

Junxian Shen

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Introduction

Junxian Shen, born in November 1997, achieved remarkable success during the 2015 Guangdong College Entrance Examination by securing the first rank in the Science section among 754,000 candidates. In 2015, he enrolled in the Department of Computer Science and Technology at Tsinghua University, where he received the Tsinghua University Freshman Scholarship First Prize. He is currently pursuing his Ph.D. and anticipates graduating in June 2025.

Junxian Shen has diligently focused on **large-scale cloud and network infrastructure monitoring**. Leveraging on the Future Internet Technology Infrastructure (FITI), which is the only major scientific and technological infrastructure in the information field under the national 13th Five-Year Plan, Junxian Shen has made notable achievements in academic research. His efforts have culminated in the publication of seven high-quality papers at prestigious conferences and journals such as **ACM SIGCOMM**, **ACM CCS**, and **IEEE TPDS**. Furthermore, he has applied for or received three patents and software copyrights, demonstrating significant contributions to his field of study.

Junxian Shen is actively involved as a core member in several important projects sponsored by the Ministry of Industry and Information Technology, the National Natural Science Foundation, and various national laboratory special projects. He also holds a part-time research position at the Zhongguancun Laboratory. His technological contributions are integral to the operation of the Future Internet Test Infrastructure (FITI) and have been effectively utilized in crucial sectors.

Education

Institute for Network Sciences and Cyberspace, Tsinghua University

Beijing, China

PH.D. CANDIDATE, ADVISED BY PROF. JILONG WANG, PROF. MINGWEI XU, AND ASSOC. PROF. HAN ZHANG

Sept. 2019 - June 2025 (Expected)

Department of Computer Science and Technology, Tsinghua University

Beijing, China

BACHELOR OF ENGINEERING, ADVISED BY PROF. JUN BI (LATE)

Sept. 2015 - July 2019

Publications

Network-Centric Distributed Tracing with DeepFlow: Troubleshooting Your Microservices in Zero Code

SIGCOMM 2023

JUNXIAN SHEN, HAN ZHANG, YANG XIANG, XINGANG SHI, XINRUI LI, YUNXI SHEN, ZIJIAN ZHANG, YONGXIANG WU, XIA YIN, JILONG WANG, MINGWEI XU, YAHUI LI, JIPING YIN, JIANCHANG SONG, ZHUOFENG LI, RUNJIE NIE

- ◇ The first research on constructing observability into distributed applications using a non-intrusive approach
- ◇ Has been adopted by over 26 companies and multiple independent development teams
- ◇ Currently ranked second in download volume among papers from SIGCOMM 2023
- ◇ Has been included in the CNCF Landscape and the eBPF Landscape

Gringotts: Fast and Accurate Internal Denial-of-Wallet Detection for Serverless Computing

CCS 2022

JUNXIAN SHEN, HAN ZHANG, YANTAO GENG, JIAWEI LI, JILONG WANG, MINGWEI XU

- ◇ The first research proposing security attacks on economic models for serverless computing

Serpens: A High-Performance Serverless Platform for NFV

IWQoS 2020

JUNXIAN SHEN, HENG YU, ZHILONG ZHENG, CHEN SUN, MINGWEI XU, JILONG WANG

- ◇ The first research that combines serverless computing with high-performance networking systems
- ◇ IWQoS 2020 Video Presentation Awards (Top 12)

Serpens: A High Performance FaaS Platform for Network Functions HENG YU, HAN ZHANG, JUNXIAN SHEN , YANTAO GENG, JILONG WANG, CONGCONG MIAO, MINGWEI XU	TPDS 2023
Octans: Optimal Placement of Service Function Chains in Many-Core Systems HENG YU, ZHILONG ZHENG, JUNXIAN SHEN , CONGCONG MIAO, CHEN SUN, HONGXIN HU, JUN BI, JIANPING WU, JILONG WANG	TPDS 2021
Scorpius: Proactive Code Preparation to Accelerate Function Startup HENG YU, JUNXIAN SHEN , CONGCONG MIAO, CHEN SUN, HONGXIN HU, JUN BI, JIANPING WU, JILONG WANG	IWQoS 2022
Buffet: Enabling Multi-Tenant Network Functions HENG YU, JUNXIAN SHEN , CHEN SUN, ZHILONG ZHENG, JILONG WANG	GLOBECOM 2019

Patents

Invention Patent: Resource Management System (CN202211373532.0) HAN ZHANG, JILONG WANG, JUNXIAN SHEN	Tsinghua University
Invention Patent: A Distributed Online Microservice Application Monitoring System Based on In-Collectin Computing (Application Pending) HAN ZHANG, JUNXIAN SHEN , JILONG WANG, YAHUI LI, QIANLI ZHANG	Tsinghua University
Software Copyright: A Microservice Risk and Failure Monitoring System Based on Continuous Performance Metric Profiling (Application Pending) HAN ZHANG, JUNXIAN SHEN , JILONG WANG, YAHUI LI	Tsinghua University

Honors and Awards

- Ranked 1st in the Science section for the Guangdong College Entrance Examination
- IWQoS Video Presentation Awards
- "Excellent Case in Stable and Secure Operation of Cloud Systems" Award by the Institute of Information and Communications Technology
- 11th Financial Technology and Services Operational Innovation Contribution Award
- Annual Outstanding Contribution Award for Financial Technology Product Innovation
- Related projects included in the CNCF Landscape and the eBPF Landscape

Other Experiences

Teaching Experiences Computer Network Management ASSISTED THE INSTRUCTOR WITH DAILY TEACHING MANAGEMENT, RESPONDED TO STUDENT INQUIRIES, AND HELPED ORGANIZE VARIOUS TEACHING ACTIVITIES.	Tsinghua University Sept. 2022 - July 2024
Internship Sogou Desktop Division - Personalized Reading Department INDEPENDENTLY DEVELOPED A NEWS THUMBNAIL SELECTION SYSTEM FOR THE 'TODAY'S HOT HEADLINES' APP WITHIN THE PERSONALIZED READING DEPARTMENT.	Beijing Sogou Technology Development Co., Ltd. July 2017 - Sept. 2017
Internship Ant Group - CTo Line - Data and Platform Technology Business Group - Basic Security Department - Security Architecture and Technology Department INDEPENDENTLY IMPLEMENTED A MALICIOUS JAVA SAMPLE ANALYSIS TOOL BASED ON YARA.	Ant Group Co., Ltd. Aug. 2021 - Oct. 2021