Jaewoo Shin

305 N. University Street – West Lafayette, IN 47907

+1 765 714 5588 • shin152@purdue.edu • nujwoo.github.io

Summary

Ph.D. candidate in Computer Science with 7+ years of experience as a full-stack developer. Interested in database systems, query processing and data indexing, especially for spatial data. Passionate for learning new technologies, analyzing details and enhancing performances.

Education

- **Purdue University** — **West Lafayette, IN**
  Ph.D. Candidate in Computer Science, GPA: 3.94/4.0 — *August 2013 – Present*
  Thesis: Efficient LSM Secondary Indexing for Update-intensive Workloads
  Advisors: Walid G. Aref and Jianguo Wang
- **Stony Brook University** — **Stony Brook, NY**
  B.S. in Computer Science, GPA: 3.75/4.0 — *August 2011 – August 2013*
- **Ajou University** — **S. Korea**
  B.S. in Information and Computer Engineering, GPA: 4.21/4.5 — *March 2006 – August 2011*

Experience

- **Research Assistant**
  Database Systems Lab, Purdue University — *August 2014 – Present*
  - Work on Log-Structured Merge-tree indexing techniques to enhance update performance of the data indexed on the secondary key. (ICDE 2021)
  - Provided an efficient indexing technique for spatial query processing by proposing a new data structure to achieve performance enhancements in distributed computing environments. (SIGSPATIAL 2019)
  - Developed Learning Programming using Interactive Map Activities (LIMO) system offering an environment for students to learn how to program by providing interactive map operations. (SIGSPATIAL 2015 DEMO, VISION)
  - Implemented a parallel computing framework using Apache Hadoop and Spark for Similarity Group-by operator, which extends the semantics of the standard SQL Group-by query.
- **Full Stack Developer**
  Rosen Center for Advanced Computing, Purdue University — *August 2014 – Present*
  - Develop services for researchers in non-CS fields to manage, analyze and visualize data.
  - Perform requirements analysis, service design, and back-end/front-end developments using various frameworks and programming languages. Implemented tools listed on `https://mygeohub.org/groups/gabbs/tools`

Technical Skills

- **Programming Languages:** Java, Python, C/C++, JavaScript, HTML/CSS, Scala, R
- **Systems/Frameworks/Libraries:** Kubernetes, Docker, Hadoop, Spark, AsterixDB, MongoDB, MySQL, PostgreSQL, InfluxDB, Node.js, OpenStreetMap, Leaflet

Publications

[1] **Jaewoo Shin**, Jianguo Wang, and Walid G Aref. The lsm rum-tree: A log structured merge r-tree for update-intensive spatial workloads. In *Proceedings of the 37th IEEE International Conference on Data Engineering (ICDE)*, 2021.

[2] **Jaewoo Shin**, Ahmed R Mahmood, and Walid G Aref. An investigation of grid-enabled tree indexes for spatial query processing. In *Proceedings of the 27th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL)*, pages 169–178, 2019.

[3] Rajesh Kalyanam, Lan Zhao, Carol Song, Larry Biehl, Derrick Kearney, I. Luk Kim, **Jaewoo Shin**, Nelson Villoria, and Venkatesh Merwade. Mygeohub—a sustainable and evolving geospatial science gateway. *Future Generation Computer Systems (FGCS)*, 94:820–832, 2019.

[4] Nelson B Villoria, Joshua Elliott, Christoph Müller, **Jaewoo Shin**, Lan Zhao, and Carol Song. Web-based access, aggregation, and visualization of future climate projections with emphasis on agricultural assessments. *SoftwareX*, 7:15–22, 2018.

[5] Lan Zhao, Carol X Song, Rajesh Kalyanam, Larry Biehl, Robert Campbell, Leif Delgass, Derrick Kearney, Wei Wan, **Jaewoo Shin**, I Luk Kim, et al. Gabbs-reusable geospatial data analysis building blocks for science gateways. In *9th International Workshop on Science Gateways (IWSG)*, 2017.

[6] Nelson B Villoria, Joshua Elliott, Christoph Müller, **Jaewoo Shin**, Lan Zhao, and Carol Song. Rapid aggregation of global gridded crop model outputs to facilitate cross-disciplinary analysis of climate change impacts in agriculture. *Environmental Modelling & Software*, 75:193–201, 2016.

[7] Ruby Y Tahboub, **Jaewoo Shin**, Aya Abdelsalam, Jalaleldeen W Aref, Walid G Aref, and Sunil Prabhakar. Limo: learning programming using interactive map activities. In *Proceedings of the 23rd SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL)*, page 98. ACM, 2015.

[8] Walid G Aref, Sunil Prabhakar, **Jaewoo Shin**, Ruby Y Tahboub, Aya Abdelsalam, and Jalaleldeen W Aref. On map-centric programming environments: vision paper. In *Proceedings of the 23rd SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL)*, page 15. ACM, 2015.

Honors and Awards

- Young Professional of the Year Award, Science Gateways Community Institute, 2018
- Best Demonstration Award, ACM SIGSPATIAL 2015, 2015
- Outstanding Academic Achievement Award, Stony Brook University, 2012
- Academic Scholarships, Ajou University, 2009 - 2011