name of the unit:		symbol:
REPRESENTATION OF INFORMATION, EXPERT & FUZZY SYSTEMS Institute of Information Technology, Lodz University of Technology		**I-72** http://www.it.p.lodz.pl

head of the unit:	potential promoters:	contact person:
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scope of activities:

- Fuzzy, expert, prediction and decision-making systems
- Databases mining, data mining
- Representing uncertain, incomplete and linguistic information
- Outliers detection and recognition in datasets
- "Soft" computing, soft computing, computing with words (CWW)
- Fuzzy logic systems in applications
- Type-2 fuzzy logic, higher order fuzzy sets
- Web Intelligence, BigData
- Evolutionary computational methods

graphic material

- Detection of exceptions with fuzzy rules in non-relational databases
- Representation of information using fuzzy logic methods in graph databases
- Detection and recognition of exceptions using linguistic quantification methods
- Fuzzy systems managing the selective catalytic reduction process
- Higher order fuzzy sets and their applications in data analysis
- Multi-subject linguistic summaries of databases
- Hierarchical fuzzy logic systems

Publications

- Niewiadomski A., Kacprowicz M., Bartczak M.: Outliers Detection In Graph-Represented Databases Using Fuzzy Rules. Pacific Asia Conference on Information Systems, PACIS 2021, 12-14 July, 2021, Dubai, Arabia Saudyjska, ISBN 978-1-7336325-7-7, wykaz konf. punkt. (140pkt.)
- Niewiadomski A., Kacprowicz M.: Type-2 Fuzzy Logic Systems in Applications: Managing Data in Selective Catalytic Reduction For Air Pollution Prevention. Journal of Artificial Intelligence and Soft Computing Research, Volume 11, Issue 2, 2021, Sciendo, ISSN 2083-2567, Doi: 10.2478/jaiscr-2021-0006, pp. 85-97, open access, JCR
- Niewiadomski A., Duraj A., Bartczak M.: Outliers Recognition Via Linguistic Aggregation of Graph Databases. Applied Sciences, 2021, Tom 11(16), 7434, MDPI, ISSN: 2076-3417, Doi: 10.3390/app11167434, pp. 1-13, open access, JCR
- Niewiadomski A., Duraj A.: Detecting and Recognizing Outliers in Datasets via Linguistic Information and Type-2 Fuzzy Logic. International Journal of Fuzzy Systems, , nr , str. 878–889. 2020 r. (70 pkt.)
- Niewiadomski, A., Zbiory rozmyte typu 2. Zastosowania w reprezentowaniu informacji. W serii „Problemy współczesnej informatyki", pod redakcją L. Rutkowskiego, Akademicka Oficyna Wydawnicza EXIT, Warszawa, 2019.
- Duraj, A., Niewiadomski, A., Szczepaniak, P. S., Detection of outlier information by the use of linguistic summaries based on classic and interval-valued fuzzy sets, International Journal of Intelligent Systems, Vol. 34, Nr 3, ss. 415-438, 2019.
- Niewiadomski, A., Kacprowicz, M., Higher Order Fuzzy Logic in Controlling Selective Catalytic Reduction Systems, Bulletin of The Polish Academy of Sciences, Technical Sciences, Vol. 62, Nr 4, ss.743-750, 2014.
- Niewiadomski, A., On Finity, Countability, Cardinalities, And Cylindric Extensions of Type-2 Fuzzy Sets in Linguistic Summarization of Databases, IEEE Transactions on Fuzzy Systems, Vol. 18, Nr 3, ss. 532-545, 2010.

Future activities:

establishing cooperation with other academic centers and business entities

Keywords:

Artificial intelligence, fuzzy logic systems, expert systems, outlier detection ndrecognition, data analysis and representation, non-relational databases.

List of internship proposal in this research team:
1. Outlier recognition in non-relational databases
2. Representing information in graph datasets

List of attachments: