

**2022 2nd International Conference on Information Technology and  
Biomedical Engineering**

**ICITBE 2022**

**Conference Program**

**December 23 to 25, 2022**

**Hangzhou, Zhejiang, China**

**Co-Sponsored by**

Zhejiang University of Technology, China

Zhejiang Sci-Tech University, China

China Jiliang University, China

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Shijiazhuang Tiedao University, China



## **Message from the ICITBE 2022 General Chairs**

2022 2nd International Conference on Information Technology and Biomedical Engineering (ICITBE 2022) aims at providing a high-level platform for experts, scholars, innovators and practitioners to share novel research and ideas in the fields of Information Technology and Biomedical Engineering. The conference plans to be held in Hangzhou, Zhejiang, China, from December 23 to 25, 2022. ICITBE 2022 features Keynote Speeches from eminent professors all over the world and technical presentation from participants in different parts of world. All the program will cover a wide range of topics to cater to the needs of specific subject areas for researchers as well as faculty members.

ICITBE 2022 is Co-Sponsored by Zhejiang University of Technology, China; Zhejiang Sci-Tech University, China; China Jiliang University, China; Zhejiang University of Science & Technology, China; China University of Petroleum, China; Jiangxi University of Finance and Economics, China; Shijiazhuang Tiedao University, China.

We would like to express our sincere thanks to the Program Chairs: Prof. Yu Feng (Zhejiang University of Technology, China), Prof. Linlin Ou (Zhejiang University of Technology, China), all program committee members and all the additional reviewers for their valuable efforts in the review process, which helped us to guarantee the highest quality of the selected papers for the conference.

We cordially thank all the authors for their valuable contributions and the other participants of this conference. The conference would not have been possible without their support. Thanks are also due to the many experts who contributed to making the event a success.

Prof. Yuanjing Feng, Zhejiang University of Technology, China

Prof. Mingfeng Jiang, Zhejiang Sci-Tech University, China

Prof. Le Zhou, Zhejiang University of Science & Technology, China

Prof. Yong Yang, Tiangong University, China

**ICITBE 2022 General Conference Chairs**

## **Message from the ICITBE 2022 Program Chairs**

Welcome to 2022 2nd International Conference on Information Technology and Biomedical Engineering (ICITBE 2022), will be held from December 23 to 25, 2022, in Hangzhou, Zhejiang, China. ICITBE 2022 will be the most comprehensive conference focused on the Information Technology and Biomedical Engineering. ICITBE 2022 will provide an opportunity for academic and industry professionals to discuss recent progress in the area of Information Technology and Biomedical Engineering. In addition, the conference will publish high quality papers which are closely related to the various theories and practical applications on Information Technology and Biomedical Engineering. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in these important subjects.

For ICITBE 2022, we received many paper submissions, after a rigorous peer review process, only very outstanding paper can be accepted for the ICITBE 2022 proceedings, published by the Conference Publishing Services (CPS). All submitted papers have undergone blind reviews by at least two reviewers from the technical program committee, which consists of leading researchers around the globe. Without their hard work, achieving such a high-quality proceeding would not have been possible. We take this opportunity to thank them for their great support and cooperation. We also would like to thank all of you for your participation in our conference, and also thank all the authors, reviewers, and organizing committee members.

Thank you and enjoy the conference!

Prof. Yu Feng, Zhejiang University of Technology, China  
Prof. Linlin Ou, Zhejiang University of Technology, China  
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PAKISTAN



## **3D Printing Technology of Bone Tissue Engineering Scaffolds: Advances and widening horizons**

Prof. Dr. A Taha, MSc, PhD  
Auckland, New Zealand  
WUC Malaysia & CDU China



### **Abstract:**

The steady development of three-dimensional (3D) printing technology for bone tissue engineering scaffold therapy has played an important role in achieving the desired goal to manufacture structures that closely mimic the original tissues. Bioceramic scaffolds are widely studied and appear to be the most promising solution. In addition, 3D printing technology can simulate mechanical and biological surface properties and print with high precision complex internal and external structures to match their functional properties. Inkjet, extrusion, and light-based 3D printing are among the rapidly advancing bone bioprinting technologies. Furthermore, stem cell therapy has recently shown an important role in this field, although large tissue defects are difficult to fill by injection alone. The combination of 3D-printed bone tissue engineering scaffolds with stem cells has shown very promising results. Therefore, biocompatible artificial tissue engineering with living cells is the key element required for clinical applications where there is a high demand for bone defect repair. The importance of this presentation lies in that it aims to briefly review the main principles and characteristics of the currently available methods in the 3D printing technology to prepare bioceramic scaffolds, and finally discuss the challenges and prospects for applications in this promising and vital field.

