Weijia Lu is a researcher with two PhDs & Sr. Manager of an innoventional team of diverse technical directions; has over 10 years of experiences in data modeling, artificial intelligence application, multiphysics numerical analysis, signal processing, computer visualization and likely; has demonstrated excellence in academic research.



CONTACT

AlfredWJLu@gmail.com

Shanghai, CN

Personal Homesite

in Professional Portal

0000-0002-7899-6034

SKILLS

Industry

Healthcare **Automobile**



Leadership & Management

Strategic Planning Quality Assurance Team Leadership Visionary Thinking



Research & Delivery

Signal Processing

(e.g. Image, Medical Signal, Text ...)

Deep/Machine Learning

(e.g. GAN, RL, Plant Modeling ...)

Compute Architecture

(e.g. Model Pruning, FL ...)

Physics & Modeling

(e.g. FEM, FIELD II, Abersim, COMSOL ...)

Software Implementation (e.g. Python, C/C++, R, Matlab, GNU Tools, Linux, Docker, HTML, PHP, DevOps ...)

Hardware Design & MCUs

(e.g. ATmega128, MSP430, 80C51, TDA4)

Operational Research

(e.g. LP, MIP, CP ...)

Languages

Mandarin **English**



CERTIFICATES

★ JHU certified Data Science Specialization

* Bk certified Big Data Analysis with Spark

GE certified Green Belt of Lean Six Sigma

* CN Automation certified Mid-Class Eng

WORK HISTORY

1 08/2019 - Now

UAES, CN

Chief Al Scientist & Sr. Mgr

UAES is No 1. in Driving Technology in China. Its product enclosed EMS, BMS, VCU, VCP, eAxials, TMS so on so forth.

1 09/2018 - 08/2019

Senior Researcher Tencent Al Lab. CN

Lead research on deep learning algorithm for medical pathological diagnosis; 2 SCIE papers, 1 top-rank conference

1 04/2017 - 09/2018

♀ GE Digital, CN

Staff Data Scientist

Lead research on deep learning algorithm for auto-annotation on physiological signal, predictive maintenance for large healthcare equipment; deliver web platform for radiomics study in hospital; 1 top-rank conference, 1 US patent

1 05/2012 - 04/2017

♀ GE Global Research, CN

Lead Engineer

Lead research on offshore drilling ultrasonic velocimetry, lift solution optimization for well lifecycle management, detection algorithm & physical modeling for micro-calcifications twinkling study, automation tool for GE controllers; 1 SCIE paper, 1 top-rank conference, 1 CTO award, 3 US patents

1 09/2010 - 05/2012

Philips Research, CN

Scientist

Research on signal processing algorithm for ultrasound blood velocimetry, and denoising algorithm for motion artifacts on ECG signal; 2 US patents

1 09/2003 - 01/2004

♀ Baokang Electronic Control, CN

Hardware Engineer

EDUCATION

1 05/2008 - 09/2011

PhD of Computer Science

Q University of Aizu, JP Research on computational model & 3D visualization for cardiac electrophysiological study; 1 SCIE paper, 2 conferences

1 09/2004 - 06/2009

♀ Fudan University, CN

PhD of Electronic Engineering

Research on epi-cardial mapping system, including its data acquisition hardware, firmware, USB driver, 3D interpolation algorithm; 1 SCIE paper, 1 Chinese top-rank journal paper, 3 conferences

6 09/1999 - 07/2003

Naniing University of Sc. and Tec., CN

BSc of Electronic Engineering

Major in radar system and signal processing

ACHIEVEMENTS, HONOURS AND AWARDS

TCTO Physical & Digital Integration Award, GE, 2016

P Best Employee, UAES, 2020

¶ 1st prize of CMQMA Excellent Quality Management, CN, 2022

Pearl Engineer, Pudong Shanghai, 2024

RECOMMENDATIONS

"...Weijia has developed an excellent reputation within our organization as a dedicated, insightful and easy to work with colleague..." - by Chief Engineer @ GE US Probes

