# Yanfei Liu

*Curriculum Vitae*

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A researcher on Artificial Intelligence with educational background in Engineering Mechanics, Chemical Engineering Machinery, Vibration & Acoustics, and Computer Science & Technology.

A Professor of Computer Science & Technology, work experience involves Government Department, Founder of an IT company, and Teaching and Researches in a university.

Research interests include Cognitive Architecture, Cognitive Modeling & Simulation, Human Factors, Human-computer Interaction and Software Engineering.

## Personal Information

| | |
|---|---|
| Date of Birth | **July 11, 1968**. |
| Gender | **Male**. |
| Nationality | **Chinese**. |
| | I-140 (IMMIGRANT PETITION FOR ALIEN WORKER) NIW has been approved 10/24/2023. |

## Languages

| | |
|---|---|
| Mandarin | **Native language**. |
| | Interested in literature of pre-Qin philosophers |
| English | **Proficiency in reading, writing and speaking**. |

## Education

| | |
|---|---|
| Mar.2003–Sep.2007 | **PhD, Computer Science & Technology**, *College of Computer Science & Technology*, Zhejiang University, Hangzhou. |
| Sep.1991–Jan.1994 | **M.S., Vibration, Shock and Acoustic**, *Department of Mechanical Engineering*, Zhejiang University, Hangzhou. |
| Sep.1987–Jul.1991 | **B.Eng., Engineering Mechanics**, *Department of Mathematical Mechanics*, Zhengzhou University, Zhengzhou. |
| | Minor in Chemical Engineering Equipment |

## Employment History

| | |
|---|---|
| Nov.2007–Dec.2023 | **Professor, Department of Computer Science & Technology**, *Zhejiang Sci-Tech University*, Hangzhou, China. |
| Aug.2000–Mar.2003 | **Founder & CEO**, *Hangzhou FUSION Information System Integration Co, Ltd.*, Hangzhou, China. |
| Jan.1994–Aug.2000 | **Director of Software Development Department**, *Office Information Processing Centre of Hangzhou People's Municipal Government*, Hangzhou, China. |

# Publications

## Journal Articles

2024 张威特 (Weite Zhang), 李俊松 (Junsong Li), and 刘雁飞 (Yanfei Liu). 基于随机森林和 bp 神经网络的船舶驾驶员疲劳检测算法 (A random forest and BP neural network algorithm for fatigue detection of ship drivers). 智能计算机与应用 *(Intelligent Computer and Applications)*, volume 14, 2024. Accept.

2023 刘雁飞 (Yanfei Liu). Cognitive modeling method and its application in ship design and C2. 人类工效学 *(Ergonomics)*, volume 10-12, 2023. Accept, Under publication.

2020 Shaikh Sheeraz, Yanfei Liu, JiangSheng Gui, Tianbao Shi, Waheed Ahmad, and Aleem Syed Abdul. Ontology semantic based hs-code matches and translation for import/export management system. *Journal of Applied Environmental and Biological Sciences*, volume 10, pages 1–11, 2020.

2019 罗梦研 (Mengyan Luo) and 刘雁飞 (Yanfei Liu). 基于轻量化卷积神经网络的服装分类方法 (Clothing classification method based on lightweight convolutional neural network). 计算机系统应用 *(Computer Systems and Applications)*, volume 28, pages 223–228, 2019.

2017 陈涛涛 (Taotao Chen), 田志强 (Zhiqiang Tian), and 刘雁飞 (Yanfei Liu). 人控交会对接任务的 ACT-R 模型脑力负荷评价 (Mental evaluation of ACT-R model of manual-control rendezvous and docking). 工业控制计算机 *(Industrial Control Computer)*, volume 30, pages 29–30, 2017.

2015 庄阿刚 (Agang Zhuang), 刘雁飞 (Yanfei Liu), and 丁芳盛 (Fangsheng Ding). 跨学科视角下的认知建模研究现状, 动向和思考 (Cognitive modeling based on interdisciplinary perspective: Research status, trends and thoughts). 浙江海洋学院学报: 人文科学版 *(Journal of Zhejiang Ocean University (Humanities Science))*, volume 32, pages 86–91, 2015.

2014 Bo Li, Yu Zhang, Haoxue Wang, Haixia Xia, Yanfei Liu, Hangbo Zhou, and Ming Jiang. Combining various trust factors for e-commerce platforms using analytic hierarchy process. *J. Softw.*, volume 9, pages 1604–1611, 2014.

