Shangfu Peng

CONTACT

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INTEREST

Content Recommendation System, Backend Infrastructure, Geographic Information Systems (GIS), Distributed System, Database, and Machine Learning.

EDUCATION

University of Maryland — College Park, MD
Ph.D. in Computer Science (Advisor: Prof. Hanan Samet) — Sep. 2012 – 2018
GPA: 4.0/4.0

Shanghai Jiao Tong University — Shanghai, China
B.S. in Computer Science (Advisor: Prof. Yu Yong) — Sep. 2008 – Jun. 2012
GPA: 3.62/4.0

INDUSTRY EXPERIENCE

Pinterest, Inc., Senior Software Engineer — San Francisco, CA
Senior Software Engineer — Aug. 2019 – Present
Software Engineer — Jun. 2018 – Aug. 2019
I am a senior software engineer in Homefeed infrastructure team in Pinterest that develops and maintains Homefeed recommendation infrastructure to generate the Homefeed content pins for Pinterest users. My responsibilities are that ensure the end-to-end recommendation system is healthy especially for my owned candidate generators such as the random-walk content generator, develop new candidate generators using search-based infrastructure to provide more relevant candidate contents for Pinterest users, improve our content ecosystem especially for the content creators experience, and optimize the latency and reduce the infrastructure cost of the Homefeed recommendation infrastructure.

Research Intern at Advanced Digital Sciences Center(ADSC) — Singapore
supervised by Dr. Yin Yang, Dr. Zhenjie Zhang, and Prof. Marianne Winslett — Aug. 2011 – Jan. 2012
Researched mainly on Differential Privacy topics.

RESEARCH EXPERIENCE

Institute for Advanced Computer Studies, University of Maryland — College Park, MD, USA
Graduate Research Assistant (Advisor: Prof. Hanan Samet) — Jun. 2013 – 2018

APEX Data Knowledge Management Lab — Shanghai, China
Research Student (Advisor: Prof. Yong Yu) — Aug. 2010 – Jul. 2012

APP/DEMO

- NewsStand: http://newsstand.umiacs.umd.edu
- Distance Oracles Demo for Spatial Analytical Queries: http://sametnginx.umiacs.umd.edu/oracle/
- Roads Inside Any Database: https://roadsindb.com/
- Geolloery: http://sametphp.umiacs.umd.edu/geollery/

PUBLICATION

[1] **S. Peng**. Ph.D. Thesis. High-Throughput Network Distance Computations for Spatial Analytics Inside Any Store. University of Maryland, College Park, Maryland, United States, 2018. Thesis Committee: David Mount, Udaya Shankar, Ramani Duraiswami, Shunlin Liang, and Hanan Samet.

[2] **S. Peng**, J. Sankaranarayanan, and H. Samet. DOS: A Spatial System Offering Extremely High-Throughput Road Distance Computations. SIGSPATIAL, 2018.

[3] **S. Peng**, H. Wei, H. Li, and H. Samet. Simplification and Refinement for Speedy Spatio-temporal Hot Spot Detection Using Spark (GIS Cup). SIGSPATIAL, 2016.

[4] **S. Peng**, and H. Samet. CDO: Extremely High-Throughput Road Distance Computations on City Road Networks. *Best Demo Award*. SIGSPATIAL, 2016.

[5] H. Li, **S. Peng**, and H. Samet. Streaming News Image Summarization. ICPR, 2016.

[6] **S. Peng**, J. Sankaranarayanan, and H. Samet. SPDO: High-Throughput Road Distance Computations on Spark using Distance Oracles. ICDE, 2016.

[7] **S. Peng**, and H. Samet. Analytical Queries on Road Networks: An Experimental Evaluation of Two System Architectures. SIGSPATIAL, 2015.

[8] **S. Peng**, H. Samet, and M. D. Adelfio. Viewing Streaming Spatially-Referenced Data at Interactive Rates. *Short Paper*. SIGSPATIAL, 2014.

[9] **S. Peng**, Y. Yang, Z. Zhang, M. Winslett, and Y. Yu. Query Optimization for Differentially Private Data Management Systems. ICDE, 2013.

[10] **S. Peng**, Y. Yang, Z. Zhang, M. Winslett, and Y. Yu. DP-Tree: Indexing Multi-Dimensional Data under Differential Privacy. *Poster*. SIGMOD, 2012.