FEATURED PUBLICATIONS

20+ papers, 60+ patents, those with following symbols are recommended: (\$\text{\flat}\$) Software implementation and algorithm; (\$\text{\flat}\$) Signal Processing, deep/machine learning and computer architecture, AI for control, plant modeling; (\heartsuit) Physics and computational modeling; (♦) Optimization algorithm and operational research Design and Implementation of a New System for Whole-Atrial Epicardial Mapping Cuiwei Yang, Weijia Lu, Xiaomei Wu, and Zuxiang Fang ■ International Journal of Bioelectromagnetism (IJB) % Link About: Design an electronic system to records electrophysiology activity of heart. Cardiac Mapping and Cardiac Modeling. A New Scheme for Observation and Interpretation Atrial Fibrillation Weiiia Lu. Zuxiang Fang 2008 in Proceedings of the 2nd International Conference on Bioinformatics and Biomedical Engineering (ICBBE) % Link A Visual Expression to Show Epicardial Electrical Activity Comprehensively Tou Zhou, Weijia Lu, Cuiwei Yang, and Zuxiang Fang % Link in Proceedings of the 2nd International Conference on Bioinformatics and Biomedical Engineering (ICBBE) Dynamic Epicardial Mapping Using 3D Emulation Weijia Lu, Tuo Zhou, Cuiwei Yang, and Zuxiang Fang % Link in Proceedings of the International Conference on Biomedical Engineering and Informatics (ICBEI) Development of Epicardial Mapping System for Study Atrial Fibrillation Cuiwei Yang, Weijia Lu, Tuo Zhou, Xiaomei Wu, and Zuxiang Fang in Proceedings of the International Conference on Biomedical Engineering and Informatics (ICBEI) S Link A Method for Real-time Sampling and Smoothly Scrolling in Epicardial Mapping System (♣) Weijia Lu, Cuiwei Yang, and Zuxiang Fang Journal of Biomedical Engineering (JBE Chinese), vol.26, pp.1102-1105 & Link About: Software design of employing DirectX to smoothly scrolling multiple signals on screen in a high speed sampling scenario. The corresponding GUI of system reported in IJB2007. Cardiac Mapping and Cardiac Modeling. A Parallel Algorithm for Computer Simulation of Electrocardiogram Based on MPI (♣) Wenfeng Shen, Weijia Lu, Daming Wei, Weimin Xu, Xin Zhu, and Shizhong Yuan in Proceedings of 8th IEEE/ACIS International Conference on Computer and Information Science (ICIS) % Link About: Software design of ECG computational simulation in HPC. A HPC version of Wei-Harumi Model. Cardiac Mapping and Cardiac Modeling. Implementation of a Novel Interpolating Method to Epicardial Potential Mapping for Atrial Fibrillation Study (& & & &) Weijia Lu, Cuiwei Yang, Zuxiang Fang, Xingpeng Liu, Xin Zhu, and Daming Wei % Link Computers in Biology and Medicine (CBM), vol.40, pp.456-463 About: An Spatio-Temporal interpolation algorithm to estimation a high resolution electrophysiology field. Traditional interpolation only consider the spatial relationship of sampling position while our method combines the spatial calculation with electrophysiology activity propagation. Designed for system reported in IJB2007. Cardiac Mapping and Cardiac Modeling. A Computer Model Based on Real Anatomy for Electrophysiology Study (♡♡♡♣) Weijia Lu. Daming Wei, Xin Zhu, and Wenxi Chen Advances in Engineering Software (AES), vol.42, pp.463-476 S link About: An computational model builtup based on real anatomy information to simulate 12 channel ECG. A upgrading of Wei-Harumi Model by introducing real anatomy, cellular Ion Channel description and propagation system. Especially for artrial arrhythmia study. Cardiac Mapping and Cardiac Modeling. Method and Device for Detecting Occlusion/Reopening of an Artery and System for Measuring Systolic Blood Pressure () 👺 Yinan Chen, Weijia Lu, Jianyi Zhong, Ajay Anand, John Petruzzello **#** 2012 US 20140180114 A1 S Link About: Method to detecting blood pressure using pulse wave ultrasound. First achievement during my career path fulfilled in Philips Research. Medical Ultrasonic and Signal Processing. Computer Simulation of Cathode Ablation for Atrial Fibrillation (\heartsuit)

