MINGXUAN LI (IEEE Senior Member)

555 Pierce Street Apt.1231, Albany, CA 94706
Cellular Phone：+1-6692931561
China Phone: +86-18601103918

LinkedIn: http://www.linkedin.com/in/limx59
Work E-mail: limx59@ieee.org
Home E-mail: limx59@gmail.com
Github: https://github.com/limx59

EDUCATION

Master of Engineering, Circuit and System

Beijing Jiaotong University, Beijing, China 2007

Thesis: Design and Realization of Test System for Generator Transformer Volt-ampere Characteristic Based on ARM

Subject: Embedded System

Bachelor of Engineering, Electronic Information Engineering

Capital Normal University, Beijing, China 2004

Thesis: Design and Research of Digital-to-Analog Conversion System Based on Microcontroller

Subject: Analog electronic circuit

RESEARCH EXPERIENCE

Formal work

Cloud Computing Architect *(part-time)* 2019

Planning and Architecture Division

China Unicom Group

- leading applying for 5G commercial license of China Unicom
- Responsible for cloud resources planning and IT/CT collaboration of China Unicom
- Responsible for the national broadband IPv6 promotion
- Leading daily promotion work of China Unicom 5G IT working group
- Responsible for compiling management planning of China Unicom cloud resources
- Responsible for related work of China Unicom platform group of "Broadband China."
- Leading the implementation of the DCI scheme of China Unicom data centre

Senior Engineer *(full time)* 2019 - 2022

Department of Future Network Research
China Unicom Network Research Institute, Beijing, China

- Responsible for the three-tier decoupling of China Unicom 5G communication cloud
- Responsible for the research on solutions of Cloud Native of China Unicom Communication Cloud
- Responsible for the research on China Unicom Computing Power Network Cloud-Native Platform architecture
- Participating in the research on edge computing infrastructure of China Unicom
- Responsible for the compilation of enterprise standards for ICT technical requirements of China Unicom value-added services

Senior Engineer *(full time)* 2017 - 2019
Center for Cloud Network Innovation
China Unicom Cloud & Data Co., Ltd. Beijing, China

- Responsible for the overall architecture design for the docking among China Unicom multi-cloud management Wo cloud, Alibaba Cloud and Tencent cloud
- Responsible for the launch of China Unicom multi-cloud management Wo cloud-T
- Responsible for the research on integrated solution of container cloud SDN cloud network
- Responsible for technical scheme discussion and project implementation of monitoring POC based on Deepflow cloud virtual network
- Deploying OpenStack, tracking OpenStack open source community and attending OpenStack Summit
- Head of the container promotion group of China Unicom Niuren Laboratory: responsible for group containerization promotion (deploying the Niuren Laboratory Rancher container cloud platform and the private image warehouse based on Harbor)

R&D Engineer *(full time)* 2012 - 2017
Center for Mobile Network Product Innovation
China Unicom Research Institute, Beijing, China

- As a product manager, responsible for investigating foreign operators, such as the business development characteristics and market share of SKT in South Korea, DoCoMo in Japan and other telecom operators
- Responsible for sorting out the overall situation of strategic innovation business of China Unicom BSS system and selecting products with more successful business development for domestic and foreign business benchmarking
- Responsible for formulating the development plan of China Unicom strategic innovation business and reporting to the leader of the Production and Innovation Department
- Responsible for strategic terminal operation analysis of China Unicom
- Participating in the iPhone access test of China Unicom
- Participating in the WCDMA 3G end-to-end application test of China Unicom
- Responsible for tracking GSMA Mobile NFC project of international standards organization
- Responsible for compiling mobile payment business enterprise standards of China Unicom

- Responsible for China Unicom "2015-2017" and "2014-2016" rolling business promotion projects
- Responsible for the China Unicom soft project of "Industry Gateway Disaster Recovery and Backup Solution."
- Participating in big data top-level design solutions for Anshun Municipal People's Government, Guizhou Province
- Completing the distributed containerization deployment of Oracle 12c enterprise, MySQL, Redis and other databases
- Solving the problems of automatic expansion of Ansible nodes and automatic deployment of Open-DCOS
- completing the prototype design of an application system with Axure
- Researching on the deployment of big data-based artificial intelligence Tensorflow platform and Kuberflow platform
- Researching on Intel Arda container cloud deployment and system architecture

