SHIJIE SUN

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EDUCATION

Tsinghua University, Beijing, China Aug. 2013 - July 2017
B.Eng. in Automation. GPA: 89/100. Ranking: 13/141

Carnegie Mellon University, Pittsburgh, PA, U.S. June 2016 - Sept. 2016
Visiting Research Assistant, Department of Electrical & Computer Engineering

PUBLICATIONS & PATENTS

[1] Junchen Jiang, **Shijie Sun**, Vyas Sekar, Hui Zhang. Pytheas: Enabling Data-Driven Quality of Experience Optimization Using Group-Based Exploration-Exploitation. *NSDI 2017.*

[2] Zhi Liu, **Shijie Sun**, Hang Zhu, Jiaqi Gao, Jun Li. BitCuts: A Fast Packet Classification Algorithm Using Bit-Level Cuttings. *Computer Communications, 2017. IF=3.07.*

[3] Zhi Liu, **Shijie Sun**, Zhe Fu, Xiaohe Hu, Jianwen Pi, Xiaofeng Yang, Yunsong Lu, Jun Li. MN-SLA: A Modular Networking SLA Framework for Cloud Management System. *Tsinghua Science and Technology, 2018. IF=1.70*

[4] Xin Li, Song Han, **Shijie Sun**, Yi Shan. Multi-Iteration Compression for Deep Neural Networks. *U.S. Patent Application 15/390559, filed December 2016. Patent Pending.*

[5] 2 C.N. patents relating to Risk Assessment of Road Traffic Accident, 2018. (*pending*)

[6] 2 C.N. patents relating to Deep Neural Network Compression, 2016. (*pending*)

[7] 1 C.N. patent relating to Mobile Sensing Systems, 2015. (*pending*)

WORK EXPERIENCE

Ant Financial (Alibaba Group), Beijing, China Aug. 2018 - Present
Algorithm Engineer II, *Turing Graph Group, CTO Line*

Project (Ongoing): Turing Knowledge Graph Construction

- Use predicted relations (e.g. couples and parent-child pairs) to construct family groups through knowledge graph reasoning and conflict resolution.
- Apply network alignment algorithms on two different KGs to increase the ID-mapping pairs.

Project: Entity Linking for Company Knowledge Graph Population

- Created an online entity linking system consisting of 4 modules (Recognition, Searching, Ranking, and Decision) for data digestion and trained multiple corresponding models, serving over 300 average QPS.
- Recognized relevant companies from news with a F1-score of 75% and improved the coverage of multiple types of company relations and properties by 15-30% with accuracy $> 98\%$ through the system.

Project: Event Extraction and Matching for Online Text

- Developed an online matching system to help OMs perform quick responses to hotspots, by matching events described in news articles and noteworthy complaints on social media with user-reported incidents (e.g., fraud or stealing) from APPs and hotlines, covering over 50% of the daily cases.

Didi Chuxing, Beijing, China July 2017 - Aug. 2018
Algorithm Engineer, *Safety Group, DiDi AI Labs*

Project: Risk Assessment of Road Traffic Accident (RTA)

- Trained predictive models for RTA using massive historical data from ∼20M drivers, including driving behaviors (from sensors), GPS trajectories, road networks and passenger feedback, reaching an AUC of 0.83 on testset (monthly active drivers from a specified month, ∼6M drivers).

- Proposed and implemented Driving Safety Score (DSS), a scoring system producing stable and accurate scores using predictions of the trained RTA model to indicate drivers' driving risk level, which has been used in order dispatch, operating decision and smart education.

Laiye Network Technology Co., Beijing, China Dec. 2016 - May 2017
Algorithm Engineer Intern, *Dialogue System Group*

- Upgraded fundamental NLP modules of task-oriented dialogue system with deep learning models, reaching a Macro-F1 of 95% on Intent Classification and a Macro-F1 of 90% on NER.

DeePhi Tech (Acquired by Xilinx), Beijing, China Oct. 2016 - Dec. 2016
Algorithm Engineer Intern, *LSTM-ASR Group*

- Enhanced and automated "Deep Compression" algorithm for LSTM models, achieving 5x faster compression speed as well as 1.6x higher compression ratio on ASR model of Sogou Inc.
- Trained an LSTM model on LibriSpeech dataset and created an offline demo of speech recognition.

RESEARCH EXPERIENCE

Research Assistant, Advisor: Prof. Jun Li Oct. 2015 - June 2017
Network Security Lab, RIIT, Tsinghua University

Project: Software Packet Classification using Bit-level Cuttings (BitCuts)

- Designed a decision-tree algorithm based on bit-level cutting scheme and optimized the algorithm implementation with a 10^2x decrease in memory usage and 10^3–10^4x in preprocessing time to make it practical, reaching 2x higher packet classification throughput.
- Reduced memory usage of BitCuts by 10^1–10^3x by creating a novel rule grouping algorithm, which achieved 1.1–2.2x higher throughput compared with EffiCuts (famous rule grouping algorithm).

Project: Networking Service Level Agreement (SLA) Scheduling for Cloud Management System (CMS)

- Proposed an offer-based scheduling algorithm to provide solutions of instance placement based on network topology, capacity, and SLA intention, achieving at least 1.4x higher resource utilization rate.

Visiting Research Assistant, Advisor: Prof. Vyas Sekar June 2016 - Sept. 2016
CyLab Security and Privacy Institute, ECE, Carnegie Mellon University

Project: A Framework for Enabling Data-Driven Networking (DDN)

- Teamed up with a PhD student to develop and refine an DDN framework with both architectural and algorithmic designs to optimize application-level Quality of Experience (QoE), which can adapt to network conditions in real time to make optimal decisions (e.g., server, bitrate, relay).
- Implemented above framework as well as an end-to-end prototype system for online video and deployed it on CloudLab's cluster (using 60+ physical servers) for evaluation, which improved video QoE over state-of-the-art prediction-based system by up to 31%-78%.

AWARDS

2017 Excellent Graduate of Tsinghua University
2017 Outstanding Graduation Thesis, Tsinghua University
2016 Award for Research and Innovation, Tsinghua University

TECHNICAL STRENGTHS

Tools & Frameworks	**Advanced:** Tensorflow, PyTorch, XGBoost, Spark, MaxCompute, **Intermediate:** RayaG (like GraphX), Kafka, HBase, GDB
Programming Languages	**Advanced:** Python, Java, C/C++, SQL, **Intermediate:** shell, Haskell
Additional Skills	**Advanced:** ROS, Elasticsearch, **Beginner:** Kubernetes, Docker