皆 Xin Zhu, Di Yang, **Weijia Lu**, Wenxi Chen, Daming Wei, Koji Fukuda, and Hiroaki Shimokawa

in Proceedings of 14th IEEE International Conference on Computer and Information Technology (CIT)

About: Simulation atrial fibrillation using computational model reported in AES2011. Cardiac Mapping and Cardiac Modeling.

Method to Develop Coded Excitation for Velocimetry in Downhole Drilling (♠♠♡)

👺 🛮 Weijia Lu, Ran Niu, Longtao Yuan, Xin Qu, Heng Wu, Jing Ye

in Proceedings of 15th IEEE International Conference on Computer and Information Technology (CIT)

🗞 Link

S Link

About: Encoding decoding algorithm for pulse wave ultrasound, which can significantly improving spatial resolution without jeopardizing signal penetration. By-product of my studying related to B-Flow and designed for early kick detection project, and my first publication in GE Research. Industry Ultrasonic and Signal Processing.

₩ Weijia Lu, Bruno Haider	
2017 ■ Journal of Medical Ultrasonics (JMU), vol.44, pp.37-50	& Link
About: A mechanistic study of twinkly phenomenon showup in B-Flow ultrasonic imaging. A study established a multiphysics computational model to a tic coupling of ultrasonic field and solid granules, then designed phantom study to validate the mechanistic theory. The agreement of simulation and found by a post-processing algorithm in also reported in this study. The break-through achievement is acknowledged by the chief engineer of media Medical Ultrasonic and Signal Processing.	l phantom study is
Sensing Systems and Methods for Detecting Changes in Downhole Hydrocarbon and Gas Species ($\spadesuit \heartsuit$)	
₩ Weijia Lu , Yi Liao	
 2017 ■ WO2018170838A1 About: A study of composition analysis using ultrasound attenuation also for early kick detection. Industry Ultrasonic and Signal Processing. 	% Link
Method to Annotate Arrhythmias by Deep Network (♠♠♠)	
Weijia Lu, Jie Shuai, Shuyan Gu, Joel Xue	
2018 In Proceedings of 18th IEEE International Conference on Computer and Information Technology (CIT) About: Automatic annotation of arrhythmias on ECG signal for GE Diagnostic Cardiology portfolio. My first publication about deep learning and AI, ration of GE Healthcare China and GE Healthcare US. AI for Diagnostic Cardiology.	% Link ny leading collabo-
New Boundary Constraint Loss to Facilitate Glands Segmentation (♠♠♠)	
Weijia Lu, Jianhua Yao, Xiao Han, Haocheng Shen	
2019 Journal of Medical Imaging and Health Informatics (JMIHI) About: Segmentation of glands on pathological image, learning method by a new loss function. My first publication of using AI on medical image and AI Lab. AI for Pathologic Image.	% Link fulfilled in Tencent
An Attentive Pruning Method for Edge Computing (♠)	
Yang Gao, Hao Gong, Weijia Lu , Chen Su, Zhang Ni and Qinghua Wang	
2019 in Proceedings of 20th International Conference on Machine Learning and Computing (ICMLC) About: Method to prune object detection network, first publication of UAES AI Lab after my enrollment of UAES as chief AI scientist. Embedded AI.	& Link
