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
+86 137 7436 3137
Shanghai, CN
Personal Homesite
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 ...)
Compute Architecture ●●●●●
(e.g. Model Pruning, FL ...)
Physics ●●●●○
(e.g. 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)

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

08/2019 - Now
UAES, Shanghai, CN
Chief AI 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.

09/2018 - 08/2019
Tencent AI Lab, Shenzhen, CN
Senior Researcher
Lead research on deep learning algorithm for medical pathological diagnosis; 2 SCIE papers, 1 top-rank conference

04/2017 - 09/2018
GE Digital, Shanghai, 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

05/2012 - 04/2017
GE Global Research, Shanghai, 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

09/2010 - 05/2012
Philips Research, Shanghai, CN
Scientist
Research on signal processing algorithm for ultrasound blood velocimetry, and denoising algorithm for motion artifacts on ECG signal; 2 US patents

EDUCATION

05/2008 - 09/2011
University of Aizu,
Aizu-Wakamatsu City, JP
PhD of Computer Science
Research on computational model & 3D visualization for cardiac electrophysiological study; 1 SCIE paper, 2 conferences

09/2004 - 06/2009
Fudan University,
Shanghai, 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

09/1999 - 07/2003
Nanjing University of Sc. and Tec.,
Nanjing, CN
BSc of Electronic Engineering
Major in radar system and signal processing

ACHIEVEMENTS, HONOURS AND AWARDS

- CTO Physical & Digital Integration Award, GE, 2016
- 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 Ultrasound Probes

PUBLICATIONS

Design and Implementation of a New System for Whole-Atrial Epicardial Mapping

Cuiwei Yang, **Weijia Lu**, Xiaomei Wu, and Zuxiang Fang

2007 International Journal of Bioelectromagnetism Link

About: *Design an electronic system to records electrophysiology activity of heart.*

A New Scheme for Observation and Interpretation Atrial Fibrillation

Weijia Lu, Zuxiang Fang

2008 in Proceedings of the 2nd International Conference on Bioinformatics and Biomedical Engineering Link

A Visual Expression to Show Epicardial Electrical Activity Comprehensively

Tou Zhou, **Weijia Lu**, Cuiwei Yang, and Zuxiang Fang

2008 in Proceedings of the 2nd International Conference on Bioinformatics and Biomedical Engineering Link

Dynamic Epicardial Mapping Using 3D Emulation

Weijia Lu, Tuo Zhou, Cuiwei Yang, and Zuxiang Fang

2008 in Proceedings of the International Conference on Biomedical Engineering and Informatics Link

Development of Epicardial Mapping System for Study Atrial Fibrillation

Cuiwei Yang, **Weijia Lu**, Tuo Zhou, Xiaomei Wu, and Zuxiang Fang

2008 in Proceedings of the International Conference on Biomedical Engineering and Informatics Link

A Method for Real-time Sampling and Smoothly Scrolling in Epicardial Mapping System

Weijia Lu, Cuiwei Yang, and Zuxiang Fang

2009 Journal of Biomedical Engineering (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.*

A Parallel Algorithm for Computer Simulation of Electrocardiogram Based on MPI

Wenfeng Shen, **Weijia Lu**, Daming Wei, Weimin Xu, Xin Zhu, and Shizhong Yuan

2009 in Proceedings of 8th IEEE/ACIS International Conference on Computer and Information Science Link

About: *Software design of ECG computational simulation in HPC. A HPC version of Wei-Harumi Model.*

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

2010 Computers in Biology and Medicine, vol.40, pp.456-463 Link

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.*

A Computer Model Based on Real Anatomy for Electrophysiology Study

Weijia Lu, Daming Wei, Xin Zhu, and Wenxi Chen

2011 Advances in Engineering Software, vol.42, pp.463-476 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.*

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 Link

About: *Method to detecting blood pressure using pulse wave ultrasound. First achievement during my career path fulfilled in Philips Research.*

Computer Simulation of Cathode Ablation for Atrial Fibrillation

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

2014 in Proceedings of 14th IEEE International Conference on Computer and Information Technology Link

About: *Simulation atrial fibrillation using computational model reported in AES2011.*

Method to Develop Coded Excitation for Velocimetry in Downhole Drilling

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

2015 in Proceedings of 15th IEEE International Conference on Computer and Information Technology 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.*

Dominant Factor Analysis of B-flow Twinkling Sign with Phantom and Simulation Data

Weijia Lu, Bruno Haider

2017 Journal of Medical Ultrasonics, 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 describe the acoustic coupling of ultrasonic field and solid granules, then designed phantom study to validate the mechanistic theory. The agreement of simulation and phantom study is found by a post-processing algorithm in also reported in this study. The break-through achievement is acknowledged by the chief engineer of medical ultrasound BU.*

Sensing Systems and Methods for Detecting Changes in Downhole Hydrocarbon and Gas Species

Weijia Lu, Yi Liao

2017 WO2018170838A1 Link

About: *A study of composition analysis using ultrasound attenuation also for early kick detection.*

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 Link

About: *Automatic annotation of arrhythmias on ECG signal for GE Diagnostic Cardiology portfolio. My first publication about deep learning and AI, my leading collaboration of GE Healthcare China and GE Healthcare US.*

New Boundary Constraint Loss to Facilitate Glands Segmentation

Weijia Lu, Jianhua Yao, Xiao Han, Haocheng Shen

2019 Journal of Medical Imaging and Medical Informatics Link

About: *Segmentation of glands on pathological image, learning method by a new loss function. My first publication of using AI on medical image and fulfilled in Tencent AI Lab.*

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 Link

About: *Method to prune object detection network, first publication of UAES AI Lab after my enrollment of UAES as chief AI scientist.*