Software Engineer *(full time)* 2008 - 2012

Center for Software Development

Broadband Business Application

National Engineering Laboratory Co., Ltd of China Netcom Group

- Completing code development of AVS-IPTV set-top box system adaptation layer
- Developing interoperability test software of AVS-IPTV set-top box system adaptation layer (CPPUNIT)
- Developing code interoperability test of AVS-IPTV set-top box system adaptation layer
- Participating in "China Unicom 3G End-to-end Test and Service Test."
- Participating in "Interactive Media Project" - requirement analysis of terminal users and compilation of test case documents
- Leading developing the set-top box DRM client code
- Leading developing SQLite embedded database
- Developing android applications
- Responsible for Bugzilla code tracking system and bug tracking and reminders of code development

Internship

Embedded Software Development Engineer *(part-time)* 2006 - 2007

Department of Software R & D

Beijing Telesound Electronics Co., Ltd. China

- Completing the software design of ARM under Linux
- Tailoring the kernel of the Linux
- Completing the porting of Linux kernel
- Writing HPI driver between DSP and ARM
- Writing SPI driver between DSP and ARM

- Debugging uboot Download
- Debugging Flash。
- Debugging SDRAM。
- Realizing TCP/IP communication

R & D Engineer *(part-time)* 2006 - 2007

Department of Product R&D

North China Electric Power Research Institute, Beijing, China

- Completing the software design of ARM (LPC2214) in an ADS1.2 development environment
- Displaying Chinese characters on the LCD screen with T6963 module
- displaying volt-ampere characteristics curve on the LCD screen with T6963 module
- Developing serial communication between ARM and PC
- simulating volt-ampere characteristic curve on PC with Labview/CVI6.0
- Porting uC/OS-II embedded operating system to LPC2214

Research Assistant *(on-campus)* 2005 - 2007

National Electrical and Electronic Teaching Laboratory

Beijing Jiaotong University, Beijing, China

- Researching on the neural network simulation system
- Conducting Chinese processing of the system
- Researching on parallel algorithm
- Improving the parallel algorithm of the neural network simulation system
- Writing additional function program with Java
- finishing image pretreatment
- Researching on accurate geometric correction of the image with Matlab
- studying image enhancement with Matlab
- studying the application of wavelet in image processing
- Compiling engineering documents to realize fundus image registration with VC6.0

R & D Assistant *(part-time)* 2005

Center for R & D

Beijing Weixinli Technology Co., Ltd. Beijing, China

- Writing an infrared communication program with EVC
- Porting operating system Windows CE to PXA255
- Cutting Windows CE with Platform Builder
- Debugging functions of the equipment

PROJECT EXPERIENCE

National

- NSFC Project "Neural Network Simulation System"
- Research on Interactive Media Integration System
- Research on the Middleware Interface Technology of China Unicom AVS-IPTV Set Top Box
- Compilation of National Network Information Office Information Infrastructure (Network) Standard

Corporation

- Soft Project: Research on Industry Gateway Disaster Recovery and Backup Solution
- New Technology: New Technology Verification of China Unicom IT Three-Tier Architecture
- Soft Project: Research on Intelligent Information Directional Push Technology Based on NFC
- Soft Project: "Technical Specifications and Test Specifications of China Unicom Near Field Payment Card Application" Enterprise Standard Compilation
- New Technology: "Research on Related Technologies of China Unicom Intelligent Public Transport Monitoring System"

COMPUTER PROFICIENCY

- Desktops：PC’s and MAC’s
- Workstations：DELL, Lenovo, IBM’s running UNIX, Nvidia
- Languages: C/C++, Java, Python, Go
- Operation Systems: Windows, Linux, Ubuntu, CentOS, IOS, Android
- General Software: Matlab
- Cloud Orchestrator: Kubernetes, OpenStack, Rancher

CONSULTING

- GSMA Mobile NFC CJK Workshop
- Big data top-level design solutions for Anshun Municipal People's Government, Guizhou Province
- Review of one-card technology standard of Ministry of Transport

- Review of mobile payment technology of the Interconnection Group of Ministry of Industry and Information Technology
- National Intellectual Property Administration: key technologies of short-distance wireless communication
- Planning: China Unicom 2015-2017 rolling business promotion project
- Planning: China Unicom 2014-2016 rolling business promotion project
- Planning: China Unicom mobile internet strategic planning
- Review of enterprise information construction of SASAC
- ITU FG digital finance
- ITU SG13 future network and cloud computing
- GSMA IMT2020