2013 Jiangsheng Gui, Li Hao, Shusen Sen, Wenshu Li, and Yenfei Liu. Unsupervised segmentation method for diseases of soybean color image based on fuzzy clustering. *Sensors & Transducers*, volume 159, page 32. Citeseer, 2013.

2008 Zhaohui Wu, Yanfei Liu, and Gang Pan. A smart car control model for brake comfort based on car following. *IEEE transactions on intelligent transportation systems*, volume 10, pages 42–46. IEEE, 2008.

2007 YanFei Liu and ZhaoHui Wu. Improvement of ACT-R for modeling of parallel and multiprocessing driver behavior. *International Journal of Intelligent Control and Systems*, volume 12, pages 72–81, 2007.

2006 刘雁飞 (Yanfei Liu) and 吴朝晖 (Zhaohui Wu). 驾驶 ACT-R 认知行为建模 (Driver behavior modeling in ACT-R cognitive architecture). 浙江大学学报: 工学版 *(Journal of Zhejiang University(Engineering Science))*, volume 40, pages 1657–1662, 2006.

1995 刘雁飞 (Yanfei Liu). 运用 C$^{++}$ 技术在 WINDOWS 环境下开发法律法规库 (using c++ technology to develop laws and regulations database under windows environment). 微型电脑应用 *(Microcomputer Applications)*, volume 1995, pages 38–40, 1995.

1994 刘雁飞 (Yanfei Liu). 基于 BP/CM 联合训练算法的超声无损检测缺陷模式识别 (Defect pattern recognition in ultrasonic nondestructive testing based on BP/CM joint training algorithm). 无损探伤 *(Nondestructive Testing)*, volume 1994, pages 6–8, 1994.

1993 刘雁飞 (Yanfei Liu). 超声无损检测中信号特征提取与模式识别 (signal feature extraction and pattern recognition in ultrasonic nondestructive testing). 应用声学 *(Journal of Applied Acoustics)*, volume 12, pages 11–16, 1993.

1992 刘雁飞 (Yanfei Liu). 注塑模具浇注系统的微型机辅助设计 (microcomputer aided design of filling system of injection moulding). 中国塑料 (China Plastics), volume 6, page 4, 1992.

### In Conference Proceedings

2023 Yanfei Liu, Chao Shen, Junsong Liu, Feng Fu, and Yuzhou Liu. Situation awareness monitoring by behaviour detection and model's processes retroaction for crew member of nuclear power plant. In *Cognitive Computing and Internet of Things*, volume 73, pages 162–168. AHFE International, 2023.

2023 Yanfei Liu, Yuzhou Liu, and Chao Shen. Combining minds and machines: Investigating the fusion of cognitive architectures and generative models for general embodied intelligence. In *Proceedings of the 2023 AAAI Fall Symposium*. AAAI Press, 2023.

2021 Yanfei Liu, Xin Wang, Zhiqiang Tian, Liang Zhang, Yuzhou Liu, Junsong Li, and Feng Fu. Towards a most suitable way for AGI from cognitive architecture, modeling and simulation. In *International Conference on Applied Human Factors and Ergonomics*, pages 165–173. Springer, 2021.

2020 Xin Wang, Liang Zhang, Zhiqiang Tian, Yuzhou Liu, Junsong Li, Feng Fu, Zhen Liao, and Yanfei Liu. Cognitive modeling and model-based performance evaluation on collaborative decision and control task. In *International Conference on Applied Human Factors and Ergonomics*, pages 274–280. Springer, 2020.

2020 Zhiqiang Tian, Liang Zhang, Xin Wang, Yuzhou Liu, Junsong Li, Feng Fu, Zhen Liao, and Yanfei Liu. Mindesign: Toward a modeling, simulation and evaluation platform for human cognitive performance. In *International Conference on Applied Human Factors and Ergonomics*, pages 190–196. Springer, 2020.

2019 Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Jusong Li, and Feng Fu. Cognitive architecture based mental workload evaluation for spatial fine manual control task. In *International Conference on Applied Human Factors and Ergonomics*, pages 819–829. Springer, 2019.

2018 Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Jusong Li, and Feng Fu. Cognitive architecture based simulation of perception and behavior controls for robot. In *International Conference on Applied Human Factors and Ergonomics*, pages 383–393. Springer, 2018.

