

Xi YU

College of Information science and engineering, Chengdu Univerisity

Mobile: +86-18382109867, E-mail: yuxi@cdu.edu.cn

Birthday: 07 June 1973

Gender: male

Education

- Université lumière Lyon 2(Lyon, France)
 - PhD student in computer science (09/2011-07/2015)
 - **Title:** Sustainable product life cycle management
- University of Electronic Science and Technology of China (Chengdu, China)
 - M.A. Computer Application
School of Computer Science & Engineering (03/2004-12/2006)
 - **Title:** Design and Implementation of C/S-based Tourism Survey System University of Electronic Science and Technology of China.
- Chengdu University of Technology (Chengdu, China)
 - B.S. Computer Application
Department of Computer Science (09/1993-07/1997)

Skills

- J2EE developement; Project management; Communication

Teaching courses

- JAVA programming; Web programming; J2EE-based development technology; Computer English;Python programming.

Research Area

- Programming languages and implementation
- Environmental impact assessment
- Decision making
- Machine Learning

Experience

- **Professor** (07/2018-Present)
- **Deputy dean of College of Information science and engineering of Chengdu University** (12/2014-Present)
- **Member of Erasmus mundus action2 sustainable e-Tourism programme**
 - Université lumière Lyon 2(France) & Shanghai Jiaotong University (China) (09/2011-07/2014)
 - ◆ Research on the Eco-PLM
 - ◆ Participate the “partenariat Hubert Curien avec la Chine Program Cai Yuanpei

2012-2014 “

- ◆ General Co-Chair of the second and third international workshop: Sustainable e-Tourism Research and Applications Workshop

■ **Associate professor** (11/2008-2018)

➤ Chengdu University

- ◆ Taught courses on JAVA, J2EE, computer English to 400 junior and senior computer science majors
- ◆ Attended the following courses at the Software Outsourcing Training at Northwest Polytechnic University in Silicon Valley, USA (fall 2008)
- ◆ Joined an English training seminar for 1 month in China
- ◆ Co-developed a data analysis system for PetroChina Co. with a team of 8 colleagues to measure and translate manual earthquake effects into graphic data

■ **Lecturer** (02/2003-11/2008)

➤ Information Science & Technology College, Chengdu University

- ◆ Instructed courses on java programming
- ◆ Implemented curriculum goals to meet university requirements
- ◆ Assessed students' skills and achievements based on test performance
- ◆ Co-created a “Tourism Survey System” with a team of 3 for the Sichuan Tourism Bureau for the following purposes:
 - Analyze and interpret data of past years in a user-friendly way
 - Organize and translate data into statistics and graphs for comparison of tourism industry's business from year to year

■ **Deputy Director** (07/1999-02/2003)

➤ Electrical Education Center, Deyang Party School of CPC

- ◆ Constructed the network of the school to computerize manual office work, decrease paperwork, and increase office efficiency
- ◆ Trained school 50 staff members on how to operate new computerized system
- ◆ Managed school networking and communication to Sichuan Provincial School of CPC to transfer student information from Deyang to Sichuan Provincial School
- ◆ Organized adult training seminars and assessment for provincial government professional certification

■ **Teaching Assistant** (07/1997-02/2003)

➤ Deyang Party School of CPC

- ◆ Instructed courses on computer basics to over 1000 adults
- ◆ Developmentally appropriate lessons and assessment to match students' abilities
- ◆ Designed a Bidding Information Management System for construction bureau of DeYang, Sichuan that allowed construction companies to compete for contracts, increasing honest business and construction practices

Publications

1. Yu X , Zhang H , Bouras A , et al. Multi-Criteria Decision Making for PLM Maturity Analysis based on an Integrated Fuzzy AHP and VIKOR Methodology[J]. Journal of Advanced Manufacturing Systems, 2018, 17(2).
2. Y. He, X. Yu, C. Liu, J. Zhang, K. Hu and H. C. Zhu, "A 3D Dual Path U-Net of Cancer

Segmentation Based on MRI," 2018 IEEE 3rd International Conference on Image, Vision and Computing (ICIVC), Chongqing, 2018, pp. 268-272.

