JUN-GI JANG

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Siebel Center Room 4211, University of Illinois at Urbana-Champaign, 201 N Goodwin Ave, Urbana, IL 61801, USA

RESEARCH INTERESTS

Data Mining, Large-scale Data Analytics, Tensor Decompositions

EDUCATION

Seoul National University Mar. 2017 - Feb. 2023
Ph.D. in Computer Science and Engineering
Thesis: Mining Real World Tensors via Efficient Tensor Decomposition Methods
Advisor: Prof. U Kang

Seoul National University Mar. 2010 - Feb. 2017
B.S. in Mechanical and Aerospace Engineering;
and Computer Science and Engineering (double major)

POSITIONS

Postdoctoral Researcher University of Illinois at Urbana-Champaign (UIUC) Aug. 2023 - present
Advisor: Prof. Hanghang Tong

Postdoctoral Researcher Seoul National University (SNU) Mar. 2023 - Aug. 2023
Advisor: Prof. U Kang

Research Intern HYPERCONNECT Jul. 2020 - Aug. 2020

AWARDS AND HONORS

Postdoctoral Fellowship Program, NRF of Korea Sep. 2023 - Aug. 2024
Outstanding Dissertation Award, SNU Feb. 2023
100 Excellent National R&D Performances, KISTEP Oct. 2022
Best Paper Awards (Honorable Mention), ICDE May 2022
SNU BK21 Star Researcher Award, SNU BK21 Feb. 2022
BK21 Best Graduate Student Award, SNU BK21 Feb. 2022
Future Gauss Lecture Award, Gauss Labs Feb. 2022
Naver Ph.D. Fellowship Award, Naver Dec. 2021
Qualcomm Innovation Fellowship, Qualcomm Nov. 2021
Yulchon AI Star Fellowship, Yulchon Foundation Sep. 2021
Best Paper Awards (Best Research Paper), KDD Aug. 2021
Best Paper Awards (1st Place), Bigcomp Jan. 2021
Humantech Paper Award (Honorable Mention, lead-author), Samsung Feb. 2018

REFEREED CONFERENCES

8. **Fast and Accurate Dual-Way Streaming PARAFAC2 for Irregular Tensors - Algorithm and Application**
Jun-Gi Jang, Jeongyoung Lee, Yong-chan Park, and U Kang
The 29th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (**KDD**), 2023, Long Beach, CA, USA
Oral presentation, acceptance rate 313/1416 ≈ 22.1%.

7. **Accurate PARAFAC2 Decomposition for Temporal Irregular Tensors with Missing Values**
   Jun-Gi Jang, Jeongyoung Lee, Jiwon Park, and U Kang
   IEEE International Conference on Big Data (**BigData**), 2022, Osaka, Japan
   Oral presentation, acceptance rate 122/633 ≈ 19.2%.

6. **DPar2: Fast and Scalable PARAFAC2 Decomposition for Irregular Dense Tensors**
   Jun-Gi Jang and U Kang
   38th IEEE International Conference on Data Engineering (**ICDE**) 2022, Virtual Event
   Oral presentation, acceptance rate 211/780 ≈ 27.1%
   🏆 **Best Paper Award, Honorable Mention**

5. **Fast and Memory-Efficient Tucker Decomposition for Answering Diverse Time Range Queries**
   Jun-Gi Jang and U Kang
   The 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (**KDD**), 2021, Virtual Event
   Oral presentation, acceptance rate 238/1541 ≈ 15.4%
   🏆 **Best Paper Award, Best Research Paper**

4. **Fast and Accurate Partial Fourier Transform for Time Series Data**
   Yong-chan Park, **Jun-Gi Jang**, and U Kang
   The 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (**KDD**), 2021, Virtual Event
   Oral presentation, acceptance rate 238/1541 ≈ 15.4%

3. **VEST: Very Sparse Tucker Factorization of Large-Scale Tensors**
   Moonjeong Park*, **Jun-Gi Jang***, and Lee Sael
   IEEE International Conference on Big Data and Smart Computing (**BigComp**), 2021, Online (* equal contribution)
   🏆 **Best Paper Award, 1st Place**

2. **D-Tucker: Fast and Memory-Efficient Tucker Decomposition for Dense Tensors**
   Jun-Gi Jang and U Kang
   36th IEEE International Conference on Data Engineering (**ICDE**), 2020, Online
   Short, acceptance rate ≈ 32%

1. **Zoom-SVD: Fast and Memory Efficient Method for Extracting Key Patterns in an Arbitrary Time Range**
   Jun-Gi Jang, Donjin Choi, Jinhong Jung, and U Kang
   ACM International Conference on Information and Knowledge Management (**CIKM**), 2018, Lingotto, Turin, Italy
   Oral presentation, acceptance rate 147/826 ≈ 17.8%

REFEREED JOURNALS

10. **Accurate Open-set Recognition for Memory Workload**
    Jun-Gi Jang, Sooyeon Shim, Vladimir Egay, Jeeyong Lee, Jongmin Park, Suhyun Chae, and U Kang
    ACM Transactions on Knowledge Discovery from Data (**TKDD**), 2023

9. **Fast and accurate interpretation of workload classification model**
    Sooyeon Shim, Doyeon Kim, **Jun-Gi Jang**, Suhyun Chae, Jeeyong Lee, and U Kang
    PLOS ONE, March, 2023

8. **Accurate Bundle Matching and Generation via Multitask Learning with Partially Shared Parameters**
    Hyunsik Jeon, **Jun-Gi Jang**, Taehun Kim, and U Kang
    PLOS ONE, March, 2023

7. **Falcon: Lightweight and Accurate Convolution Based on Depthwise Separable Convolution**
   Jun-Gi Jang*, Chun Quan*, Hyun Dong Lee, and U Kang
   Knowledge and Information Systems (**KAIS**), Jan., 2023 (* equal contribution)

6. **Static and Streaming Tucker Decomposition for Dense Tensors**
   Jun-Gi Jang and U Kang
   ACM Transactions on Knowledge Discovery from Data (**TKDD**), Feb., 2023
   It is the extended version of the conference paper C2.