System and Method for Identifying Cardiac Arrhythmias With Deep Neural Networks (♠♠♠)	
Weijia Lu, Shuyan Gu, Joel Xue, Jie Shuai, Hu Lifei	^
2020 Substitution 2020 S	Sology.
Microsatellite Instability Prediction of Uterine Corpus Endometrial Carcinoma Based on HE Histology Whole-Slide Imagi	ng (♠♠♠)
Tongxin Wang, Weijia Lu, Fan Yang, Li Liu, Zhong-Yi Dong, Weimin Tang, Jia Chang, Wenjing Huan, Kun Huang and Jianhua Yao	0 (-111-)
2020 in Proceedings of IEEE 17th International Symposium on Biomedical Imaging (ISBI) About: An new Al paradigm to predict MSI on pathological image. A multi-instance learning method by me and Tongxin, when he was working as an in Lab. Al for Pathologic Image.	% Link ntern in Tencent Al
Development and interpretation of a pathomics-based model for the prediction of microsatellite instability in Colorectal Cao Rui, Fan Yang, Si-Cong Ma, Li Liu, Yu Zhao, Yan Li, Dehua Wu, Tongxin Wang, Weijia Lu, Wei-Jing Cai, Hong-bo Zhu, Xue-Jun Guo, Yuwen Lu, Jun-Huan, Wei-min, Tang, Kun Huang, Junzhou Huang, Jianhua Yao and Zhong-Yi Dong	
2020 Theranostics	% Link
About: A collaboration research fulfilled by Tencent Al Lab and Nanfang hospital, and a systematic description of methodology reported in ISBI2020 Image.	
Processing Methods, Devices, Equipment and Storage Media for Vehicle Data (♠)	
Peng Liu, Weijia Lu, Bingyang Li, Hao Gong, Jie Zhuang and Tao Song	% Link
2020 © CN202011480936.0 About: Optimization of sampling point selection for utilizing gaussian process regression in torque prediction. Comparing with ASCMO modeling methour method use only 70% of sampling point without any decresing in prediction performance. Al for Smart Sensor.	-
Construction Method, Device and Storage Medium for Engine Exhaust System Temperature Model (♦)	
Bingyang Li, Hao Gong, Weijia Lu, Peng Liu, Chunshan Ma, Yang Wang, Jianqiang Wang and Zhiwei Wang	a
2021 Substitution CN202110499356.4 About: A swarm intelligence method to optimize super-parameter map of the control algorithm. Al for smart calibration.	% Link
Dual Batch Size Training: An efficient MGD adaptive batch size method	
Yuhang Du, Wenfeng Shen, Baohua Liu, Weijia Lu and Hao Gong	
	& Link
Method, Device and Storage Medium of PCB Welding Defect Detection (♠♠)	
Weijia Lu, Peng Liu, Bingyang Li, Chuang Liu, Wei Shen, Huan Ge, Yu Jing, Jie Zhang, Qi Wang and Yu Cao	
 2021 ■ CN202110622967.3 About: A two-stage method to predict welding defect areas and defect type based on selective welding image. Al for manufacturing. 	% Link
Method, Device and Storage Medium of Image Recognition for Chip Welding Defect (♠)	
Peng Liu, Weijia Lu , Bingyang Li, Chuang Liu, Tong Ma and Fayu Qian	_
2021 CN202110992821.8 About: Welding defect detection based on resistance welding image. All for manufacturing	% Link