2017 Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Junsong Li, Feng Fu, and Jing Bian. Cognitive modeling for robotic assembly/maintenance task in space exploration. In *International Conference on Applied Human Factors and Ergonomics*, pages 143–153. Springer, 2017.

2017 Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Junsong Li, and Feng Fu. Cognitive architecture based platform on human performance evaluation for space manual control task. In *Advances in Neuroergonomics and Cognitive Engineering*, pages 303–314. Springer, 2017.

2017 Yanfei Liu, Shoupeng Huang, Yu Tian, Yuzhou Liu, Junsong Li, Feng Fu, Zhiqiang Tian, and Jing Bian. Performance evaluation of numeric keypad layout based on cognitive workload. In *International Conference on Applied Human Factors and Ergonomics*, pages 314–324. Springer, 2017.

2016 Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Junsong Li, and Feng Fu. Toward a joint growing of research and teaching in university based on information technology. In *2015 1st International Conference on Information Technologies in Education and Learning (icitel-15)*, pages 81–85. Atlantis Press, 2016.

2016 Weidong Chen, Xuefei Wang, Nenggan Zheng, Yanfei Liu, and Sen Yu. A navigation cognitive system driven by hierarchical spiking neural network. In *2016 Intl IEEE Conferences on Ubiquitous Intelligence & Computing, Advanced and Trusted Computing, Scalable Computing and Communications, Cloud and Big Data Computing, Internet of People, and Smart World Congress (UIC / ATC / ScalCom / CBDCom / IoP / SmartWorld)*, pages 51–56. IEEE, 2016.

2014   Yanfei Liu, Zhiqiang Tian, Yu Zhang, Qi Sun, Junsong Li, Jing Sun, and Feng Fu. Compass: a space cognitive behavior modeling and performance assessment platform. In *International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management*, pages 630–636. Springer, 2014.

2013   庄阿刚 (Agang Zhuang) and 刘雁飞 (Yanfei Liu). xDB: 异构政务信息云服务中间件的实现 (xDB: Towards an cloud computing middleware for heterogeneous government data). 浙江海洋学院学报: 自然科学版 *(Journal of Zhejiang Ocean University (Natural Science))*, volume 32, pages 178–182, 2013.

2013   Chunhui Wang, Yu Tian, Yanfei Liu, Shanguang Chen, Zhiqiang Tian, and Junsong Li. Cognitive behavior modeling of manual rendezvous and docking based on the ACT-R cognitive architecture. In *International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management*, pages 143–148. Springer, 2013.

2013   Yanfei Liu, Yu Zhang, Junsong Li, Jing Sun, Feng Fu, and Jiangsheng Gui. Towards early status warning for driver's fatigue based on cognitive behavior models. In *International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management*, pages 55–60. Springer, 2013.

2011   Jiangsheng Gui, Shusen Sun, and Yanfei Liu. Exploration in practice teaching and laboratory operational mechanism of digital media technology specialty. In *International Conference on Computer Science, Environment, Ecoinformatics, and Education*, pages 185–189. Springer, 2011.

2010   Yanfei Liu, Yaming Wang, Wenshu Li, Wei Xu, and Chengshu Rong. Driver behavior's KDD and its application in driver status warning system. In *2010 Seventh International Conference on Fuzzy Systems and Knowledge Discovery*, volume 6, pages 2810–2814. IEEE, 2010.

2009   Yanfei Liu, Yaming Wang, Wenshu Li, Weiqiang Xu, and Jiangsheng Gui. Improve driver performance by experience of driver cognitive behavior model's practice. In *2009 IEEE Intelligent Vehicles Symposium*, pages 475–480. IEEE, 2009.

2006   Nenggan Zheng, Zhaohui Wu, Zhigang Gao, and Yanfie Liu. A novel power management scheme for e-textiles. In *International Conference on Grid and Pervasive Computing*, pages 654–663. Springer, 2006.

2006   Yanfei Liu and Zhaohui Wu. Multitasking driver cognitive behavior modeling. In *2006 3rd International IEEE Conference Intelligent Systems*, pages 52–57. IEEE, 2006.

2005   Yanfei Liu and Zhaohui Wu. Urgent driver behavior modeling in cognitive architecture. In *Proc. of 18th ICTCT Workshop*, pages 201–220, 2005.

2005   Yanfei Liu and Zhaohui Wu. A smart car control model for driver's comfort of car following. In *IEEE Proceedings. Intelligent Vehicles Symposium, 2005.*, pages 833–839. IEEE, 2005.

