Tentative Outline

Fuzzy System in Technology Enhanced Learning

Guest Editor: Zhihan Lv, Neeraj Kumar, Houbing Song

- **Scope of the Thematic Issue:**

The advent of new technologies such as the Fuzzy System and Internet of Things has brought opportunities for Technology Enhanced Learning. The technologies with Fuzzy System can be applied the intelligence functions to learning which range from Smart School, Smart Class to Smart Learning at Home and so on. Accordingly, the assessment and evaluation methods need to be developed and involved into the iterative designing process. This new notion involves some tasks in which traditions are replaced by Fuzzy System technology requiring manual discrimination and resolution to reach the optimization. In addition, with the development of Internet of Things, Technology Enhanced Learning application pays greater attention to the interconnection between Fuzzy expert system technologies and information systems to the maximum extent possible. Based these new technologies, the increasing networking in different scales from global to local is having a profound effect on learning and teaching. It makes new forms of collaborative and personalized learning experiences reality. Then it can be seen that further efficient management and deeper analysis of Technology Enhanced Learning are the key tasks in developing smart school or individual learning application at home based on Fuzzy System technologies.

This special issue calls for high quality, up-to-date technology related to Fuzzy System in Technology Enhanced Learning and serves as a forum for researchers all over the world to discuss their works and recent advances in this field. In particular, the special issue is going to showcase the most recent achievements and developments in Fuzzy expert system technologies for Technology Enhanced Learning. Both theoretical studies and state-of-the-art practical applications are welcome for submission. All submitted papers will be peer-reviewed and selected on the basis of both their quality and their relevance to the theme of this special issue.

- **Keywords:** Fuzzy System, Technology Enhanced Learning, Pattern Recognition, Intelligent User Interface, Virtual Reality, Internet of Things

Sub-topics:

The sub-topics to be covered within the issue should be provided:

- Fuzzy System Technology
- Fuzzy Expert System
- Pattern Recognition and Image Analysis
- Intelligent User Interface
- Pattern Recognition and Computer Vision
- Virtual Reality/ Augmented Reality and Human-Computer Interaction
- Social computing and social media

- Mobile technologies
- Roomware, ambient displays and wearable devices
- eLearning specifications and standards
- Learning analytics
- Context-aware systems
- Computer-supported collaborative learning
- Teaching techniques and strategies for online learning
- Learner motivation and engagement
- Evaluation methods for Technology Enhanced Learning
- Cognitive mechanisms in knowledge acquisition and construction
- Self-regulated and self-directed learning
- Global learning communities
- Lifelong learning
- Massive Open Online Courses (MOOC)
- Accessible learning for all
- Visual, hearing and physical impairments
- Cloud Computing Platform Based BigData Mining
- Multimedia Communications, Visual Signal Processing and 3D video pre/post-processing
- Wireless and Internet-of-Things Technology for Learning
- Serious Game for Education
- Pervasive Wireless Communication
- Human Element of Learning System Design
- Internet of Things

Tentative titles of the articles and list of contributors:

Tentative titles of the articles and list of contributors with their names, designations, addresses and email addresses should be provided.

A list of potential authors is listed as follows:

Adaptive neuro-fuzzy pedagogical recommender for technology enhanced learning	Guido Dartmann	University of Applied Sciences Trier, Germany	Guido.Dartmann@ice.rwth-aachen.de
Enhanced fuzzy system models with improved fuzzy clustering algorithm in technology enhanced learning	Burak Kantarci	University of Ottawa, Canada	burak.kantarci@uOttawa.ca
One-to-one technology-enhanced learning: An opportunity for global research collaboration	Zhou Su	Shanghai University, China	zhousu@ieee.org
Efficient hardware/software implementation of an adaptive neuro-fuzzy system	Chonggang Wang	Interdigital, USA	cgwang@ieee.org
Panorama of recommender systems to support learning	Xiaoming Fu	Gottingen University, Germany	fu@cs.uni-goettingen.de
Enhancing fuzzy robot navigation systems by mimicking human visual perception of natural terrain	Kui Wu	University of Victoria, Canada	wkui@uvic.ca