### **Short Bio:**

Prof. Dr. A Taha is an Honorary Professor and External Advisor from New Zealand, and a High-end Foreign Expert at WUC Malaysia & CDU China. Research interests include biomedical engineering, 3D printing technology for bone tissue engineering scaffold therapy, and various topics related to biomedical research. The research results have been published in more than 50 papers in international journals and conferences, including various SCI/SCIE/IEEE indexing. Received various awards such as Chosen for Who's Who in Medicine and Healthcare 2010. Currently an editorial board member for several international journals.

**The role of computer programming: Artificial intelligence and game theory - Mathematical modelling, algorithms, Python program, and applications in emerging technologies**

Prof. Sardar M. N. Islam (Naz)

Ph.D., LL.B. (Law)

Professor, ISILC,

Victoria University, Australia.

Distinguished Visiting Professor of Artificial Intelligence, UnSri.

Adjunct Professor of IT and Business, Armstrong Institute, Melbourne.

Editor-in-Chief of "IAIC Transactions on Artificial Intelligence"



**Abstract:**

A computer program/system i.e., artificial intelligence is changing the world and the future of mankind. We are living in a science fiction world where artificial intelligence is deterring the future of the world and mankind. Many real life environments are characterized by the existence of intelligent multiagent systems where intelligent agents interact, formulate strategies, cooperate, coordinate, design systems, and plan actions autonomously for achieving their goals. Game theory analyses and formulates strategies, and designs rules or mechanisms for these multiagent systems on the basis of artificial intelligence. For specifying, characterising and modelling and designing these intelligent multiagent systems, mathematical game theory models of different forms can be developed such as static, dynamic, evolutionary, differential, and stochastic game theory models. Different algorithms such as Nash equilibrium, joint optimization, evolutionary algorithms, neural networks, genetic algorithms, and other machine learning algorithms can be applied to different game theory models for analysing, solving, and computing these models. Computer programs such as Python can be used for computing and implementing these models and AI algorithms. Findings from these models are used to formulate strategies, cooperate, coordinate, design systems, and plan actions by different intelligent agents in different disciplines in engineering, business, computer science, etc. Game theory applications in artificial intelligence in different emerging technologies in engineering, business, computer science, etc. is an important area for doing highly useful academic and practical activities and for academics and practitioners for building their careers. Therefore, it is necessary to give priority to this area for research and development in different emerging technologies in engineering, business, computer science, etc.

**Short Bio:**

Prof. Sardar M. N. Islam (Naz) is currently a Professor, at Victoria University, Australia. He is also a Distinguished Visiting Professor of Artificial Intelligence, UnSri and a Distinguished Visiting Professor, AURAK 2019 – 2021, Adjunct Professor of IT and Business, Armstrong Institute, Melbourne and Editor-in-Chief of "International Transactions on Artificial Intelligence".

Professor Sardar M. N. Islam adopts a global and humanistic approach in his research and academic works. He has undertaken rigorous scientific studies of emerging issues of computer science and other different disciplines.

His academic work has gained international acclaim resulting in considerable (1) Honours and Awards, (1) many visiting or adjunct professorial appointments in different countries, (2) many appointments in editorial roles of journals and (3) a large number of keynote speeches at international conferences in several countries. He has published 31 (+4 forthcoming books) scholarly authored academic books with prestigious international publishers in different disciplines, including computer science. Each of these books makes significant scientific contributions to the literature. Prestigious publishers publish these books, and the majority of books are published in highly regarded book series. He has also published about 250 articles, including some of the top leading international journal articles in his specialised research areas, including computer science.

## Biometric Cryptosystem

Prof. Lu Leng  
School of Software  
Nanchang Hangkong University, China



### Abstract:

Biometric cryptosystem is a promising scheme for biometric protection, which attempts to utilize biometric features as authenticators in cryptosystems rather than using conventional credentials, such as passwords, tokens. Cryptosystems request that the encryption key and decryption key be exactly identical; however, due to intra-class variance, it is highly difficult to extract the exactly identical biometric features as the key from the gallery and query biometric templates. Moreover, biometric cryptosystems typically suffer from many serious security and privacy problems. This keynote speech will introduce how the SOTA biometric cryptosystems solve the aforementioned challenges.