2005   Yanfei Liu and Zhaohui Wu. Comfortable driver behavior modeling for car following of pervasive computing environment. In *International Conference on Computational Science*, pages 1068–1071. Springer, 2005.

2003   Wu Zhaohui, Liu Yanfei, Xu Wei, and Mao Jian. Application of knowledge management in intelligent transportation systems. In *Proceedings of the 2003 IEEE International Conference on Intelligent Transportation Systems*, volume 2, pages 1730–1734. IEEE, 2003.

## Research Experience

### PhD candidate , in Zhejiang University

| | |
|---|---|
| Mar.2004–Mar.2006 | **Researches on Embedded Semantics Grid and Key Technologies towards Pervasive Computing**, Involvement. |
| Aug.2004–Mar.2006 | **Development and Application of Domestic Linux Operating System in the Stock Exchange System**, Involvement. |
| Oct.2004–Oct.2005 | **Embedded Software System Platform for Digital Devices**. |
| Apr.2003–Oct.2005 | **Researches on Key Technologies for Supporting Pervasive Computing Operating System**, Involvement. |

### Research Granted, in Zhejiang Sci-Tech University

| | |
|---|---|
| Nov.2022–Nov.2024 | **Research on Cognitive and Behavioral Performance Modeling Technology of Nuclear Power Crew**, *funded by the CGN Research Institute CO., LTD.* |
| Dec.2021–Dec.2022 | **Development of Social Software Based on Blockchain Technology**. |
| Nov.2020–May.2021 | **Human Comfort Adaptive System Based on Temperature & Light Perception and Intelligent Control**. |
| Jul.2019–Dec.2023 | **Research on Modeling Method of Crew Members Cognitive Behavior and Decision-making**, *funded by the China Institute of Marine Technology and Economic.* |
| Jun.2016–Oct.2016 | **Development of Touch Screen Button Ergonomics Experimental Software and Touch Screen Operation Cognitive Model**. |
| Sep.2015–Nov.2015 | **Calculation and Test of Operation Data Comparison Between SR6C Solid Manipulator and Simulation Manipulator**. |
| Nov.2015–Api.2015 | **Construction of Discrete Event Simulation Development Platform**. |
| Nov.2014–Apr.2015 | **Data Analysis of Performance Index and Behavior Index for Manual Rendezvous and Docking**. |
| Jan.2012–Dec.2013 | **Research on Cognitive Behavior Modeling and Performance Evaluation of Astronauts in Spacecraft Rendezvous and Docking Mission Based on ACT-R**, *funded by the Natural Science Foundation of Zhejiang Province.* |
| Jan.2012–Dec.2013 | **Cognitive Behavior Modeling and Performance Evaluation in Spacecraft Rendezvous and Docking Tasks Based on ACT-R**. |
| Jan.2012–Dec.2012 | **Implementation of Cognitive Modeling and Simulation for Rendezvous and Docking Tasks**, *funded by the China Astronaut Research and Training Center.* |
| Jan.2012–Dec.2013 | **Interface Design of the Virtual Instrument System Based on ACT-R for Rendezvous and Docking Tasks**. |
| Jan.2012–Dec.2014 | **Research on Identification and Diagnosis Method for Crop's Disease on the Basis of Local Feature's Analysis for Complex Environment**. |
| Oct.2011–Apr.2012 | **Researches on Driver Cognitive Behavior Modeling and Crash Warning in Critical Moment**. |
| Oct.2011–Apr.2012 | **Cognitive Modeling for Rendezvous and Docking Behavior**. |
| Oct,2010–Dec,2011 | **Development of Integrated Information System for ITS**. |
| Jan,2009–Dec,2010 | **Researches on Recognition of Facial Expression Based on Cognitive Model**. |
| Mar,2009–Mar,2010 | **Development of Mobile Electronic Handle Device for Police Affairs**. |
| Apr,2008–Mar,2009 | **Production Platform for Heteromorphic Multimedia CD-ROM**. |
| Jan,2007–Dec,2008 | **Research on Cognitive Behavior Modeling and Collision Avoidance of Driving in Critical Moments**. |

## Book or Translation

**2019**  **Human Brain's Cognitive Architecture and Its Computational Model[Translation]**, *National Defense Industry Press*, Wang Chunhui, Liu Yanfei, Tian Yu , Qin Yulin.