System and Method for Identifying Cardiac Arrhythmias With Deep Neural Networks

Weijia Lu, Shuyan Gu, Joel Xue, Jie Shuai, Hu Lifei

2020 US20200178825 Link

About: *The corresponding patent of publication CIT2018, authored by Joel, the principle engineer of GE Diagnostic Cardiology.*

Microsatellite Instability Prediction of Uterine Corpus Endometrial Carcinoma Based on HE Histology Whole-Slide Imaging

Tongxin Wang, **Weijia Lu**, Fan Yang, Li Liu, Zhong-Yi Dong, Weimin Tang, Jia Chang, Wenjing Huan, Kun Huang and Jianhua Yao

2020 in Proceedings of IEEE 17th International Symposium on Biomedical Imaging, ISBI Link

About: *An new AI paradigm to predict MSI on pathological image. A multi-instance learning method by me and Tongxin, when he was working as an intern in Tencent AI Lab.*

Development and interpretation of a pathomics-based model for the prediction of microsatellite instability in Colorectal Cancer

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-jie Kuang, Wenjing Huan, Wei-min, Tang, Kun Huang, Junzhou Huang, Jianhua Yao and Zhong-Yi Dong

2020 Theranostics Link

About: *A collaboration research fulfilled by Tencent AI Lab and Nanfang hospital, and a systematic description of methodology reported in ISBI2020.*

Processing Methods, Devices, Equipment and Storage Media for Vehicle Data

Peng Liu, **Weijia Lu**, Bingyang Li, Hao Gong, Jie Zhuang and Tao Song

2020 CN202011480936.0 Link

About: *Optimization of sampling point selection for utilizing gaussian process regression in torque prediction. Comparing with ASCMO modeling method by ETAS Bosch, our method use only 70% of sampling point without any decresing in prediction performance.*

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

2021 CN202110499356.4 Link

About: *A swarm intelligence method to optimize super-parameter map of the control algorithm.*

Dual Batch Size Training: An efficient MGD adaptive batch size method

Yuhang Du, Wenfeng Shen, Baohua Liu, **Weijia Lu** and Hao Gong

2021 in Proceedings of 2021 IEEE 33rd International Conference on Tools with Artificial Intelligence, ICTAI 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 Link

About: *A two-stage method to predict welding defect areas and defect type based on selective welding image.*

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 Link

About: *Welding defect detection based on resistance welding image.*

Using EBGAN for Anomaly Intrusion Detection

Yi Cui, Wenfeng Shen, Jian Zhang, **Weijia Lu**, Chuang Liu, Lingge Sun and Sisi Chen

2022 in Proceedings of 2022 International Joint Conference on Neural Networks, IJCNN Link

About: *A generative adversarial network to detect intrusion on vehicle gateway.*

Knock detection method and device for PCSP ignition strategy

Xiaofeng Ma, **Weijia Lu**, Gang Xi and Jianqiang Wang

2022 CN 114781425 A Link

About: *A new knock detection method when traditional algorithm failed on PCSP ignition strategy. This method deal with labeling noise by cross training and carefully designed hand-crafted features.*

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 Link

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 floating parameters, has been deployed in a ECU with 300MHz frequency and limited code segment. This network has two branches, one to predict the angle and another one for radial distance, and whole network is sparse activated. Moreover a carefully designed loss function is reported in this study to accelerate network training.*

Distributed Training Methods and Systems for Models

Weijia Lu, Xiaodong Zhang, Zhifei Yang, Xiaofeng Ma, Chuang Liu and Wangchen Lin

2023 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.*

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 Link

About: *A heuristic strategy for battery balancing. In nowadays, heterogenization of power battery cells becomes a critical factor of e-car lifespan. Certain chip has been provided to automatically initiate balancing process and ultimately ameliorate the heterogenization. But the chip will shutdown balancing once the temperature reaches a pre-set threshold. So this patent introduce a method to fulfilled balancing process without trigger the temperature protection strategy.*

A Reinforcement Learning-based Battery Balancing Method and Device

Zhifei Yang, Xichun Ke, Chuang Liu, **Weijia Lu**, Xiaodong Zhang and Xiang Di

2023 CN 116767024 A Link

About: *The reinformant learning verion of CN 116674432 A. Moreover this patent reports the method to establish the digital twin model of the balancing hardware. This digital model is used as the environment during policy training.*

A Curve Information Processing Method, Device, Storage Medium, and Detection Equipment

Peng Liu, Lin Sun, **Weijia Lu** and Tong Ma

2023 CN 115631139 A Link

A Target Detection Method, Device, Storage Medium, Sensor, and Controller

Peng Liu, **Weijia Lu**, Lin Sun, Can Zhang and Tong Ma

2023 CN 116452916 A Link

About: *Contrastive learning method for target detection.*

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

2024 CN 117726855 A Link

About: *Semi-Supervised learning method for target detection.*

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 CN 118860853 A Link

About: *A test case generation tool utilizing signal matrix, IO configuration and large language model.*

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

2024 CN 118732531 A Link

About: *A method to establish digital twin model based on a new neural ODE structure.*

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 Link

About: *A vehicle trajectory model, federated learned from real vehicle data, with multi-head design and federated clustering. The corresponding method is protected in patent CN 116822619 A.*

A Comfortable and Robust DRL-based Car-following Policy Incorporating Lateral Information under Cut-in Scenarios

Yifei Shen, Zhifei Yang, **Weijia Lu**, Wenfeng Shen, Zhou Lei

2024 in Proceedings of 35th IEEE Intelligent Vehicles Symposium, IV Link

About: *A reinforcement learning policy to significant increase the safety. The vehicle trajectory model, federated learned from real vehicle data and reported in PartD 2024, provide critical lateral information.*

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 Link

About: *A resampling strategy to address heterogenization issue of data distribution in a federated learning.*