### Short Bio:

LU LENG received his Ph.D degree from Southwest Jiaotong University, Chengdu, P. R. China, in 2012. He performed his postdoctoral research at Yonsei University, Seoul, South Korea, and Nanjing University of Aeronautics and Astronautics, Nanjing, P. R. China. He was a visiting scholar at West Virginia University, USA, and Yonsei University, South Korea. Currently, he is a full professor at Nanchang Hangkong University. Prof. Leng has published more than 100 international journal and conference papers, including about 50 SCI papers and three highly cited papers. He has been granted several scholarships and funding projects, including five projects supported by National Natural Science Foundation of China (NSFC). He serves as a reviewer of more than 100 international journals and conferences. His research interests include computer vision, biometric template protection and biometric recognition.

Prof. Leng is an outstanding representative of "Innovation Talent" of Jiangxi Enterprise in "Science and Technology China" in 2021, received "Jiangxi Youth May Fourth Medal" in 2019, "Jiangxi Hundred-Thousand-Ten-thousand Talent Project" in 2018, "Jiangxi Voyage Project" in 2014, etc.

## Conference Schedule

Date	Time	Standard Room
2022-12-23	09:00-18:00	Registration
2022-12-24	09:00-09:10	Opening Remarks
	09:10-09:50	Keynote by Prof. Dr. A Taha
	09:50-10:00	Halftime
	10:00-10:40	Keynote by Prof. Sardar M. N. Islam (Naz)
	10:40-10:50	Halftime
	10:50-11:30	Keynote by Prof. Lu Leng
	11:30-14:00	Noon Break
	14:00-16:40	Oral Session A
	2022-12-25	09:00-11:40
11:40-14:00		Noon Break
14:00-16:40		Oral Session C

### Instructions for Presentations

#### Oral Presentation

#### Devices Provided by the Conference:

Laptops (with MS-Office & Adobe Reader)

Projectors & Screen

#### Materials Provided by the Presenters:

PowerPoint or PDF files

Duration of each Presentation (Tentatively): 20 minutes

Regular Oral Session: about 20 Minutes of Presentation

Keynote Speech: 40 Minutes of Presentation

#### Poster Session

Poster Session at Standard Room. The time at December 24-25, 2022

#### Devices Provided by the Conference:

Space and nails

#### Materials Provided by the Presenters:

90cm(h) × 60cm(b) poster

**December 23, 2022**

**Registration 09:00-18:00**

**December 24, 2022**

**09:00-09:10 Opening Remarks**

Prof. Yuanjing Feng, Zhejiang University of Technology, China

**09:10-09:50 Keynote 1**

Title: 3D Printing Technology of Bone Tissue Engineering Scaffolds: Advances and widening horizons

Prof. Dr. A Taha, MSc, PhD

**09:50-10:00 Halftime**

**10:00-10:40 Keynote 2**

Title: The role of computer programming: Artificial intelligence and game theory - Mathematical modelling, algorithms, Python program, and applications in emerging technologies

Prof. Sardar M. N. Islam (Naz)

**10:40-10:50 Halftime**

**10:50-11:30 Keynote 3**

Title: Biometric Cryptosystem

Prof. Lu Leng

**11:30-14:00 Noon Break**

**14:00-16:40 Oral Session A**

1211	Lung Segmentation of CT images Based on Grey Incidence Degree	Caixia Liu,Wanli Xie*
1239	Active Ordinal Classification with Expected Model Output Change	Deniu He
1256	A Novel Approach to Sparse Linear Inverse Problems with Application to Sparse Face Recognition	Gang Li <sup>1</sup> , Wu A. Li <sup>2</sup> , Aihua Yu <sup>1</sup> , and Beiping Hou <sup>1</sup>
1269	Study on the prediction method of machining hardening index by a double-hole micro-shear method	QI Jing, ZHANG Aihua*, WANG Junqing, ZHU Liang
1274	Unsupervised Monocular Depth Prediction for Continuous Indoor Video Streams	Yinglong Feng, Okan K"op"ukl"u, Tao Zhao, XiaoDong Wang
1294	EEG assisted speech emotion recognition based on DBM-LSTM+	Juan Li <sup>1,2</sup> Xueying Zhang <sup>1,*</sup> and Fan Gao <sup>3</sup>
1298	Dynamic Heart Rate Extraction Method Based on Postauricular Photoplethysmography Signal	QI Yusheng <sup>1,2,3</sup> , ZHANG Aihua <sup>1,2,3,*</sup> , MA Yurun <sup>1,2,3</sup> , WANG Huidong <sup>1,2,3</sup> , LI Jiaqi <sup>1,2,3</sup>

