

# Jinlai Xu

## Curriculum Vitae

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## Education

- Aug. 2015– Jul. 2021 **PhD in Information Science (expected)**, *University of Pittsburgh*.  
Advisor: Balaji Palanisamy  
Thesis: Geo-distributed Edge and Cloud Resource Management for Low-latency Stream Processing
- Sep. 2012– Jun. 2015 **M.E in Software Engineering**, *China University of Geosciences*.  
Advisor: Zhongwen Luo  
GPA – 89.9/100, Major GPA – 91.9/100,  
Thesis: MapReduce Performance Acceleration and Analytic with Intermediate Results Reusing.
- Sep. 2008–Jun. 2012 **B.E. in Software Engineering**, *China University of Geosciences*.  
GPA – 88.6/100, Major GPA – 92.9/100, ranked 1st/96,  
Thesis: Design and Implementation of the Quadrotor Autopilot and 3-D Point Cloud Generation and Processing System.

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## Research Interests

I am broadly interested in Distributed Systems, Edge Computing, and Cloud Computing with specific focuses on Resource Management, Stream Processing, Reinforcement Learning on Systems, and Intensive Design for Resource Sharing

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## Publications

### Journal Publications

- [JPDC] **Jinlai Xu**, Balaji Palanisamy, Qingyang Wang, Heiko Ludwig, and Sandeep Gopisetty. Amnis: Optimized stream processing for edge computing. *Journal of Parallel and Distributed Computing*(**under review after major revision**), 2021.
- [TSC] **Jinlai Xu**, and Balaji Palanisamy. Optimized contract-based model for resource allocation in federated geo-distributed clouds. *IEEE Transactions on Services Computing (TSC)*, 2018.
- [CCPE] Hong Yao, **Jinlai Xu**, Zhongwen Luo, and Deze Zeng. MEMoMR: Accelerate mapreduce via reuse of intermediate results. *Concurrency and Computation: Practice and Experience (Special Issue)*, 28(14):3814-3829, 2016.

### Conference Publications

- [CCGrid 21'] **Jinlai Xu**, Balaji Palanisamy, and Qingyang Wang. Resilient stream processing in edge computing. In 2021 *IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid)*(**accepted**). IEEE, 2021.
- [CODASPY 21' D/T] Chao Li, Balaji Palanisamy, Runhua Xu, **Jinlai Xu** and Jingzhe Wang. SteemOps: Extracting and Analyzing Key Operations in Steemit Blockchain-based Social Media Platform. In 2021 *ACM Conference on Data and Application Security and Privacy (Dataset/Tool Paper)*. ACM, 2021.

- [IEEE CIC 20'] Jingzhe Wang, Balaji Palanisamy, and **Jinlai Xu**. Sustainability-aware resource provisioning in data centers. In *2020 IEEE International Conference on Collaboration and Internet Computing (CIC)*. IEEE, 2020.
- [IEEE Edge 17'] **Jinlai Xu**, Balaji Palanisamy, Heiko Ludwig, and Qingyang Wang. Zenith: Utility-aware resource allocation for edge computing. In *2017 IEEE international conference on edge computing (EDGE)*, pages 47-54. IEEE, 2017.
- [IEEE Cloud 17'] **Jinlai Xu** and Balaji Palanisamy. Cost-aware resource management for federated clouds using resource sharing contracts. In *2017 IEEE 10th International Conference on Cloud Computing (CLOUD)*, pages 238-245. IEEE, 2017.
- [IEEE CIC 17'] **Jinlai Xu**, Balaji Palanisamy, Yuzhe Tang, and SD Madhu Kumar. PADS: Privacy-preserving auction design for allocating dynamically priced cloud resources. In *2017 IEEE 3rd International Conference on Collaboration and Internet Computing (CIC)*, pages 87-96. IEEE, 2017.

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## Teaching Experience

- 2017–2020 **Teaching Assistant**, University of Pittsburgh
  - Cloud Computing (2017 Spring, 2018 Spring, 2019 Spring, 2020 Spring)
    - Instructor: Prof. Balaji Palanisamy
  - Information Security and Privacy (2017 Fall), Information Security and Privacy (Online Course) (2018 Fall)
    - Instructor: Prof. Balaji Palanisamy
  - Algorithm Design (2018 Fall)
    - Instructor: Prof. Hassan Karimi
- 2013 Fall **Teaching Assistant**, China University of Geosciences
  - Advanced Programming Language (JAVA)
    - Instructor: Prof. Shengwen Li

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## Work Experience

- 2020 Aug.–present & 2019 Aug.–Dec. **Graduate Student Researcher**, *University of Pittsburgh*.  
Working on creating, and improving the materials in SADET project, and maintaining the website
- 2019 May.–Jul. **Software Engineer Intern**, *Facebook*.  
Software Engineer Intern in Stream Processing Team

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## Honors & Awards

- 2017 **ICDCS 2017 student travel grant**, ICDCS 2017, Atlanta, GA, USA
- 2013–2014 **Outstanding Student Award**, China University of Geosciences, China
- 2010–2011 **Fellows Scholarship**, China University of Geosciences, China
- 2009–2010 **National Scholarship**, Ministry of Education, China
- 2009 **The Second Place of AndroSot(Full-autonomous 3vs3 Humanoid Robot Soccer)**, The 9<sup>th</sup> Robot Soccer Tournament of China and The Tryouts for FIRA, Changchun, China

