BEOMYEOL JEON

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EDUCATION

University of Illinois Urbana-Champaign, Urbana, IL   May 2024 (Expected)
Ph.D in Computer Science. GPA: 3.97/4.0

Seoul National University, Seoul, Korea   Feb 2016
B.S. in Computer Science and Engineering *(summa cum laude)*. GPA: 4.0/4.3

The University of Texas at Austin, Austin, TX   Jan 2015 – May 2015
Undergraduate Exchange Student in Computer Science. GPA: 3.91/4.0

WORK EXPERIENCE

University of Illinois Urbana-Champaign   Aug 2016 – Present
Graduate Research Assistant. Advisor: Prof. Indranil Gupta   *Urbana, IL*
· Designed and built a fast device placement (model parallelism) system for ML graphs (e.g., Transformers, LLMs, etc.) via an algorithmic approach. Our system is integrated with TensorFlow and generates expert-level quality placements $654\times-206K\times$ **faster** than the state-of-the-art ML-based approaches (published in SoCC '20) [code].
· Designed and built an ML inference framework that autoscales inference jobs with time-varying workloads via probabilistic time-series prediction and relaxed optimization (in collaboration with IBM Research). Our system is integrated with Ray Serve on a Kubernetes cluster and achieves $1.7\times-22\times$ **lower SLO violations** than state-of-the-art systems.
· Designing and building an autotuning Graph Neural Network (GNN) training framework on AWS Lambda via simulation and various optimization techniques (e.g., gray-box optimization, RL, etc.)

Nokia Bell Labs   Jun 2019 – Aug 2019
Research Intern. Mentor: Dr. Muntasir Raihan Rahman and Dr. Anwar Walid   *Murray Hill, NJ*
· Designed a privacy-preserving decentralized aggregation protocol for federated learning by controlling communication patterns in ADMM-based aggregation (published in FOGML '21)[code].

Google   May 2018 – Aug 2018
Software Engineering Intern. BigQuery Team. Mentor: Dr. Mohsen Vakilian   *Kirkland, WA*
· Built an autotuner for BigQuery system configuration parameters to improve performance via black-box optimization.

Google   May 2017 – Aug 2017
Software Engineering Intern. Earth Engine Team. Mentor: Dr. Hector Gonzalez   *Mountain View, CA*
· Designed and built a prototype framework for large-scale GIS batch computation on top of Google Cloud Dataflow.

Somansa   Jan 2011 – Dec 2013
Researcher [Full-time, in fulfillment of mandatory military service duty]   *Seoul, Korea*
· Developed a network data loss prevention (DLP) solution, Mail-i, and a database audit and protection (DAP) solution, DB-i, by analyzing network packets through reverse engineering.

PUBLICATIONS

Beomyeol Jeon, Yongjoo Park, Indranil Gupta. *Automating Resource Allocation for Graph Neural Network Training on Serverless Frameworks*, Currently Under Preparation.

Beomyeol Jeon, Chen Wang, Diana Arroyo, Alaa Youssef, Indranil Gupta. *SLO-aware ML Inference Autoscaler for Fixed-Size On-Premises Clusters*, Under Review at a Conference.

Beomyeol Jeon*, S M Ferdous*, Muntasir Raihan Rahman, Anwar Walid. *Privacy-preserving Decentralized Aggregation for Federated Learning*. FOGML 2021. [link, code, extended version]

Beomyeol Jeon, Linda Cai, Pallavi Srivastava, Jintao Jiang, Xiaolan Ke, Yitao Meng, Cong Xie, Indranil Gupta. *Baechi: Fast Device Placement of Machine Learning Graphs*. SoCC 2020. [`link`, `code`, `extended version`]

Woo-Yeon Lee, ... **Beomyeol Jeon**, et al. *Automating System Configuration of Distributed Machine Learning*. ICDCS 2019. [`link`, `code`]

Byung-Gon Chun, ..., **Beomyeol Jeon**, et al. *Apache REEF: Retainable Evaluator Execution Framework*. ACM TOCS, Volume 35 Issue 2. [`link`]

Byung-Gon Chun, Brian Cho, **Beomyeol Jeon**, Joo Seong Jeong, Gunhee Kim, Joo Yeon Kim, Woo-Yeon Lee, Yun Seong Lee, Markus Weimer, Gyeong-In Yu. *Dolphin: Runtime Optimization for Distributed Machine Learning*. ICML MLSys 2016 workshop. [`link`]

SELECTED TECHNICAL SKILLS

Languages	C/C++, Python, Go, Java, C#
Frameworks & Platforms	PyTorch, TensorFlow, Ray, Kubernetes, Docker, AWS EC2, AWS Lambda
Libraries	Boost, Eigen, OpenMP, CUDA, ZeroMQ, Protocol Buffers, Scikit-learn, TBB
Databases	Redis, Microsoft SQL Server
Tools	Git, Vim, Visual Studio Code, Bash/Zsh, GitHub, Pandas