Using EBGAN for Anomaly Intrusion Detection (♠♠) Yi Cui, Wenfeng Shen, Jian Zhang, Weijia Lu, Chuang Liu, Lingge Sun and Sisi Chen 1022 International Joint Conference on Neural Networks, IJCNN 1034 About: A generative adversarial network to detect intrusion on vehicle gateway. All for Vehicle Safety.	% Link
Knock detection method and device for PCSP ignition strategy (♠)	
Xiaofeng Ma, Weijia Lu, Gang Xi and Jianqiang Wang	_
2022 © CN 114781425 B About: A new knock detection method when traditional algorithm failed on PCSP ignition strategy. This method deal with labeling noise by cross train designed hand-crafted features. Al for Smart Sensor.	& Link ing and carefully
Gradient-Based Meta-Learning Using Uncertainty to Weigh Loss for Few-Shot Learning	
 ★ Lin Ding, Wenfeng Shen, Weijia Lu, Peng Liu and Shengbo Chen ★ 2023 ★ in Proceedings of ICCECE 	% Link
Towards Designing an Attentive Deep Trajectory Predictor Based on Bluetooth Low Energy Signal (♠♠♠)	
Weijia Lu, Xiaofeng Ma, Xiaodong Zhang, Zhifei Yang and Qinghua Wang	•
2023 in Proceedings of 57th Annual Conference on Information Sciences and Systems (CISS) About: A small but carefully designed MOE network to predict cellphone location in a key-less entry scenario. The deep learning network, with only 700 ters, has been deployed in a ECU with 300MHz frequency and limited code segment. This network has two branches, one to predict the angle and anoth distance, and whole network is sparse activated. Moreover a carefully designed loss function is reported in this study to accelerate network training. Al	ner one for radial
Distributed Training Methods and Systems for Models (♠♠)	
Weijia Lu, Xiaodong Zhang, Zhifei Yang, Xiaofeng Ma, Chuang Liu and Wangchen Lin	0
2023 S CN 116822619 A	& Link
A Method for Automatic Capacity Allocation (♦)	
Shuyu Jiang, Weijia Lu , Na Li, Huan Ge and Bingyang Li 2023 © CN 116384669 A	% Link
About: Automatic production line allocation using linear programming and cbc solver. Al for Scheduling.	• LITIK
A Power Battery Balancing Controller, Balancing Control Method, and Electric Vehicle (♠♠♠)	
Chuang Liu, Xichun Ke, Zhifei Yang, Weijia Lu, Xiaodong Zhang and Xiang Di	
2023 © CN 116674432 A About: A heuristic strategy for battery balancing. In nowadays, heterogenization of power battery cells becomes a critical factor of e-car lifespan. Certs provided to automatically initiate balancing process and ultimately ameliorate the heterogenization. But the chip will shutdown balancing once the tem a pre-set threshold. So this patent introduce a method to fulfilled balancing process without trigger the temperature protection strategy. Al for Control	perature reaches
A Reinforcement Learning-based Battery Balancing Method and Device (♠♠)	
Yhifei Yang, Xichun Ke, Chuang Liu, Weijia Lu, Xiaodong Zhang and Xiang Di	
2023 © CN 116767024 A About: The reinformant learning verion of CN 116674432 A. Moreover this patent reports the method to establish the digital twin model of the balancin digital model is used as the environment during policy training. Al for Control.	& Link g hardware. This
A Curve Information Processing Method, Device, Storage Medium, and Detection Equipment (♠)	
Peng Liu, Lin Sun, Weijia Lu and Tong Ma	% Link
	To LINK
A Target Detection Method, Device, Storage Medium, Sensor, and Controller (♠♠♠)	
Peng Liu, Weijia Lu, Lin Sun, Can Zhang and Tong Ma	
 ■ CN 116452916 A About: Contrastive learning method for target detection. Al for Manufacturing. 	% Link
A Target Detection Method, Machine Vision Device, Storage Medium, and Controller (♠♠♠)	
Peng Liu, Lin Sun, Weijia Lu, Jie Zhang, Wei Shen, Yu Jin and Huan Ge	Q (2.1)
2024 © CN 117726855 A About: Semi-Supervised learning method for target detection. Al for Manufacturing.	% Link
A Product Testing Method, Data Management Method, Apparatus, Medium and Controller (🌲)	
Weijia Lu, Xiaodong Zhang, Can Zhang, Zhifei Yang, Xiaofeng Ma, Chuang Liu, Bingyang Li, Feng Wu, Xuzhou Zhang, Jing Ye, Yongyi Liu, Xichun Ke, Jianfei Zheng, Jie	
Bai and Chen Sheng 2024	% Link
About: A test case generation tool utilizing signal matrix, IO configuration and large language model. LLM for Software Development.	
A Method for Model Data Processing, a Simulation Apparatus, a Storage Medium, and a Testing System. (♠♠♠) * Zhifei Yang, Xiaofeng Ma, Weijia Lu, Xiaodong Zhang, Wangchen Lin, Ting Li, Fei Sun, Qiang Fang and Gang Xi	
	% Link
A memor to establish digital twill model based on a new neutral ODE structure. Al for Flank Modelling.	