## Granted Patents

**2022**  **A digital brain construction method for UUV systems**, **********, Xin Wang, Yanfei Liu et al..

**2022**  **A method for quantifying the cognitive workload of ** C2 multi-position collaborative tasks**, **********, Xin Wang,Yanfei Liu et al..

**2020**  **A method for evaluating speech cognitive capability**, *CN111210838A*, Xin Wang, Yanfei Liu, Zhiqiang Tian, Zhen Liao, Liang Zhang.

**2021**  **Data analysis and visualization software of psychomotor vigilance task**, *2021R11S2262722*, Xin Wang, Yanfei Liu.

**2011**  **Universal embedded marker and marking method based on CCP**, CN1747472B. Minde Zhao, Hangping Pan, Weifeng Lv,Xikun Li,Yanfei Liu, Qing Wu, Zhaohui Wu

**2009**  **Public security logistics support information management system V1.0**, *2009SR045416*, Yanfei Liu.

**2009**  **Real time police presence information management system V1.0**, *2009SR045415*, Yanfei Liu.

**2009**  **Information management system for renting private houses in police stations V1.0**, *2009SR045413*, Yanfei Liu.

## Fellowships

Member of IEEE, IEEE Communications Society

AAAI Membership, Cognitive Society

China Computer Federation

## Honors & Awards

**2002**  131 Outstanding Young People of Hangzhou in New Century

**1997**  Science and Technology Advancement Award of Hangzhou City

**1997**  Science and Technology Advancement Award of Zhejiang Province

**1994**  *Guanghua Scholarship*. Zhejiang University

## Postdoctoral Training

**Jul.2013–Aug.2014**  Visiting scholar, Center for neural basis of cognition at Carnegie Mellon University

**Jul.2012–Jul.2012**  *19th Annual ACT-R Summer School.* Carnegie Mellon University

**Feb.2012–Jun.2012**  *Advanced English Training Programme for Government-Sponsored Scholars to Study Abroad.* Overseas Training Center of Shanghai International Studies University.

## Research Interesting

- Cognitive Architecture, Cognitive Modeling and Simulation
- Artificial Intelligence, LLM Application
- Human Computer Interaction, Human Factor Engineering
- Robotics, Digital Human
- Software Engineering, Data Mining/Fusion, Information System Integration

## Thesis

Master **Research on Intelligent Information Fusion of Ultrasonic NDT for Adhesive Composite with Bonded Structure**,
*Advisor:* ***Yaodong Cheng***, 1994.

Ph. D. **Research on Driver Behavior Modeling**, *Advisor:* ***Zhaohui Wu***, 2007.

## Computer skills

Skills Web, App, Django, Vue, Flutter

Database SQL, MySQL, Oracle

System AWS, Ali Cloud, Apache, Nginx

## Hobbies

**Chinese Handwriting**.

**Hiking, Trip & Table Tennis**.

## Partially Teaching Experience

Fall, 2023 **Human Computer Intraction**, *Undergraduate Computer Student.*

Spring, 2023 **Human Computer Intraction**, *Graduate and Undergraduate Psychology Student.*

Spring, 2023 **Introduction to electronic information disciplines**, *Undergraduate Computer Student.*

Fall, 2022 **Human Computer Intraction**, *Undergraduate Computer Student.*

Spring, 2022 **e-commerce**, *Undergraduate Computer Student.*

Fall, 2021 **Introduction to service outsourcing**, *Undergraduate Computer Student.*

Spring, 2021 **Software Engineering**, *Graduate Computer Student.*

Fall, 2020 **Java Program Language**, *Undergraduate Computer Student.*

Spring, 2018 **Web programming and database application**, *Undergraduate Computer Student.*

Fall, 2012 **Software Architecture**, *Undergraduate Computer Student.*

Spring, 2010 **Artificial Intelligence**, *Undergraduate Computer Student.*

Spring, 2010 **Computer System Architecture**, *Undergraduate Computer Student.*

## Self Comment

Good communication and interpersonal skills; Strong responsibility and independent working capability.

## Referees

**Dr. Nenggan Zheng**
*Professor,*
*College of Computer Science & Technology*
Zhejiang University
✉ zng@zju.edu.cn
to his webpage

**Dr. Yong Liu**
*Professor,*
*College of Control Science & Engineering*
Zhejiang University
✉ yongliu@iipc.zju.edu.cn
to his webpage

**Dr. Beishui Liao**
*Professor, Director, Institute of logic and cognition*
*School of philosophy*
Zhejiang University
✉ baiseliao@zju.edu.cn
to his webpage