- 2009 **The First Prize of AndroSot(Semi-autonomous 3vs3 Humanoid Robot Soccer)**, The 9<sup>th</sup> Robot Soccer Tournament of China and The Tryouts for FIRA, Changchun, China

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## Research Experience

- 2015–Present **PhD Student**, THE LABORATORY FOR EDUCATION AND RESEARCH ON SECURITY ASSURED INFORMATION SYSTEMS (LERSAIS), University of Pittsburgh, Pittsburgh.
- Reviewed related literature (mainly in Edge Computing, Cloud Computing, Stream Processing, and Reinforcement Learning)
  - Focus on resource management and allocation problems in Edge and Cloud Computing for Low-latency Stream Processing
  - Publish papers on these topics.
- 2012–2015 **Research Assistant**, ROBOTICS AND ARTIFICIAL INTELLIGENCE LABORATORY, China University of Geosciences, Wuhan.
- Reviewed related literature (mainly in Cloud Computing)
  - Constructed the cloud computing platform for our faculty:
    - Designed the virtualization solution for the cluster. (based on Xen)
    - Deployed Hadoop and related application(Hive, Spark, Solr ...) on the cluster.
  - Studied MapReduce programming model and did research on it:
    - Read the source code of MapReduce in Hadoop project.
    - Proposed a new method to reuse the intermediate results automatically and data-awarenessly and implemented the prototype system by modifying the core code of MapReduce.
    - the paper is published on Concurrency and Computation: Practice and Experience (CCPE) (Title: **MEMoMR: Accelerate MapReduce via Reuse of Intermediate Results**)
  - Managed the cluster in our faculty:
    - Allocated the virtual machines and network resource.
    - Supported a mirror site on the cluster (<http://mirrors.cug.edu.cn>).
- 2009–2012 **Undergraduate Research Assistant**, ROBOTICS AND ARTIFICIAL INTELLIGENCE LABORATORY, China University of Geosciences, Wuhan.
- Reviewed related literature (mainly in Computer Vision and Robotics).
  - Participated in The 9<sup>th</sup> Robot Soccer Tournament of China and The Tryouts for FIRA in Changchun in freshmen year.
  - Studied the architecture and implementation of ROS(The Robot Operating System) and preliminarily deployed it on the robots control panel (Version: RB100 by RoBoard).
  - Successfully applied for The National College Students Innovation Experiment Program:
    - **Topic: Small Model Aircraft Autopilot System and Aerial Photo Research**
    - Chose Quadrotor(an aircraft with four rotors) as the carrier platform of the research.
    - Studied the theory of balancing the Quadrotor with MikroKopter(one of the most famous open source UAV projects).
    - Studied and implemented the point clouds registration algorithm ICP and RANSAC on ROS.
    - Used ASUS Xtion PRO (a device like Kinect) to get the point cloud data and evaluated the algorithm.
    - Wrote graduation thesis based on this topic.(Title: the Design and Implementation of the Quadrotor Autopilot and 3-D Point Cloud Generation and Processing System)

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## Professional Services

- Journal Review
  - IEEE Transactions on Services Computing (TSC)
  - Concurrency and Computation: Practice and Experience (CCPE)
  - International Journal of Cooperative Information Systems (IJCIS)
  - Information Systems Frontiers (ISFI) : IRI - Special Issue on Foundations of Reuse
  - PLOS ONE
  - TELKOMNIKA (Telecommunication, Computing, Electronics and Control)
- Conference Review
  - IEEE INTERNATIONAL CONGRESS ON INTERNET OF THINGS (ICIOT)
  - International Conference on Electrical Engineering, Computer Science and Informatics (EECSI)
  - International Workshop on Internet-scale Clouds and Big Data (ISCBD)
  - IEEE International Conference on Communications (ICC)
- Conference External Review
  - IEEE World Wide Web (WWW)
  - International Conference on Distributed Computing Systems (ICDCS)
  - IEEE International Conference on Big Data (Big Data)
  - ACM International Conference on Information and Knowledge Management (CIKM)
- Conference Volunteer
  - IEEE 18th International Conference on Information Reuse and Integration (IRI 2017), San Diego, CA, USA. Aug 4 - 6, 2017
  - The 37th International Conference on Distributed Computing Systems (ICDCS 2017), Atlanta, GA, USA. June 5 - 8, 2017
  - IEEE 17th International Conference on Information Reuse and Integration (IRI 2016), Pittsburgh, PA, USA. Jul 28 - 30, 2016
  - IEEE 2nd International Conference on Collaboration and Internet Computing (CIC 2016), Pittsburgh, PA, USA. Nov 1 - 3, 2016
- Conference Webmaster
  - IEEE 19th International Conference on Information Reuse and Integration (IEEE IRI 2018)
  - IEEE 18th International Conference on Information Reuse and Integration (IEEE IRI 2017)
  - International Workshop on Internet-scale Clouds and Big Data (ISCBD 2018)
  - International Workshop on Internet-scale Clouds and Big Data (ISCBD 2017)
  - International Workshop on Internet-scale Clouds and Big Data (ISCBD 2016)