traversability			
An optimal fuzzy system for color image enhancement	Dan Wang	Hong Kong Polytechnic University, Hongkong	csdwang @comp.p olyu.edu.h k
An automatic adaptive grouping of learners in an e-learning environment based on fuzzy grafting and snap-drift clustering	Anke Schmeink	RWTH Aachen University, Germany	anke.sch meink@is ek.rwth-aa chen.de
Dynamic access approach to multiple channels in pervasive wireless multimedia communications for technology enhanced learning	Jinsong Wu	University of Chile, Chile	wujs@iee e.org
Hybrid expert systems: A survey of current approaches and applications	Takuji Tachibana	University of Fukui, Japan	takuji-t@ u-fukui.ac .jp
A fuzzy-based multi-agent model for group formation in collaborative learning environments	Lin Cai	University of Victoria, Canada	cai@ece.u vic.ca
Flexible pedagogies: Technology-enhanced learning	Elias Bou-Harb	University of Texas at San Antonio, USA	elias.bouh arb@utsa. edu
Enhanced knowledge-leverage-based TSK fuzzy system modeling for inductive transfer learning	Jun Bi	Tsinghua University, China	junbi@tsi nghua.edu .cn
Orchestrating technology enhanced learning: a literature review and a conceptual framework	Jongwon Kim	Gwangju Institute of Science and Technology, Korea	jongwon @gist.ac. kr
A novel optimal fuzzy system for color image enhancement using bacterial foraging	Humphrey Rutagemwa	Communications Research Centre, Canada	humphrey. rutagemw a@canada .ca
Evaluating recommender systems for technology enhanced learning: a quantitative survey	Jie Wu	Temple University, USA	jiewu@te mple.edu
Enhance neuro-fuzzy system for classification using dynamic clustering	Yuki Koizumi	Osaka University, Japan	ykoizumi @ist.osak a-u.ac.jp

Schedule:

✧ Thematic issue submission deadline: December 30, 2020

✧ Decisions on Acceptance/ Rebuttal: March15 2021

✧ Final Papers Submission: June15, 2021

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publications related to the proposed topic in the special issue:

1. **Lv, Zhihan**, Liang Qiao, Jinhua Li, and Houbing Song. "Deep Learning Enabled Security Issues in the Internet of Things." IEEE Internet of Things Journal (2020).

2. Liu, Shuai, Shuai Wang, Xinyu Liu, Chin-Teng Lin, and **Zhihan Lv**. "Fuzzy Detection aided Real-time and Robust Visual Tracking under Complex Environments." IEEE Transactions on Fuzzy Systems (2020).

3. **Lv, Zhihan**, Dongliang Chen, Ranran Lou, and Houbing Song. "Industrial Security Solution for Virtual Reality." IEEE Internet of Things Journal (2020).

4. Lin, Chuan, Guangjie Han, Jiaxin Du, Tiantian Xu, Lei Shu, and **Zhihan Lv**. "Spatio-Temporal Congestion-Aware Path Planning towards Intelligent Transportation Systems in Software-Defined Smart City IoT." IEEE Internet of Things Journal (2020).

5. **Lv, Zhihan**, H. A. N. Yang, Amit Kumar Singh, Gunasekaran Manogaran, and Haibin Lv. "Trustworthiness in Industrial IoT Systems Based on Artificial Intelligence." IEEE Transactions on Industrial Informatics (2020).

6. **Lv, Zhihan**, and Amit Kumar Singh. "Big Data Analysis of Internet of Things System." ACM Transactions on Internet Technology (TOIT)(2020).

7. **Lv, Zhihan**, Liang Qiao, and Houbing Song. "Analysis of the Security of Internet of Multimedia Things." ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)(2020).

8. **Lv, Zhihan**, and Francesco Piccialli. "The Security of Medical Data on Internet Based on Differential Privacy Technology." ACM Transactions on Internet Technology (TOIT)(2020).

9. **Lv, Zhihan**, and Houbing Song. "Trust Mechanism of Multimedia Network." ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)(2020).

10. Cao, Bin, Xinghan Chen, **Zhihan Lv***, Ruichang Li, and Shanshan Fan. "Optimization of Classified Municipal Waste Collection Based on the Internet of Connected Vehicles." IEEE Transactions on Intelligent Transportation Systems (2020).

11. **Lv, Zhihan**, Shaobiao Zhang, and Wenqun Xiu. "Solving the Security Problem of Intelligent Transportation System With Deep Learning." IEEE Transactions on Intelligent Transportation Systems(2020).

12. Jiang, Dingde, Yuqing Wang, **Zhihan Lv**, Wenjuan Wang, and Huihui Wang. "An Energy-Efficient Networking Approach in Cloud Services for IIoT Networks." IEEE Journal on Selected Areas in Communications (2020).

13. Cao, Bin, Jianwei Zhao, **Zhihan Lv***, Yu Gu, Peng Yang, and Saman Halgamuge. "Multiobjective Evolution of Fuzzy Rough Neural Network via Distributed Parallelism for Stock Prediction." IEEE

Transactions on Fuzzy Systems (2020).

