LECTURE (No.8)

Dr. Janusz Kacprzyk

- **Professor, Systems Research Institute, Polish Academy of Sciences (SRI PAS), Warsaw, Poland;**
- **Fellow, IEEE (Institute of Electrical and Electronics Engineers), since 2006;**
- **Full member, Polish Academy of Sciences, since 2010 (Member correspondent since 2002);**
- **Foreign member, Spanish Royal Academy of Economic and Financial Sciences (RACEF), since 2007;**
- **Foreign member, Bulgarian Academy of Sciences, since 2013;**
- **Member, Academia Europaea (Informatics), since 2014**

Date: 2019.04.10

INTRODUCTION

- Janusz Kacprzyk is a Polish engineer and mathematician, notable for his multiple contributions to the field of computational and artificial intelligence tools like fuzzy sets, mathematical optimization, decision making under uncertainty, computational intelligence, intuitionistic fuzzy sets, data analysis and data mining, with applications in databases, ICT, mobile robotics and others.

- Dr. Kacprzyk is a professor of computer science at the Systems Research Institute and an academician (full member) of the Polish Academy of Sciences. In 1965-1970, he studied at the Department of Electronics, Warsaw University of Technology in Warsaw, Poland, and his major field is computer science and automatic control. Later, he obtained M.S. in computer science and automatic control received in 1970 from the Warsaw University of Technology. He acquired Ph.D. with distinction in systems analysis received in 1977 from the Systems

Research Institute, Polish, Academy of Sciences in Warsaw, Poland. Afterwards, he obtained D.Sc. (habilitation) in computer science in 1990 from the Systems Research Institute, Polish Academy of Sciences. He also honored a full professor in 1997, awarded by President of the Republic of Poland.

● He is a foreign member of the Spanish Royal Academy of Economic and Financial Sciences (2007), of the Bulgarian Academy of Sciences (2013), of the Finnish Society of Sciences and Letters (2018), of the Royal Flemish Academy of Belgium for Science and the Arts (2019), as well as member of Academia Europaea and the European Academy of Sciences and Arts, and fellow of multiple professional societies, like IEEE, Institution of Engineering and Technology (IET), European Coordinating Committee of Artificial Intelligence (EurAI/ECCAI), IFSA, and Mexican Society for Artificial Intelligence (SMIA). In 2013, he becomes the laureate of the annual IFSA Award.

● In the past academic research career, Dr. Kacprzyk has published more than 600 important articles, of which a total of citations have reached 28,114 times by Google Scholar in May 2020.
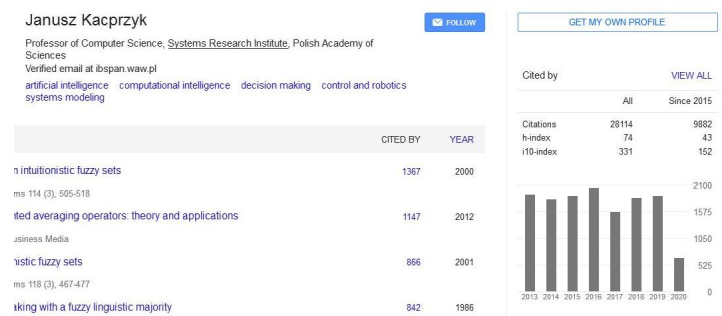
● He has been recognized by many national and international awards. Currently Dr. Kacprzyk has served as

the president of the Polish Operational and Systems Research Society since 2007 and past president of the International Fuzzy Systems Association (IFSA) in 2009-2011.

- We hope that through the invitation of Tamkang Clement and Carrie Chair Lecture, our scholars and students will deeply understand the research directions of combining decision theory and behavior theory. In addition, by the experience of academicians of the Academy of Sciences, we could obtain forward-looking and innovative research suggestions to the Tamkang University and Taiwan academic community, and strengthen Tamkang scholars through future cooperation.

Topic：Multi-attribute/criteria decisions under bipolar user testimonies and intentions

ABSTRACT

Decision making is an omnipresent and universal human activity, and is a more complex setting under multiple attribute/criteria. The best way for the human to evaluate values or describe intentions, preferences and affects is to use bipolar judgments.

