- Leszek Kotulski, Adam Sędziwy: “Towards highly energy-efficient roadway lighting” – 2016.
- Leszek Kotulski, Adam Sędziwy, Barbara Strug: “Heterogeneous Graph Grammars Synchronization in Computer Aided Design. Expert Systems with Applications” – 2014.
- Leszek Kotulski, Barbara Strug: Supporting Communication and Cooperation in Distributed Representation for Adaptive Design. Advanced Engineering Informatics – 2013.
- Leszek Kotulski, Adam Sędziwy A.: “GRADIS - the multiagent environment supported by graph transformations. Simulation Modelling Practice and Theory” – 2010.

List of projects managed by Professor Leszek Kotulski:

Project name	Project scope	Project period	Role
COSID	Construction of a parallel processing system using graph grammars	1986-1990	Project Manager at the Jagiellonian University
DO-GM-23/91	Testing modem connection	1991	Project Manager at the Jagiellonian University
Alvis	Development of a system verifying the correctness of operation embedded systems.	2011	Project leading member
ALLIVE&KICing 88_2012_JP47 KIC InnoEnergy	Pilot modernization of street lighting of the City of Geel (Belgium)	2012-2013	AGH Team Manager
Modern technologies in criminal proceedings and their use – technical and criminological aspects Legal	Model of using the data warehouse schema in processing classified information	2012-2014	AGH Team Manager
SPIN	Commercialization of scientific research results	2012 - 2014	Member of the Steering Group

Pilot modernization of street lighting of the City of Krakow along with the expansion of the telemetry layer, control system creation and construction of PV installations	Pilot modernization of street lighting of the City of Krakow along with the expansion of the telemetry layer, control system creation and construction of PV installations	2015	Project Manager
Horizon 2020- PreFlexMS - Predictable Flexible Molten Salts Solar Power Plant -- Demonstration of renewable electricity and heating-cooling technologies.	Demonstration of renewable electricity, heating and cooling technologies.	2015	Project Manager at AGH University
SPIN-ISE	Commercialization of scientific research results	2013-2014	Coordinator in the field of Intelligent Information Networks
DEMONSTRATOR	Innovative wind farm with vertical rotation axis, with power 1.5 MW with high energy conversion efficiency.	2013-2017	Project Manager At AGH University.
Development of Gradis research and development activities. EU grant awarded by the Malopolska Center for Enterprise.	Purchase of laboratory equipment for the development of Gradis scientific works.	2018-2019	Project Manager
Polish Technological Bridges – expansion into the United Arab Emirates market. Competition organized by the Polish Investment and Trade Agency.	Expansion into the lighting market in the United Arab Emirates.	2019	Project Manager
Polish Technological Bridges – expansion into the China market. Competition organized by the Polish Investment and Trade Agency.	Expansion into the lighting market in China.	2019-2020	Project Manager
Polish Technological Bridges - expansion into the Vietnam market. Competition	Expansion into the lighting market in Vietnam.	2019-2020	Project Manager

organized by the Polish Investment and Trade Agency.			
Development of an innovative PhoCa Custom system for the design, control and management of urban lighting infrastructure.	Application of artificial intelligence and machine learning to the system for lighting design and control.	2017 -2020	Head of scientific research.

Professor Adam Sędziwy

Responsible for photometric calculations.

Professor Adam Sędziwy is a physicist and computer scientist who holds the title of habilitated PhD in the field of computer science. He is the author of over 60 scientific publications, including one book and nine papers in journals presented on the Philadelphia List. He conducts research in the field of artificial intelligence methods, syntactic methods, image recognition, agent systems as well as graph databases. He applies his research to the design and control of external lighting in large systems. The practical value of his research has been proved by numerous national and international research and implementation projects in cooperation with industry representatives as well as local government units. Professor Adam Sędziwy also conducts intensive research in the field of CAD design as well as design and optimization of lighting systems. He cooperates with the research group “Lighting Technology for Safety and Sustainability at the University of Granada” (Spain), as well as with commercial partners in the country and abroad (Schreder, GE Lighting, Data Comp).

Most important, street lighting related scientific publications:

- Adam Sędziwy, Artur Basiura: "Energy Reduction in Roadway Lighting Achieved with Novel Design Approach and LEDs" – 2017.
- Adam Sędziwy: "Sustainable Street Lighting Design Supported By Hypergraph-Based Computational Model" – 2016.
- Adam Sędziwy: "A New Approach To Street Lighting Design" – The Journal of the Illuminating Engineering Society of North America – 2016.
- Adam Sędziwy, Leszek Kotulski – “Multi-agent system supporting automated large-scale photometric computations” – 2016.
- Adam Sędziwy: “Graph computational environment for parallel calculations and its application in the problem of lighting designing” – Habilitation monograph – 2016.

Currently involved in the project: “Development of an innovative PhoCa Custom system for the design, control and management of urban lighting infrastructure”.

Professor Igor Wojnicki - CTO

Responsible for machine learning processes.

Professor Igor Wojnicki is the author and co-author of scientific articles on artificial intelligence and intelligent control systems. He holds the title of Habilitation PhD in Computer Science from AGH University in Krakow. He participated in a number of international research projects on energy efficiency and lighting control. He is also experienced in commercial projects. Since 2016, he has been the Head of AGH team in the PreFlexMS grant under Horizon 2020 Program. AGH's tasks in this project concern the development of solar electronics efficiency.