RESEARCH PROJECTS SELECTED

Managing spatial data in a distributed environment	Oct. 2013-2018
Social media photos retrieval and geographic information extraction for Instagram	Oct. 2014-Dec. 2015
Viewing streaming labels in a map at Interactive Rates	Aug. 2013-Aug. 2014
Data management systems under differential privacy	Aug. 2011-Oct. 2012

PATENTS FILED

- All-Store Distance Oracles: Complex Analytical Queries on Large Road Networks Inside Any Database
- SPDO: High-Throughput Road Distance Computations on Spark using Distance Oracles

HONORS, GRANTS, AND SCHOLARSHIPS SELECTED

National Science Foundation I-CORPS Program Grant as Entrepreneurial Lead (EL) $50,000	2016
ACM SIGSPATIAL NSF Travel Award	2015
Graduate School Outstanding Graduate Assistant Award	2015
ACM SIGSPATIAL NSF Travel Award	2014
Amazon Web Services (AWS) in Education Research Grant Award, $10,000	2014
John D. Gannon Scholarship Fund	2013
Dean's Fellowship, University of Maryland	2012-2014
SIGMOD 2012 Student Travel Grant	2012
Outstanding Undergraduate Thesis Award, Shanghai Jiao Tong University	2012
Computer World Corporation Scholarship (62 awardees nation-wide)	2010
Excellent Student Leader Scholarship from Shanghai Jiao Tong University	2010
National Scholarship (highest-level scholarship from the Chinese government)	2009
Academic Excellence Scholarship (1st-class, 1%) from Shanghai Jiao Tong University	2009

ACM-ICPC AWARDS SELECTED

Participated in more than 10 ACM-International Collegiate Programming Contests (ICPC) as the team leader:
27th Place of 2013 ACM-ICPC World Finals, St. Petersburg, Russia
First to solve a problem winner in 2013 ACM-ICPC World Finals, Russia
Champion of 2012 ACM-ICPC Mid-Atlantic Regional Contest, USA
13th Place of 2011 ACM-ICPC World Finals, Orlando, USA
Champion of 2010 ACM-ICPC Asia Regional Contest, Hangzhou, China
Champion of 2010 ACM-ICPC Asia Regional Contest, Fuzhou, China
2nd place of 2010 ACM-ICPC Asia Regional Contest, Japan

PROFESSIONAL

Topcoder SRM red rating, ID: pengshangfu	Sep. 2011 - Present
Student Coach for University of Maryland ACM-ICPC team	Sep. 2013 - May. 2018
Student Committee for Computer Science Graduate Admissions for Fall 2016	Jan. 2016 - Mar. 2016
Teaching Assistant for Geographical Information Systems and Spatial Databases, CMSC725	Fall 2015
Teaching Assistant for Discrete Structures, CMSC250	Spring 2013 - Fall 2013
Teaching Assistant for Data Structure, CMSC420	Fall 2012
Student Coach for Shanghai Jiao Tong University ACM-ICPC team	Sep. 2011 - Jun. 2012

GRADUATE COURSES

- Reinforcement Learning (auditor) — Fall 2016
- Advanced Topics in Information Processing: Deep Learning (auditor) — Fall 2016
- High Performance Computing (A) — Fall 2015
  Project: Explore optimal partition of deep neural network in a distributed environment
- Computational Geometry (A) — Fall 2014
- Computational Linguistics I (A+) — Fall 2014
  Project: Quizbowl: predict whether the answer to a trivia question is correct or not
- Computational Systems Biology and Functional Genomics (A+) — Spring 2014
- Computer Processing of Pictorial Information (A) — Fall 2013

- Geographical Information Systems and Spatial Databases (A) — Fall 2013
  Project: Distance Oracle in MapReduce Framework
- Data-Intensive Computing with MapReduce (A) — Spring 2013
  Project: Deep Learning using MapReduce
- Database Management Systems (A) — Spring 2013
  Project: Automated Materialized View Selection in PostgreSQL
- Machine Learning (A) — Fall 2012
  Project: Geotagging for geographic locations in news articles
- Analysis of Algorithms (A) — Fall 2012

QUALIFICATION

Languages: C++, JAVA, PYTHON, PHP, SCALA, SQL, RUBY, BASH, MATLAB, JAVASCRIPT, DHTML.
Tools/Farmeworks: SPARK, HADOOP, TENSORFLOW, HIVE,AWS,OPEN MPI, OPENMP, LIBSVM, REDIS, CODIS,MEMCACHED, ELASTICSEARCH, KAFKA, GH-OST, PHABRICATOR, LaTeX, GNUPLOT.