CURRENT PROFESSIONAL MEMBERSHIPS

- The senior member of the Institute of Electrical and Electronics Engineers
- Member of Association for Computing Machinery
- GSMA Mobile NFC CJK Workshop Leader
- The senior member of the Chinese Institute of Electronics
- The senior member of China Institute of Communications
- The senior member of China Computer Federation
- Standards expert of China Communications Association
- Bidding expert in communication infrastructure certified by Ministry of Industry and Information Technology
- Member of OpenStack open source community

RESEARCH INTERESTS

- Mobile communication / near-field communication
- Big data
- Business platform
- Cloud computing (Public Cloud, Private Cloud, OpenStack, OpenInfra)

- Cloud-Native (Docker, Kubernetes, CI/CD, Service mesh, Serverless, eBPF)
- DevOps
- Software development
- Embedded
- SOC

Technical Reviewer

- Information and Communications Technologies
- Telecommunications Science
- Frontiers of Data & Computing
- ZTE Technology Journal

HONOR AND AWARDS

- 2017 Outstanding Achievement Award of Telecom Big Data "Smart Award."
- 2021 Network 5.0 Leading Innovation and Technology Achievements “Computing power network heterogeneous computing power unified identification system and application innovation”

PUBLICATIONS

Journal

- **Mingxuan Li**, Chang Cao, Xiongyan Tang, Ran Pang, Ying Liu, Qiuyan Liu, "Research on Edge Scheduling Mechanism of UPF Based on Programmable Network", *Frontiers of Data & Computing*, v.02, pp.74-86, April 2022.
- **Mingxuan Li**, Pei Chang, Tong Cui, Zhaoxia Li, "FaaS-oriented Computing Network Heterogeneous Resource Scheduling Technology", *Information and Communications Technologies*, v.04 pp.44-49+58, August 2021.
- **Mingxuan Li**, Chang Cao, Jianjun Yang, "Computing Power Scheduling Mechanism Based on Programmable Network", *ZTE Technology Journal*, v.03 pp.18-22+61, Jun 2021.
- **Mingxuan Li**, Chang Cao, Xiongyan Tang, Tao He, Jianfei Li, Qiuyan Liu, "Research on Edge

Resource Scheduling Solutions for Computing Power Network", *Frontiers of Data & Computing*, v.04 pp.80-91, August 2020.

- Xin Zhao, **Mingxuan Li**, "Microservice Fault Management Based on Service Mesh", *Information and Communications Technologies*, v.04 pp.50-58, August 2021.
- Qiuyan Liu, **Mingxuan Li**, Xuan Lv, Jiajun Li, Zhonghao Zhang, Fuchang Li, Xuetian Zhu, " Trustworthy requirements and application scenarios in 6G network", *Application of Electronic Technique*, v.03 pp.5-7+1, March 2021.
- Tao He, Chang Cao, Xiongyan Tang, **Mingxuan Li**, Jianfei Li, " Research on Computing Power Network Technology for 6G Requirements", *Mobile Communications*, v.06 pp.131-135, Jun 2020.
- Qiuyan Liu, Yi Feng, Fuchang Li, Zhonghao Zhang, **Mingxuan Li**, Jiajun Li, "Research on Scale Deployment of Blockchain Based on MEC in 5G", *Designing Techniques of Posts and Telecommunications*, v.03, pp.1-4, Mar 2020.
- **Mingxuan Li**, Junjie Tong, Qiuyan Liu, "Research on Cloud Native 5G Core Network Evolution Solution", *Information and Communications Technologies*, v.14, n.01, pp.63-69, Jan 2020.
- Qiuyan Liu, Huazhang lv, **Mingxuan Li**, Zhonghao Zhang, Fuchang Li, Yi Feng, Changbo Zhu, Jiajun Li, "5G video service side cloud collaboration strategy for user experience", *Automation Panorama*, v.12, pp.74-77, Dec 2019.
- **Mingxuan Li**, Xin Xing, Benzhong Wang, "Research on Container Cloud SDN Cloud Network Integration Solution for Telecom Operators", *Information and Communications Technologies*, v.13, n.02, pp.7-12+25, Feb 2019.
- **Mingxuan Li**, "Research on Intelligent Network Based on Container Technology", *Computer Programming Skills & Maintenance*, v.01, pp.115-117, Jan 2019.
- **Mingxuan Li**, Rui Gu, "Research on Software Development System for Multi-terminal Platform", *China New Telecommunications*, v.21, n.01, pp.100-102, Jan 2019.
- **Mingxuan Li**, Min Lin, Mingxia Gu, "Research on air storage system based on status code", *Telecommunications Technology*, v.12, pp.23-25+29, Dec 2018.
- **Mingxuan Li**, "Cloud platform virtual network monitoring technology and application scenario analysis", *Telecommunications Technology*, v.12, pp.5-7, Dec 2018.
- **Mingxuan Li**, Rui Gu, "Research on Flash Conversion Method Based on Streaming", *Telecom World*, v.25, n.12, pp.5-6, Dec 2018.
- **Mingxuan Li**, Minxia Gu, Min Lin, "Research on NFC-oriented interoperability", *Telecommunications Technology*, v.11, pp.8-11+16, Nov 2018.
- **Mingxuan Li**, Jinwu Wei, Yunyong Zhang, "IT resource micro-services solution for telecom operators", *Information and Communications Technologies*, v.11, n.02, pp.48-55, Feb 2017.
- **Mingxuan Li**, "Research on Application of Containerized Big Data Based on Arda",