3. Liu, Chang,Wu, Xi,Yu, Xi, et al. Fusing multi-scale information in convolution network for MR image super-resolution reconstruction[J]. BioMedical Engineering OnLine,2018,17, pp.114
4. Zhang, H. , Li, D. , Wang, T. , Li, T. , Yu, X. , & Bouras, A. . (2018). Hesitant extension of fuzzy-rough set to address uncertainty in classification. Journal of Intelligent & Fuzzy Systems, 34(4), 2535-2550.
5. Liu, C. , Wu, X. , Tang, Y. Y. , Yu, X. , Zhao, W. D. , & Zhang, L. . (2016). Super Resolution Reconstruction of Brain MR Image Based on Convolution Sparse Network. International Conference on Cloud Computing & Big Data. IEEE Computer Society.
6. Yu X, Sekhari A, Nongaillard A, et al. A novel approach to assess the products' global environmental impacts by considering pollution transfer phenomena[J]. International Journal of Product Lifecycle Management, 2014, 7(2/3):114.
7. X.Yu, A.Sekhari, A.Nongaillard, A.Bouras, and Suiran Yu. 2014. "A Sensitivity Analysis Approach to Identify Key Environmental Performance Factors," Mathematical Problems in Engineering, vol. 2014, Article ID 918795, 9 pages, 2014. doi:10.1155/2014/918795
8. X.Yu, A.Sekhari, A.Nongaillard, A.Bouras, S.Yu, QY.Yang. 2013. A LCIA Model Considering Pollution Transfer Phenomena, in: Bernard, A., Rivest, L., Dutta, D. (Eds.), Product Lifecycle Management for Society, IFIP Advances in ICT. Springer Berlin Heidelberg, pp. 365–374.
9. X.Yu, A.Sekhari, A.Nongaillard, A.Bouras. Sep, 2012. The Environment Impact Integration in Product lifecycle: State of The Art. 6th SKIMA(International Conference on Software, Knowledge, Information Management and Applications) 10pages. Chengdu, China.
10. Xi Yu, Dan Li. Research and Simulation for Dynamic Bandwidth Deployment with SDGP Algorithm. Modern Electronics Technique. Vol 15. (published in 2008)
11. Xi Yu. Application of Multilayer Distributing Model Based on COM/DCOM. Modern Electronics Technique. Vol 14. (published in 2008)
12. Xi Yu, Ding Yuan Zhao. Data Acquisition and Communication Controlled by Single Chip Microcomputers. Automation Information (published in 2006).

Languages

- Fluent in spoken and written Mandarin Chinese
- Fluent in spoken and written English

References available upon request

Abstract of publication

Multi-Criteria Decision Making for PLM Maturity Analysis based on an Integrated Fuzzy AHP and VIKOR Methodology

Abstract:

A wide range of product lifecycle management (PLM) maturity models are proposed to assess the relative position of companies on their road to complete PLM implementation. However, it is a tough job for the company to dynamically evaluate the gradual process of PLM maturity by using existing values and accurately make decisions of improving PLM maturity by selecting the optimum alternative. A fuzzy PLM components maturity model (PCMA) is presented to build the internal logical relationship between maturity levels and existing values that can automatically predict the unknown PLM maturity levels. A fuzzy AHP–VIKOR methodology is used to make a decision among option PLM strategies. The weights of the criteria are determined by fuzzy pairwise comparison matrices (PCM). The weights of alternatives with respect to criteria are calculated by fuzzy VIKOR. The fuzzy AHP–VIKOR is a compromise solution and has the ability of transfer subjective and implicit linguistics into objective and transparent data. A numerical example illustrates and clarifies the running steps of the proposed methodology.

