DONGJIN CHOI

www.djchoi.xyz ⋄ skywalker5@snu.ac.kr
Data Mining Laboratory, 301-519 at Seoul National University
1 Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea 08826 (151-744)

RESEARCH INTEREST

Scalable Data Mining Algorithms, Latent Variable Model, Interpretable Tensor Decomposition, Parallel Computation

EDUCATION

Seoul National University, Seoul, Korea — Mar 2011 - Feb 2018 (Expected)
B.S. in Electrical and Computer Engineering
Minor in Computer Science & Engineering
Overall GPA: 3.9/4.3, Upper GPA: 4.0/4.3

Korean Minjok Leadership Academy, Hoengseong, Korea — Mar 2008 - Feb 2011
Natural Science Department

RESEARCH EXPERIENCE

Data Mining Laboratory — Aug 2016 - Present
Research Intern (Advisor: Professor U Kang, Lee Sael) — *Seoul National University*

· Proposed a novel scalable CMTF algorithm using parallelization and caching computation results
  - Contributed as the first author for a paper uploaded to Arxiv
· Apply network-regularized to a patient genetic mutation dataset
  - Contributed as the first author for a paper submitted to *Bioinformatics*
· Proposed a novel algorithm for sampling based dynamic tensor decomposition
  - Contributed as a co-author for a paper submitted to *PLoS ONE*
  - Awarded as bronze prize for Humantech paper award @*Samsung*
· Proposed a novel system and algorithms to track SVD of multiple time series data
  - Contributed as a co-author for a paper submitted to *ICDE'18* (under revision)
· Performed projects on building occupancy recognition and prediction for Intelligent Building Systems
  - Developed wireless sensor communication module using Arduino micro-controller boards
  - Developed a pedestrian simulator model
  - Implemented *ResNet*-based transfer learning network

Knowledge Discovery & Database Laboratory — Dec 2015 - Feb 2016
Research Intern (Advisor: Professor Kyuseok Shim) — *Seoul National University*

· Implemented a previously proposed strategy on boosting subgraph isomorphism algorithms
· Found out useful vertex relationships in a graph and exploited them to boost up currently existing *backtracking algorithms* for subgraph isomorphism
· Implemented distributed algorithms using Hadoop MapReduce

PUBLICATIONS

- **Dongjin Choi**, Jun-gi Jang, and U Kang, *Fast, Accurate, and Scalable Method for Sparse Coupled Matrix-Tensor Factorization*, arXiv:1708.08640 [cs.NA]
- **Dongjin Choi**, and Lee Sael, *SNeCT: Integrative cancer data analysis via large scale network constrained Tucker decomposition* arXiv:1711.08095 [cs.NA], (submitted to *Bioinformatics*)
- Jun-gi Jang, **Dongjin Choi**, and U Kang, *Fast and Memory Efficient Method for Time Ranged Singular Value Decomposition*, (submitted to ICDE'18, under revision)
- Jungwoo Lee, **Dongjin Choi**, and Lee Sael, *CTD: Fast, Accurate, and Interpretable Method for Static and Dynamic Tensor Decompositions*, arXiv:1710.03608 [cs.NA], (submitted to *PLoS ONE*)

PATENTS

- U Kang, **Dongjin Choi**, and Jun-gi Jang, *Data Analysis Method and Apparatus for Sparse Data*, Korean Patent 10-2017-0158496, 2017.

AWARDS AND HONORS

- **Bronze Prize**, Humantech Paper Award, top 6 in the CS division, *Samsung* Feb 2017
- **National Science & Technology Scholarship**, top 0.7% in Korea, KOSAF 2011 - 2016
- **Kwon Oh-Hyun Alumni Scholarship**, additional 2,500$/semester, *Samsung* 2015 - 2016
- **Best Term Paper Award**, top 1 in the course *Writing in Science & Technology* Dec 2015
- **Silver Medal**, Korean Mathematical Olympiad (ranked<100th), *Korean Mathematical Society* 2009

PROJECTS

People flow recognition and prediction Sep 2017 - Present
With Sovico, Samsung (Advisor: Professor U Kang) *Seoul National University*

- Implemented a pedestrian simulator model
- Proposed isolated kernel CNN model for people flow recognition
- Proposed multi-scale skip connected and graph-structured RNN model for people flow prediction

Room occupancy detection for HVAC control Aug 2016 - Sep 2017
With Smart Campus, Samsung (Advisor: Professor U Kang) *Seoul National University*

- Developed IoT sensor kits using Arduino board
- Implemented server storage system with TCP communication via Wi-Fi
- Applied ResNet-based CNN network with transfer learning for real-time recognition of people count and activity
- Proposed RNN network for future-time prediction of people count and activity

Deep learning course term project Mar 2017 - June 2017
Term project for graduate deep learning course M1522.001600 *Seoul National University*

- Human identification from image data
- Crawled and collected human image data
- Identify human characteristics (gender, ethnicity) from images, with high accuracy using transfer learning technique

SKILLS

Languages & Libraries	C++, MATLAB, Python	(**Advanced**)
	Tensor Toolbox, Armadillo, JAMA	
	Java, Perl, R, HTML	(**Intermediate**)
	Keras, TensorFlow	
English Profiency	**TOEFL**	
	107 (Reading : 28, Listening : 30, Speaking : 23, Writing : 26)	
	GRE General	
	Verbal 152 (56%), Quantitative 170 (97%), Writing 4.0 (60%)	

MILITARY SERVICE

Cheolwon, 6th Division Aug 2012 - May 2014
Republic of Korea Army

- Served as TOW missile shooter
- Dispatched to USAG Yongsan for UFG 2013 as military operations English interpreter
- Awarded for excellence in the Ranger's Program 2014
- Awarded for teaching a colleague to pass Korean GED examination

EXTRACURRICULAR ACTIVITIES

- **Dream camp**, served as an advisor and mentor for students in Seongwon high school Aug 2015
- **Teach for Korea**, tutored for high school students in low-income household for total 314 hours with a volunteer group 2011 - 2012
- **GLPS**, worked as english debate TA in a summer camp for elementary and middle school students Summer 2011
- **Rania mission school**, served for volunteer work by teaching various activities (origami, solving mathematical quizzes) to young students in low income households, *Kolkata, India* Summer 2011

REFERENCE

U Kang, Associate Professor

- Department of Computer Science and Engineering
  Seoul National University, Seoul, Korea
  Building 301 - Room 502, 1 Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea 08826 (151-744)
  ukang@snu.ac.kr

Kyuseok Shim, Professor

- Department of Electrical and Computer Engineering
  Seoul National University, Seoul, Korea
  Building 302 - Room 531, 1 Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea 08826 (151-744)
  kshim@snu.ac.kr

Lee Sael, Assistant Professor

- Department of Computer Science
  SUNY Korea, Incheon, Korea
  Academic Building B422, 119 Songdo Moonwha-ro, Yeonsu-Gu, Incheon, Republic of Korea 21985
  sael@sunykorea.ac.kr