Telecommunications Technology, v.11, pp.29-33, Nov 2016.

- **Mingxuan Li**, "Research on Intelligent Information Push Scheme Based on NFC Technology", *Telecommunications Technology*, v.08, pp.69-73, Aug 2014.
- Qiuyan Liu, **Mingxuan Li**, Min Lin, "Research on NFC-based large-capacity information push technology", *Information and Communications Technologies*, v.7, n.05, pp.67-70, May 2013.

Book

- Chang Cao, Xiongyan Tang, Shuai Zhang, Jianfei Li, Tao He, **Mingxuan Li**, Ying Liu, Chuanbiao Zhang, Libiao Tu, ‘‘Computing Network: Network Architecture and Key Technologies in the Era of Cloud-Network Convergence 2.0’’, Book chapter5: Computing power network orchestration and scheduling key technologies, chapter7: IT support technology, Publishing House of Electronics Industry

STANDARDS

Independent leader release

Joint leader release

- GB/T 40690-2021, Information technology—Cloud computing—Jointcloud computing reference architecture [S].
- GB/T 34096-2017, Mobile payment Test method of contactless reader terminal based on 2.45 GHz RCC (Restricted Field Communication) technology [S].
- GB/T 33741-2017, Mobile payment Technical requirements of contactless reader terminal based on 2.45 GHz RCC (Restricted Field Communication) technology [S].
- GB/T 33742-2017, Technical requirements for RF interface of the contactless reader based on 13.56 MHz and 2.45 GHz dual-band technology [S].
- GB/T 33736-2017, Mobile payment Technical requirements of non-contact RF interface based on 2.45 GHz RCC (Restricted Field Communication) technology [S].
- GB/T 33737-2017, Mobile payment Smart card test method based on 2.45 GHz RCC (Restricted Field Communication) technology [S].
- GB/T 33739-2017, RF interface test method for the contactless reader based on 13.56 MHz and 2.45 GHz dual-band technology [S].
- GB/T 33738-2017, Mobile payment Technical requirements for smart cards based on 2.45 GHz RCC (Restricted Field Communication) technology [S].
- GB/T 33740-2017, Mobile payment Non-contact RF interface test method based on 2.45 GHz RCC (Restricted Field Communication) technology [S].

- YD/T 3575-2019, Technical requirements of directional information push interactive platform based on near field communication technology [S].