5. **Large-scale tucker Tensor factorization for sparse and accurate decomposition**
   Jun-Gi Jang*, Moonjeong Park*, Jongwuk Lee, and Lee Sael
   The Journal of Supercomputing, May, 2022. (* equal contribution).
   It is the extended version of the conference paper C3.

4. **Finding Key Structures in MMORPG Graph with Hierarchical Graph Summarization**
   Jun-Gi Jang, Chaeheum Park, Changwon Jang, Geonsoo Kim, and U Kang
   ACM Transactions on Knowledge Discovery from Data (**TKDD**), Feb., 2022

3. **Time-Aware Tensor Decomposition for Sparse Tensors**
   Dawon Ahn, **Jun-Gi Jang**, and U Kang
   Machine Learning, Sep. 27, 2021

2. **S3CMTF: Fast, accurate, and scalable method for incomplete coupled matrix-tensor factorization**
   Dongjin Choi, **Jun-Gi Jang**, and U Kang
   PLOS ONE, June 28, 2019.

1. **High-Performance Tucker Factorization on Heterogeneous Platforms**
   Sejoon Oh, Namyong Park, **Jun-Gi Jang**, Lee Sael, and U Kang
   IEEE Transactions on Parallel and Distributed Systems (**TPDS**), Apr. 1, 2019

PATENTS

United States

1. MEMORY TEST DEVICE
   U Kang, Suhyun Chae, Jongmin Park, **Jun-Gi Jang**, Jeeyong Lee, Sooyeon Shim, and Vladimir Egay
   Filed on Apr. 2023

Korea

9. Apparatus and Method for Decomposing Irregular Tensors
   Jun-Gi Jang, Jeongyoung Lee, Yong-chan Park, and U Kang
   Filed on July 2023

8. Method and Apparatus for Decomposition for Temporal Irregular Tensors with Missing Values
   Jun-Gi Jang, Jeongyoung Lee, Jiwon Park, and U Kang
   Filed on Jan. 2023

7. Apparatus and Method for Tensor Analysis
   Jun-Gi Jang, and U Kang
   Filed on May 2022

6. Apparatus and Method for Tensor Analysis
   Jun-Gi Jang, and U Kang
   Filed on Jul. 2021

5. Fast Partial Fourier Transform Method and Computing Apparatus for Performing the Same
   Yongchan Park, **Jun-Gi Jang**, and U Kang
   Filed on Apr. 2021; Registered on Mar. 2023

4. Method for Tensor Decomposition with Temporal Dependency and Apparatus Therefor
   Dawon Ahn, **Jun-Gi Jang**, and U Kang
   Filed on Mar. 2021; Registered on Nov. 2022

3. Method for Decomposing Tensor and Apparatus for Performing the Same
   Jun-Gi Jang, and U Kang
   Filed on Sep. 2020; Registered on Sep. 2022

2. Data Analysis Method and Apparatus for Sparse Data and Apparatus For Performing the Same
   Donjing Choi, **Jun-Gi Jang**, and U Kang
   Filed on Nov. 2017; Registered on Mar. 2020

1. Apparatus and Method for Processing Data
   Jun-Gi Jang, Dongjin Choi, Jinhong Jung, and U Kang
   File on Jan. 2018; Registered on Jan. 2020

TEACHING EXPERIENCE

Lead T.A., M2177.004900 Theory and Lab of IoT, AI, and Big Data @ SNU	Spring 2020
T.A., M2177.004900 Theory and Lab of IoT, AI, and Big Data @ SNU	Fall 2019
T.A., M2177.004900 Theory and Lab of IoT, AI, and Big Data @ SNU	Spring 2019
T.A., M1522.001400 Introduction to Data Mining @ SNU	Spring 2018
T.A., M1522.000900 Data Structure @ SNU	Fall 2017

INVITED TALKS

The Future of Data Workshop 2023, KCC DB Society, KIISE	Jun. 2023
SNU AI Summer School 2022, SNU	Aug. 2022
Korea Computer Congress 2022, KIISE	Jun. 2022
AI Retreat, SNU AI Institute (AIIS)	Apr. 2022
EIRIC Seminar, EIRIC	Mar. 2022
TechTalk, NAVER	Feb. 2022
Future Gauss Lecture, Gauss Labs	Feb. 2022
TechTalk, HYPERCONNECT	Jan. 2022
Korea Software Congress 2021, KIISE	Dec. 2021
AI Retreat, SNU AI Institute (AIIS)	Nov. 2021
Regular Seminar, Qatar Computing Research Institute (QCRI)	Sep. 2021
Korea Computer Congress 2020, KIISE	Jul. 2020
NC AI DAY, NC Soft	Jan. 2019
Korea Software Congress 2018, KIISE	Dec. 2018
Samsung AI Forum, Samsung	Sep. 2018

PROFESSIONAL SERVICES

Program Committee

SDM	2024
AAAI	2024
KDD	2023
BigComp	2021 - 2022

Reviewer

TIST journal	2023
Machine Learning journal	2023
TPDS journal	2023
DAMI journal	2023

External Reviewer

KDD	2019 - 2022
WWW	2019 - 2021
ICLR	2021
NeurIPS	2020 - 2022
CIKM	2018 - 2019
ICDM	2018
WSDM	2018