14. **Lv, Zhihan**, and Houbing Song. "Mobile Internet of Things under Data Physical Fusion Technology." IEEE Internet of Things Journal (2019).

15. **Lv, Zhihan**, and Wenqun Xiu. "Interaction of Edge-Cloud Computing Based on SDN and NFV for Next Generation IoT." IEEE Internet of Things Journal (2019).

16. Jiang, Dingde, Yuqing Wang, **Zhihan Lv***, Sheng Qi, and Surjit Singh. "Big Data Analysis-based Network Behavior Insight of Cellular Networks for Industry 4.0 Applications." IEEE Transactions on Industrial Informatics (2019).

17. Yang, Po, Jing Liu, Jun Qi, Yun Yang, Mr Xulong Wang, and **Zhihan Lv**. "Comparison and Modelling of Country-Level Micro-blog User Behaviour and Activity in Cyber-Physical-Social Systems using Weibo and Twitter Data." ACM Transactions on Intelligent Systems and Technology (2019).

18. **Lv, Zhihan**, Xiaoming Li, Haibin Lv, and Wenqun Xiu. "BIM Big Data Storage in WebVRGIS." IEEE Transactions on Industrial Informatics (2019).

19. **Lv, Zhihan**, Weijia Kong, Xin Zhang, Dingde Jiang, Haibin Lv, and Xiaohui Lu. "Intelligent Security Planning for Regional Distributed Energy Internet." IEEE Transactions on Industrial Informatics (2019).

20. **Lv, Zhihan**, Bin Hu, and Haibin Lv. "Infrastructure Monitoring and Operation for Smart Cities based on IoT system." IEEE Transactions on Industrial Informatics (2019).

21. Cao, Bin, Xinyuan Kang, Jianwei Zhao, Po Yang, **Zhihan Lv**, and Xin Liu. "Differential evolution-based 3-D directional wireless sensor network deployment optimization." IEEE Internet of Things Journal 5, no. 5 (2018): 3594-3605.

22. Muhammad, Khan, Jamil Ahmad, **Zhihan Lv**, Paolo Bellavista, Po Yang, and Sung Wook Baik. "Efficient deep CNN-based fire detection and localization in video surveillance applications." IEEE Transactions on Systems, Man, and Cybernetics: Systems 49, no. 7 (2018): 1419-1434.

23. Jiang, Bin, Jiachen Yang, **Zhihan Lv**, and Houbing Song. "Wearable vision assistance system based on binocular sensors for visually impaired users." IEEE Internet of Things Journal 6, no. 2 (2018): 1375-1383.

24. Cao, Bin, Jianwei Zhao, Po Yang, **Zhihan Lv**, Xin Liu, and Geyong Min. "3-D Multiobjective Deployment of an Industrial Wireless Sensor Network for Maritime Applications Utilizing a Distributed Parallel Algorithm." IEEE Transactions on Industrial Informatics 14, no. 12 (2018): 5487-5495.

25. Jiang, Dingde, Liuwei Huo, **Zhihan Lv**, Houbing Song, and Wenda Qin. "A joint multi-criteria utility-based network selection approach for vehicle-to-infrastructure networking." IEEE Transactions on Intelligent Transportation Systems 19, no. 10 (2018): 3305-3319.

26. Yang, Qiang, Le Jiang, Weijie Hao, Bo Zhou, Po Yang, and **Zhihan Lv**. "PMU placement in electric transmission networks for reliable state estimation against false data injection attacks." IEEE Internet of Things Journal 4, no. 6 (2017): 1978-1986.

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28. Cao, Bin, Jianwei Zhao, **Zhihan Lv***, and Xin Liu. "A distributed parallel cooperative coevolutionary multiobjective evolutionary algorithm for large-scale optimization." IEEE Transactions on Industrial Informatics 13, no. 4 (2017): 2030-2038.

29. Xu, Zheng, Neil Y. Yen, Hui Zhang, Xiao Wei, **Zhihan Lv**, Kim-Kwang Raymond Choo, Lin Mei, and Xiangfeng Luo. "Social sensors based online attention computing of public safety events." IEEE Transactions on Emerging Topics in Computing 5, no. 3 (2017): 403-411.

30. **Lv, Zhihan**, Houbing Song, Pablo Basanta-Val, Anthony Steed, and Minho Jo. "Next-generation big data analytics: State of the art, challenges, and future research topics." IEEE Transactions on Industrial Informatics 13, no. 4 (2017): 1891-1899.