Scenario-Aware Clustered Federated Learning for Vehicle Trajectory Prediction with Non-IID Data (♠)	
Liang Tao, Yangguang Cui, Xiaodong Zhang, Wenfeng Shen, Weijia Lu	
2024 Part D: Journal of Automobile Engineering (PartD) About: A vehicle trajectory model, federated learned from real vehicle data, with multi-head design and federated clustering. The corresponding method patent CN 116822619 A. Federated Learning in Vehicle.	S Link od is protected in
A Comfortable and Robust DRL-based Car-following Policy Incorporating Lateral Information under Cut-in Scenarios (🏟 🏟 a	♠)
Yifei Shen, Zhifei Yang, Weijia Lu , Wenfeng Shen, Zhou Lei	
2024 in Proceedings of 35th IEEE Intelligent Vehicles Symposium (IV) About: A reinforcement learning policy to significant increase the safety. The vehicle trajectory model, federated learned from real vehicle data and re 2024, provide critical lateral information. Al for Control.	S Link eported in PartD
Improving Generalization and Personalization in Long-Tailed Federated Learning via Classifier Retraining (♠♠)	
Yuhang Li, Liu Tong, Wenfeng Shen, Yangguang Cui, Weijia Lu	
2024 in Proceedings of 30th International European Conference on Parallel and Distributed Computing (Euro-par) About: A resampling strategy to address heterogenization issue of data distribution in a federated learning. Federated Learning in Vehicle.	% Link
Hybrid Attention with Memory-based Conditional Refinement for Unified Intent Trajectory Prediction (♠♠♠)	
Jingjing Wang, Weijia Lu, Wenfeng Shen, Yangguang Cui, Tong Liu, Xiaodong Zhang, Zhifei Yang, Guangtai Ding, Yifei Shen, Liang Tao	
## 2025	% Link
About: A spatiotemporal network with semantic-search based training method. To improve the prediction of driver intention. Al for smart sensor.	
FedSMU: Communication-Efficient and Generalization-Enhanced Federated Learning through Symbolic Model Updates (^^
Xinyi Lu, Hao Zhang, Chenglin Li, Weijia Lu, ZHIFEI YANG, Wenrui Dai, xiaodong Zhang, Xiaofeng Ma, Can Zhang, Junni Zou, Hongkai Xiong	
2025 International Conference on Machine Learning (ICML) '25 About: Alleviating data heterogeneity by symbolizing client model updates (normalizing parameter magnitude) and combining Lion optimizer's local-g reduces communication costs and enhances the global model's generalization.	Substitution Link Link Link Link Link Link Link Lin
LBI-FL: Low-Bit Integerized Federated Learning with Temporally Dynamic Bit-Width Allocation (♠♠♠)	
Li Ding, Hao Zhang, Wenrui Dai, Chenglin Li, Weijia Lu, ZHIFEI YANG, xiaodong Zhang, Xiaofeng Ma, Junni Zou, Hongkai Xiong	
	% Link
About: By using low-bit quantization and dynamic bit-width allocation via reinforcement learning, communication and computation costs are significant maintaining high precision.	ly reduced while
Logical Consistency is Vital: Neural-Symbolic Information Retrieval for Negative-Constraint Queries (♠♠♠)	
Ganlin Xu, Zhoujia Zhang, Wangyi Mei, Jiaqing Liang, Weijia Lu, xiaodong Zhang, ZHIFEI YANG, Xiaofeng Ma, Yanghua Xiao, Deqing Yang	
## 2025	& Link
About: A neuro-symbolic info retrieval method using first-order logic to boost complex query retrieval.	
BPO: Revisiting Preference Modeling in Direct Preference Optimization (♠♠)	
Lin Sun, Chuang Liu, Peng Liu, Bingyang Li, Weijia Lu, Ning Wu	
	% Link
FreePRM: Training Process Reward Models Without Ground Truth Process Labels (♠)	
Lin Sun, Chuang Liu, Xiaofeng Ma, Tao Yang, Weijia Lu , Ning Wu	
	% Link