**December 25, 2022**

**09:00-11:40 Oral Session B**

1314	Developing an artificial intelligence model for GBM classification and prediction based on gene features	Pei Zhang, Wanting Xu, Qin Xia, Lei Dong
1327	A Review of ECG Signal Denoising Based on Deep Learning	WANG Huidong, MA Yurun,* , ZHANG Aihua, LIN Dongmei, QI Yusheng, LI Jiaqi
1328	The Impact of “Emotion Grammar” on the Veracity of News Headlines: Evidence from Machine Learning	Xiaoyu Zhou,Song Tong,Ruihang Liu,Fei Wang* Kaiping Peng*
1329	Detecting the Attention Scopes from Travel Photos	Song Tong, Xuefeng Liang * , Takatsune Kumada * , Peng Zhang, Kaiping Peng
1330	Semi-Supervised Direction of Arrival Estimation Based on Manifold Regularization*	Liuli Wu*,Jianhua Liao,Ping Wang,Yao Wang,Yanchen Li

**11:40-14:00 Noon Break**

**14:00-16:40 Oral Session C**

1332	Modeling method of river water-land integration three-dimensional reality scene	RUAN Xiaoguang*, YANG Fanghao, GUO Meijing, ZOU Chao
1350	Analysis of key risk factors for stroke based on logistic regression model	Jing Xie,Fenglian Li * ,Xueying Zhang,Fengyun Hu,Wenhui Jia,Peng Du
1358	A new frame interpolation algorithm	Biwei Chi,Yuxuan Wang,Aizhu Liu,Lingrong Xu,Xinhui Chen,Hangyuan Lu
1361	Detection of Pneumonia in Chest Radiographs using Transfer Learning with Efficient Channel Spatial Attention	Xiaofei Wang,Huijuan Lu*,Yanbin Wang,Ke Yan,Zhigang Gao

## Poster Session

1186	A Serial Peripheral Interface Design Based on FPGA	Yuan Liu 1, Yuwei Xue 2, Chen Feng 3,
1193	A Design Programme of Permanent Magnet Linear Synchronous Motor Servo Control System	Mian WANG, Fei LV, Chunming DAI
1196	Design and Experiment of Information Monitoring System of Surface Sweeping Robot	Eli-rusul, Wang Weijun, Liu Zefeng, Zhang Zemin, Gao Junjie,
1198	Construction and Research of Log Platform Based on Autonomous Controllable System	Zhao Kai
1199	Research on Blended Teaching Reform of Accounting Courses based on Precise Ideological Politics and Artificial Intelligence Take "Financial Management" as an Example	Cui GUO
1203	More Tough and More Mature: Evidence from Chinese Automobile Insurance Market	Guannian Zhao, Jiarui. Zhu 2, Rong. Li 2
1204	Underwater Random Noise Measurement Method Based on Probability Density Function Deconvolution	TONG Haoyang, Liu Yucui, Chen Yi, Zhao Han
1206	Research on airline network optimization based on plant growth simulation algorithm	Sizhen Wang, Qing Cheng, Yuanji Wang, Yuan Zhao, Pengwei Fu, Fengling Wu
1207	Prediction of Diabetes Disease Based on Artificial Intelligence	Wei-Ming Liu
1208	An Edge Preserving Method for Remote Sensing Image Fusion	Qun Song, Chen Ding, Hangyuan Lu
1209	An Efficient Fold-Unfold Approach for Pansharpening	Hangyuan Lu, Shihua Luo, Yong Yang
1210	A Fast Two-Step Pansharpening Method Based on Conditional Random Fields	Hangyuan Lu, Shihua Luo, Yong Yang
1213	A fuzzy comprehensive evaluation study on the performance of age-friendly digital retrofit based on user experience: Take the "elder mode" App as an example	Hao Ji
1214	Habitability Classification of Exoplanets Based on BP Neural Network	Xiyang Kong, Jiangpei Dou
1215	Capacity allocation of energy storage system based on optimal expected output of predictive planning	Gu Wei, Hao Hao, Li Peng
1216	Tetrandrine combined with acetylcysteine in the treatment of pneumoconiosis: A meta-analysis and GRADE evaluation	Chen Lei1, Wu kuangqin2, Jianguo Hu*3
1217	Processing and Analysis of Acoustic and Physiological Signals Based on Mongolian Long-tune	Shu Liu, Kaiwu Zhang, Kai Zhang, Axu Hu
1218	An Adaptive Weighted Modulation Coefficient for Remote Sensing Image Fusion	Chen Ding, Qun Song, Hangyuan Lu
1219	5G MEC Technology and Its Application	Liu Ya, Xiao Juan



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The secretary of ICITBE 2022

Ms: Mindy Wang

Tel: +86-13564138859

Email: [icitbe@icitbe.org](mailto:icitbe@icitbe.org)

<http://www.icitbe.org>