Most important, street lighting related scientific publications:

- Igor Wojnicki, Leszek Kotulski: "Empirical Study of How Traffic Intensity Detector Parameters Influence Dynamic Street Lighting "– 2018.
- Igor Wojnicki, Leszek Kotulski: "Improving Control Efficiency of Dynamic Street Lighting by Utilizing the Dual Graph Grammar Concept "– 2018.
- Igor Wojnicki, Leszek Kotulski, Adam Sędziwy, Sebastian Ernst: "Application of Distributed Graph Transformations to Automated Generation of Control Patterns for Intelligent Lighting Systems " – 2017.
- Igor Wojnicki, Sebastian Ernst, Leszek Kotulski: "Economic impact of intelligent dynamic control in urban outdoor lighting" – 2016.
- Igor Wojnicki, Sebastian Ernst, Wojciech Turek: "A robust planning algorithm for groups of entities in discrete spaces" – 2015 ".

PhD Eng. – Sebastian Ernst

Responsible for transformation of spatial data into a formal form.

PhD Eng. Sebastian Ernst conducts scientific research and didactic work at AGH University in Krakow. In 2010 he obtained a PhD degree in technical sciences in the field of computer science. He specializes in artificial intelligence and data modeling. In the recent years he has been focusing on energy efficiency of lighting systems. He participated in numerous national and international research projects and acted as an expert for various institutions. From 2013 to 2016 he managed the tasks of AGH concerning the design of an intelligent lighting system in Krakow. His tasks included building a digital enterprise model, designing the architecture of analytical and control systems and developing tools enabling components integration of the whole system. The developed solution is considered as pioneer on a European scale and provides significant energy savings compared to classic solutions.

Most important, street lighting related scientific publications:

- Sebastian Ernst, Marek Łabuz, Kamila Środa, Leszek Kotulski: "Graph-Based Spatial Data Processing and Analysis for More Efficient Road Lighting Design, Sustainability" – 2018.
- Konrad Kułakowski, Piotr Matysik, Sebastian Ernst: "Modeling indoor lighting inspection robot behavior using Concurrent Communicating Lists" – 2014.

- Igor Wojnicki, Sebastian Ernst, Leszek Kotulski, Adam Sędziwy "Advanced Street Lighting Control. Expert Systems with Applications" – 2014.
- Igor Wojnicki, Sebastian Ernst, Leszek Kotulski: "On scalable, event-oriented control for lighting systems. Advanced methods and technologies for agent and multi-agent systems" – 2013.
- Igor Wojnicki, Sebastian Ernst, Paweł Szwed, Wojciech Chmiel: "Ontology oriented storage, retrieval and interpretation for a dynamic map system" – 2012.

MSc. – Jaromir Działo

VP of Product. Responsible for building the Gradis Platform as a final product, as well as for formulating and implementing the business model of the company.

Built and successfully exited a company in Silicon Valley. Topicmarks, as a winner of Founder Showcase, Seedcamp, covered by TechCrunch, Mashable, attracted funding from e.g. Aaron Patzer (mint.com) was acquired by social network in US: Tagged.com (330+ mln of users). In the Internet business since 1994: founder of 3 successful startups, IT for Swiss banking domain, content distribution for 95% cinemas in Switzerland, 100+ web services, worked with companies from US, UE for over 20 years. UI/UX evangelist, frontend maestro, with passion for ergonomics, usability and clear communication. Co-author of a semantic analysis patent, but also an open-source committer. Co-organized a social action that changed a law in Poland. Seasoned CTO, Product Manager, Software Engineering Manager, IT consultant. Investor, technical and product advisor to international investment funds (e.g. I/O Venture, Satus Venture, FZKPT, Nomad Fund GmbH). Supervisory Board Member and advisor to startups (getting funded the smart way, sales management, business intelligence, mobile payments, fin-tech, IoT, cloud) focused on the customer experience and growth-hacking. Helped investing in 50+ projects (>25x ROI). Judge, mentor, speaker at 50+ startup events, building relations with angel investors, bridging Corporate Venture Capital with startups. Co-organized a startup contest GSEA for young entrepreneurs with global final in Washington, D.C. Jaromir Działo takes on ambitious projects with global scope.

MSc. – Kamila Kotulska

Sales Director. Responsible for sales and marketing activities of Gradis.

Kamila Kotulska holds the Master of Science degree in Computer Science and Econometrics, she has also completed postgraduate studies in Financial Mathematics and Internet Marketing.

Within Gradis she is responsible for building business-to-government, and business-to-business relationships and sales with Polish cities, municipalities, local governments, utilities, as well as with key international street lighting infrastructure vendors. She specializes in developing smart city and smart lighting market with and for key clients of Gradis.

Additionally, Kamila Kotulska has the unique experience of being an Innovation Broker at AGH University of Science and Technology, where her main focus was developing co-operation between scientific and industrial communities. Last but not least, Kamila Kotulska has spent several years working as television reporter and producer. That experience mixed other skills and abilities developed over the years of professional career makes Kamila Kotulska a very effective sales person with unique approach to different kinds of clients.

MBA – Sebastian Siuchta

General Director. Responsible for international expansion and fund-raising strategy.

Over 20 years of experience in the investment and finance industry developed in an international environment (Warsaw, Frankfurt am Main, Shanghai, Stockholm) with a particular focus on Central and Eastern Europe (CEE). Among Sebastian's roles, he led a team of Investment Managers and himself managed a portfolio of sustainable energy and clean tech seed stage start-ups located in CEE; managed the global credit portfolio of German, Austrian, and Swiss large corporate clients of a leading international bank, including responsibility for syndications, acquisition oriented bond issues, as well as managing product specialist and local account managers located in Europe and Asia.

Sebastian Siuchta also has experience as an: entrepreneur - within one month he has created a State Forests' contractor, including arranging financing for heavy machinery and recruitment of operators and lumberjacks; and "intrapreneur" – he belonged to the group of people, who were hand-picked by the group executive committee of the bank to form an internal start-up with the objective to create a new credit processing system, based on rapid process development and agile methodologies.