# Shijing Li

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## Technical Skills

- Java, Python, C++, C, HTML, Assembly languages
- SQL, Cassandra (No SQL DB), Hadoop, ORACLE, AWS
- TCP/IP, JavaScript, React, Angular, HTML, CSS,
- Linux/Unix, OpenStack, Amazon EC2, TensorFlow
- MATLAB, AutoCAD, LabVIEW, VHDL, NS2, OPNET

## Education History

**George Washington University** PhD August 2014 - May 2022

- Degree: Doctor of Philosophy
- Major: Electrical Engineering, Focus: Communications and networks
- GPA: 3.69

**Beijing University of Posts and Telecommunications - Beijing, China** September 2009-July 2014

- Degree: Bachelor of Engineering
- Major: Communication Engineering

**Minnesota State University, Mankato - Mankato, MN** August 2011-May 2012

Global Undergraduate Exchange Program – exchange student sponsored by the U.S. Department of States

- As one of 10 students all over China selected to participate in the exchange program
- Major: Electronic Engineering Technology

## Patent

Background traffic management (US10289448B2) Granted in 2019

## Internship – Java Programmer

**Internship, AT&T Research Lab (Bedminster, NJ)** 2015-2020

- Onsite internship: May 2015 - July 2015, June 2016 - August 2016
- Remote cooperation: 2016-2020
- Built large-scale distributed storage systems for simulations by using Java, C, Python
- Designed algorithms to manage background traffic in cloud storage system
- Did research on optimizing deduplication in distributed cloud storage
- Built a large distributed Cassandra system on OpenStack and Amazon EC2
- Did experiments on OpenStack and Amazon EC2 VMs (Ubuntu system VMs, C programming, bash scripts)

## Working and Research Experience

**Research Assistant** August 2014 – May 2022

**George Washington University**

- Doing research in the field of machine learning, cloud storage, network resource allocation optimization, distributed systems, edge computing and IoT
- Doing simulations for algorithm performance(C++, Python, Java)
- Designed algorithms to estimate abnormal data using machine learning (RNN, TensorFlow)
- Designed data deduplication algorithms on large Cassandra distributed system (C, Cassandra, Amazon EC2)

- Designed algorithms and proved performance bound to reduce network inference error on estimated routing (NS2)
- Doing experiments using OpenStack and Amazon EC2 VMs, Java and C programming, bash scripts, linux system, Cassandra, Lambda, TensorFlow

**Research Assistant** April 2013 – May 2014

**Research Institute of Information Technology, Tsinghua University**

- Doing research in the field of communication fusion
- Exploring solutions for the coexistence problem caused by Zigbee and Wifi nodes
- Doing simulations and developing hardware devices
- NS2, OPNET Modeler, Linux system, Qt Creator, C and C++ programming

**National-level Innovative Project, team leader** May 2012- May 2013

**Application of Image Identification in Detecting the Quality of Rice**

Designed an equipment for automatically detecting the quality of rice

- Led a student research team, applied funds for project, assigned tasks to teammates
- Designed algorithms of image identification (C++ programming)
- Designed a PCB board and control circuits
- Programmed 8051 single-chip microcontroller (C programming)
- This project was demonstrated at the "Exhibition for College Student Research and Career-creation Program of Beijing", representing the Beijing University of Posts and Telecommunications with other 5 projects selected from 200 projects

## Publication

- Shijing Li, Tian Lan, Bharath Balasubramanian, Moo-Ryong Ra, Hee Won Lee, Rajesh Panta, "Pushing Collaborative Data Deduplication to the Network Edge: An Optimization Framework and System Design, IEEE Transactions on Network Science and Engineering, 2022.
- Shijing Li, Tian Lan, "From Network Inference Errors to Utility Suboptimality: How Much Is the Impact?", In IEEE Transactions on Network Science and Engineering, 2022.
- Shijing Li, Tian Lan, "HotDedup: Managing Hot Data Storage at Network Edge through Optimal Distributed Deduplication", in Proceedings of INFOCOM, July 2020.
- Shijing Li, Tian Lan, Bharath Balasubramanian, and etc., "EF-dedup: Enabling Collaborative Data Deduplication at the Network Edge", In Proceedings of ICDCS, July 2019.
- Shijing Li, Tian Lan, Moo-Ryong Ra, Rajesh Panta, "Joint Scheduling and Source Selection for Background Traffic in Erasure-Coded Storage", In IEEE Transactions on Parallel and Distributed Systems, 2018.
- Shijing Li, Tian Lan, Moo-Ryong Ra, Rajesh Panta, "S3: Joint Scheduling and Source Selection for Background Traffic in Erasure-Coded Storage", In Proceedings of ICDCS, June 2017.
- Shijing Li, Tian Lan, Moo-Ryong Ra, Rajesh Panta, "Background Traffic Optimization for Meeting Deadlines in Data Center Storage", In Proceedings of CISS, March 2016.
- Shijing Li, Tian Lan, Hanqing Hang, "Forecasting performance anomalies in the cloud using deep learning", Under review