Keywords: Eco-design PLM maturity models fuzzy VIKOR fuzzy AHP group decision making pairwise comparison matrices

A 3D Dual Path U-Net of Cancer Segmentation Based on MRI

Abstract:

Nasopharyngeal Carcinoma (NPC) is one of the most common malignant tumors in China. However, the cancer's region is subtle, variability and irregular. In the traditional diagnostic way, clinicians' diagnosis relies on manual delineations which are time consuming and require rich prior experience. Recently, the deep learning architecture of U-Net and Dual Path Network (DPN) apply well in the biomedical segmentation and nature scene respectively. However, U-Net cannot extract abundance texture information from the data and DPN cannot utilize the information of shallow layer and deep layer closely. Moreover, both of them are applied on the slices of images instead of 3D images directly, which discard the anatomic context in 3D spatial domain. Consequently, this paper proposed a novel 3D convolutional network-Dual Path U-Network (DPU) which integrates U-Net and DPN to segment the cancer's region of NPC automatically. The experiment on the MRI dataset of NPC patients has shown that the DPU is more successful than the corresponding 3D version of U-Net and DPN in the field of 3D biomedical image segmentation automatically.

Keywords—3D Convolutional Neural Networks; Image Segmentation; Magnetic Resonance Imaging

Fusing multi-scale information in convolution network for MR image super-resolution reconstruction

Abstract:

Background

Magnetic resonance (MR) images are usually limited by low spatial resolution, which leads to errors in post-processing procedures. Recently, learning-based super-resolution methods, such as sparse coding and super-resolution convolution neural network, have achieved promising reconstruction results in scene images. However, these methods remain insufficient for recovering detailed information from low-resolution MR images due to the limited size of training dataset.

Methods

To investigate the different edge responses using different convolution kernel sizes, this study employs a multi-scale fusion convolution network (MFCN) to perform super-resolution for MRI images. Unlike traditional convolution networks that simply stack several convolution layers, the proposed network is stacked by multi-scale fusion units (MFUs). Each MFU consists of a main path and some sub-paths and finally fuses all paths within the fusion layer.

Results

We discussed our experimental network parameters setting using simulated data to achieve trade-offs between the reconstruction performance and computational efficiency. We also conducted super-resolution reconstruction experiments using real datasets of MR brain images and demonstrated that the proposed MFCN has achieved a remarkable improvement in recovering detailed information from MR images and outperforms state-of-the-art methods.

Conclusions

We have proposed a multi-scale fusion convolution network based on MFUs which extracts different scales features to restore the detail information. The structure of the MFU is helpful for extracting multi-scale information and making full-use of prior knowledge from a few training samples to enhance the spatial resolution.

Keywords: Super-resolution reconstruction; Multi-scale information fusion; Convolution network; Magnetic resonance imaging

Hesitant extension of fuzzy-rough set to address uncertainty in classification

Abstract: Although fuzzy rough sets have been considered as a powerful theory to handle real-valued data with uncertainty, fuzzy rough sets based algorithms reached their limit of conveying hesitation information in the processes of making classification decision. Hesitant fuzzy set plays an important role in handling hesitant and uncertainty information. Thus, the fusion of hesitant fuzzy set and fuzzy-rough set is then explored and also applied it into the task of classification. The contributions of this paper include: 1) A dimensionality reduction of hesitant fuzzy sets by investigating the equivalence relation between hesitant fuzzy elements is studied. 2) A new definition of upper and lower approximations of the hesitant fuzzy rough set is given by studying the hesitant fuzzy similarities

between hesitant fuzzy elements. 3) A hesitant fuzzy rough sets nearest neighbor (HFRNN) classification algorithm is proposed. The experiments show that the classification algorithm of HFRNN outperforms the existing algorithms of FRNN, VQNN, SNN and ASNN in classification accuracy and execution time.

Keywords: Hesitant fuzzy rough nearest neighbor, hesitant fuzzy-rough set, similarity measure, equivalence relations

Super Resolution Reconstruction of Brain MR Image Based on Convolution Sparse Network

Abstract: In order to recover high resolution image from their corresponding low-resolution counterparts for MR Images, this paper has proposed a super resolution reconstruction method to recover the low-resolution MR images based on convolution neural network. Based on the proposed network, the convolution operation and non-linear mapping are employed to adapt MR images naturally and learning the end-to-end mapping from low/high-resolution images. On one hand, convolution operation is natural for image processing; on the other hand, non-linear mapping is helpful to explore the non-linear mapping relationship between low resolution and high resolution images and enhance the sparsity of feature representation. The experiments have demonstrated that the proposed convolution sparse network has the ability to restore the detail information from low resolution MR images and achieve better performance for super resolution reconstruction.