Introducing behavioral decision-making is the actual development of machine learning by behavioral decision-making, data and computing power, with many internally connected machine learning systems to provide possible uncertain predictions and changes. In reality, when there are a number of feasible choices we face insufficient information, instead of thinking about how to adopt better problem-solving tools or techniques, we should correctly describe what the person or agent wants to do. Because our decision-making behavior is a process of selecting from a limited set of choices, e.g., pros and cons, support and opposition, acceptable and rejected bipolar judgments, to evaluate human values or describe intentions, preferences, and behaviors; In dealing with real-world problems, a bipolar data database is a better approach to be designed to solve the practical problems. Since most data are described by various attributes or characteristics, it could directly achieve man-machine talks, reduce the complexity of the man-machine interface, and expand the man-machine interface synergy of cooperation. In the future, for pioneering work with multi-dimensional and multi-extreme criteria, we should consider the concept of fuzzy inference and propose a query system with various composition conditions and needs to meet the requirements to express our needs and intentions using imprecise natural language. Obtain corresponding situational decision information to solve more complex man-machine problems.

MINUTE

Met with Chairman of the Board, Dr. Flora Chia-I Chang and TKU colleagues
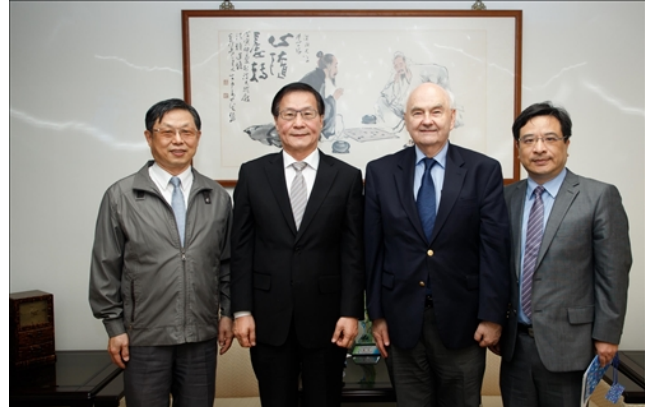
Met with President, Dr. Huan-Chao Keh and TKU colleagues

- Prof. Janusz Kacprzyk visited Tamkang University on April 8-12 in 2019. His visit was honored by Tamkang Clement and Carrie Chair Lecture Fund and the Ministry of Science and Technology. During his visit, Prof. Janusz Kacprzyk gave a lecture to all of the faculty and students of Tamkang University and attended a workshop with the faculty and doctoral students of department of Management sciences.

- Pro. Janusz Kacprzyk visited Chairman of the Board, Dr. Flora Chia-I Chang and President, Dr. Huan-chao Keh before the Chair Lecture at TKU. Chair and Prof. Ruey-Chyn Tsaur and Prof. Hsu-Shih Shih of Department of Management Sciences accompanied him during the visit.

Delivering The Tamkang Clement and Carrie Chair Lecture at The International Convention Centre

- Prof. Janusz Kacprzykz delivered a speech on multi-attribute/criteria decisions under bipolar user testimonies and intentions in international conference center.
- The speech was attended by over 300 faculty and students from a variety of TKU departments.
- Dr. Kacprzyk noted that in the context of contemporary decision-making theory and anylysis, behavioral decision making is an independent research discipline with applications in fields such as economics, finnance, and management. In the future, decision making, data, and calculation capacity can be used to practically develop the scope of robot learning.

Lecture at The International Convention Centre

Photos with TKUMS students

- During the lecture, Prof. Kacprzyk received active response from the audience and had a lively interaction during Q&A session.
- The visit has established the friendships between **Polish Academy of Sciences (SRI PAS)** and TKU fellows. Further cooperation between **SRI PAS** and **TKU** would be expected in the future. We hope our scholars and students will deeply understand the research directions of combining decision theory and behavior theory that through the invitation of Tamkang Clement and Carrie Chair Lecture. In addition, we could obtain forward-looking and innovative research suggestions to the Tamkang University and Taiwan academic community, and strengthen Tamkang scholars through future cooperation.
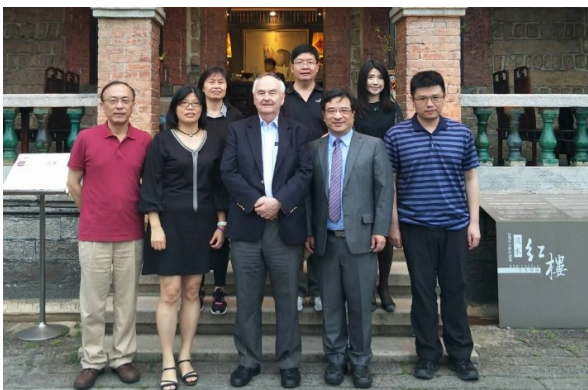
Photos with TKUMS Professors

Met with chairman, Dr. Ruey-Chyn Tsaur