

# Song Gao

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## Experiences

### **2017.3 - Present     Apple Inc. / Maps Navigation, Cupertino, California, US Sr. Software Engineer**

- As a Senior Software Engineer at Apple Maps' Routing Team since 2017, I've prioritized improving routing quality and speeding up release cycles. I've led the transition to a more frequent release cycle, building infrastructure for automated sign-offs. This involved establishing robust Routing CI systems to detect issues early, optimizing data build phases for quicker results, and creating a Kubernetes-based framework for flexible routing-service deployment. I've also been instrumental in developing the routing AB experiments system, automating the rollout and management of quality-enhancing experiments.
- In addition to my core responsibilities, I actively contributed to several significant new feature releases during my tenure. These included the implementation of functionalities such as multiple destination routing, EV (Electric Vehicle) routing, and offline routing, each of which played a pivotal role in enhancing the user experience and expanding the capabilities of the Apple Maps platform.

### **2012.7-2017.3     Telenav Inc. / Navigation Group, Sunnyvale, California, US Sr. Software Engineer / Staff Software Engineer**

- Between 2012 and 2017, I led the development of Telenav's Map Enhancement Platform, employing technologies like Hadoop MapReduce, YARN, HDFS, HBase, Oozie, and Azure/Electric Command. This platform processed map and GPS probe data, enhancing road attributes and traffic details, crucial for routing improvements. Its success led to the release of the Enhanced Open Street Map for Scout US and Scout Global, and its licensing to companies like INRIX.
- I also spearheaded the address & POI fusion engine, boosting NA's POI rooftop coverage by 75%. Additionally, I revamped content data compiling modules, ensuring better flexibility and maintainability.

### **2008.7-2012.7     Telenav Inc. / Maps, Beijing, CHINA Sr. Software Engineer / Sr. Engineering Manager**

- As a core engineer in Telenav's Routing team since 2009, I've been instrumental in implementing highway-hierarchy based routing engines for both mobile productions (like ATT&T, Sprint, Telenav Navigators, and Telenav Scout) and the Embedded routing engine for automotive partners (Project Phoenix for Toyota 2010). These engines stand as Telenav's Official Routing engines. My significant achievements encompass completing essential modules—Routing Cost Mode, Multi-Mode Routing, Via-Point Routing, and more—fundamental to Telenav's routing systems.
- I've also taken charge of management for five sub-teams, overseeing Navigation, Routing, Traffic R&D, OSM++, and the Intelligent Navigation team. My focus has centered on conducting technical reviews for Routing and Traffic R&D projects.
- Notably, my journey within Telenav saw considerable growth, progressing from a software engineer to senior software engineer, engineering manager, and senior engineering manager by 2012.

### **2005.8-2008.7     University Of Chinese Academy Of Science, Beijing, CHINA**

- I obtained my master's degree in Cartology and Geographic Information Systems, specializing in Navigation and Intelligent Transportation Systems. My primary research centered on dynamic traffic routing and heuristic routing algorithms, contributing to significant projects:
- I participated in developing intelligent data-processing techniques and software tailored for multi-patterns and traffic network services, a part of China's National Project of High Technology Research and Development Program (863 Program).
- Additionally, I engaged in research and development focused on TSP/VRP Routing algorithms for a Vehicle Planning System, collaborating with the Chinese Academy of Sciences and the Ministry of Transport of China.

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## HONORS

2011	Excellent Staff Award of Telenav Inc.	(1%)
2006	Excellent Student in Graduate University of Chinese Academy of Science	
2004	Diamond Scholarship	
2003	Excellent Student Scholarship of Hunan Province	
2003	Bao Gang Scholarship	
2002-2004	Best-Class scholarship in Central South University for consecutive 3 years	(1%)
2002	Honors of Top 10 Excellent Students of Central South University	
2002-2004	Chairman of the School Students Union	
2001	Excellent Freshman Scholarship in Central South University	

## PERSONAL

Excelling in both soccer and basketball, I held the position of the basketball team captain at my school from 2005 to 2007. Simultaneously, I served as the chairman of the college student union from 2003 to 2005. Furthermore, I took on the roles of coach and captain for a basketball team competing in the SVCBA (Silicon Valley Chinese Basketball Association). I'm also a member of the SVCBA committee member since 2020.

## PUBLICATIONS

- Gao Song**, Lu Feng. (2009) The Kth Shortest Path Algorithms: Accuracy and Efficiency Evaluation. *JOURNAL OF IMAGE AND GRAPHICS*, 14(8).
- Gao Song**, Lu Feng. (2009) A Path Finding Heuristic Algorithm for A Road Network Hierarchy. *Journal of Geo-Information Science*, 11(2).
- Gao Song**, Lu Feng, Duan Yingying. (2008) A Kth Shortest Path Algorithm Implemented with Bi-directional Search. *Geomatics and Information Science of Wuhan University (EI)*, 33(4).
- Gao Song**, Lu Feng. (2008) An Arc-labeling Shortest Time Path Algorithm. *Journal of Geo-Information Science*, 10(5).

## PATENTS

- Lu Feng, **Gao Song**, Duan Yingying. A navigation road network model implementation for traffic data load. China. ZL200810115576.7
- Gao Song**, Yuan Chen. Route Planning Via Fuzzy Points Based on the Group Strategy. US. 13/861277
- Gao Song**, Probe based Erroneous One Ways Correction. US 2016.

## EDUCATION

- 2005.9-2008.6      **UNIVERSITY OF CHINESE ACADEMY OF SCIENCES Beijing, CHINA**  
**State Key Lab of Resources and Environmental Information System**  
Master of Cartology and Geographic Information System
- 2001.9-2005.6      **CENTRAL SOUTH UNIVERSITY Changsha, Hunan, CHINA**  
**School of Geoscience and Environment Engineering**  
Bachelor of Geographic Information System