PATENTS

- **Mingxuan Li**, Jinwu Wei, Chengyu Zhang, Jiheng Zhang, Geli Bo. Container resource management method and system [P]. CN107577538B, 2020-03-31.
- **Mingxuan Li**. Access processing device and method across container clusters [P]. CN107508795B, 2020-03-13.
- Niya Hu, Hao Cheng, Yao Wang, **Mingxuan Li**. Industry short message sending method and device [P]. CN106488416B, 2020-02-07.
- **Mingxuan Li**, Jinwu Wei, Chengyu Zhang, Jiheng Zhang, Geli Bo. Node registration method and system based on Kubernetes system [P]. CN106330923B, 2019-10-25.
- **Mingxuan Li**. NFC communication method, intelligent information terminal, intelligent terminal and NFC communication system [P]. CN105792113B, 2019-08-16.
- **Mingxuan Li**, Zhijun Wang, Minxia Gu, Min Lin. A data transmission method and system based on NFC [P]. CN105657647B, 2019-04-26.
- **Mingxuan Li**. Distributed container management method and system [P]. CN107368369A, 2017-11-21.
- **Mingxuan Li**. Disaster recovery backup method and system [P]. CN105302649A, 2016-02-03.
- **Mingxuan Li**. An industry gateway architecture [P]. CN105049344A, 2015-11-11.
- Hao Cheng, Niya Hu, Ruimin Jin, **Mingxuan Li**, Yao Wang. Point-to-point short message sending and receiving method and system [P]. CN104994486A, 2015-10-21.
- **Mingxuan Li**, Zhijun Wang, Minxia Gu, Min Lin, Rong Wang. Near field communication authentication method, certificate authorization center and near field communication equipment [P]. CN103248487A, 2013-08-14.
- **Mingxuan Li**, Hongqi Liu. Set-top box communication method, device and system [P]. CN103024599A, 2013-04-03.
- **Mingxuan Li**, Hongqi Liu. Set-top box authentication method, certificate agent terminal and system [P]. CN102256178A, 2011-11-23.
- Jianshu Qiu, **Mingxuan Li**, Hongqi Liu. Implementation method, equipment and system of IPTV service [P]. CN101945255A, 2011-01-12.
- **Mingxuan Li**. Data distributed storage method and system [P]. CN104462358A, 2015-03-25.
- **Mingxuan Li**, Zhijun Wang. Electronic payment method, system, mobile terminal, loading platform and payment platform [P]. CN102663587A, 2012-09-12.

- **Mingxuan Li**, Zhijun Wang. OTA method, system, terminal and server [P]. CN102610042A, 2012-07-25.
- **Mingxuan Li**, Jianshu Qiu, Weibin Feng, Hongqi Liu. Key processing method and device [P]. CN101951315A, 2011-01-19.
- **Mingxuan Li**. Flash protocol conversion method and system based on streaming [P]. CN104753923A, 2015-07-01.
- **Mingxuan Li**. Video monitoring method and monitoring system based on Storm technology [P]. CN105828052A, 2016-08-03.
- Hao Cheng, Zhijun Wang, **Mingxuan Li**. Matching method and device of eUICC terminal and remote management server [P]. CN107995623A, 2018-05-04.

SOFTWARE COPYRIGHT

- 2013SR135475 SWP Card-based Information Query Software V1.0 2013.11
- 2013SR135479 NFC-based Information Push Software V1.0 2013.11
- 2013SR136866 NFC-based Information Push Management System V1.0 2013.12
- 2013SR130470 NFC-based Mobile Client Information Query Software V1.0 2013.11
- 2013SR130466 Map Query Agent System V1.0 2013.11

ONLINE/DISTANCE LEARNING PUBLICATIONS

- Detailed Offline Deployment of Rancher 2.0 *Sohu*
- Deployment Practice of Niuren Laboratory Rancher Platform *Sciencenet*
- How to Build A Master-Slave Mysql Server Cluster Based on Kubernates *Sciencenet*
- How to Build A Mysql Multi-Host Group Based on Kubernates *Sciencenet*
- How to Build the Framework Private Server of DC/OS System *Sciencenet*
- “Big Show” Harbor Deployment Scheme Based on Ceph Distributed Storage *WeChat Subscription*
- Offline Deployment Practice of China Unicom Cloud Data Container *WeChat Subscription*
- The Special Series of "Big Name": Deployment Practice of Niuren Laboratory Rancher Platform *China Unicom Niuren Tribe*

THESES

- **Mingxuan Li**, "Design and Realization of Test System for Generator Transformer Volt-ampere Characteristic Based on ARM", MS Thesis, Beijing Jiaotong University, Beijing, China, 2007.
- **Mingxuan Li**, “Design and Research of Digital-to-Analog Conversion System Based on Microcontroller”, BS Thesis, Capital Normal University, Beijing, China, 2004.