Sheng Yang

PROFESSIONAL EXPERIENCE

Senior Data Scientist at Udemy, Inc. **WA, U.S.A July 2024 - Present**

- Implemented optimizations to SQL queries and AWS instance runtime, aiming to improve on-call quality
- Collaborated with the data analysis team to profile runtime and identify optimization opportunities
- Parallelized SQL queries, created independent SQL jobs for bottlenecks, and optimized batch sizes
- Improved instance runtime by **95% reduction (17x faster)** AWS instances, saving **~$10,000/yr**

Senior Data Scientist at Walgreens Boots Alliance **WA, U.S.A May 2023 - April 2024**

Built personalized recommendation systems for the Walgreens online retail website

- Impact: increased top-100 **purchase recall by 30%** with **Transformer** models
- Engineered **user history features** and conducted **TB** data preprocessing using **PySpark on Azure**
- Enhanced semantic quality of item representation by language models providing **5%** metric (NE) gain
- Developed pipelines for user history embeddings using LLM (**Mistral**) and **LangChain**
- Improved the retrieval efficiency of user/item embeddings by 20% using **Faiss**

Research Scientist at Meta Platforms, Inc. **WA, U.S.A Aug 2022 - Jan 2023**

Developed time series modules for the FB user history models

- Feature engineering: analyzed **time series features** distribution using **SQL**
- Modeling: implemented temporal-encoding modules for multi-head attention models in **TorchRec**
- Experimented with attention-based model variants on **distributed training clusters**
- Identified the computing bottleneck of the modules with cross-functional teams

Machine Learning Ph.D. intern at Facebook Inc. **CA, U.S.A May 2021 - Aug 2021**

Developed auxiliary objectives for the FB Reels ranking system

- Impacts: increased **0.5 % engagement time** compared to a baseline model
- Designed **auxiliary objective modules** using **objective-oriented concepts** for scalable development
- Implemented the modules for attention-based models with **sparse (embedding) and dense features**
- Applied data augmentation techniques of (two towers) retrieval models
- Implemented relevant metrics allowing for real-time monitoring of the performance of models
- Worked with **cross-functional teams** (infrastructure, retrieval modeling) to explore modeling directions

Graduate Researcher at the University of Illinois Urbana-Champaign **IL, U.S.A Aug 2016 - Aug 2022**

Reconstructing nuclear collision event for a 2D array detector

- Impact: the developed ML model is included in a 2.5 M collaborative proposal to the DOE
- Developed a **Python** framework for digital signal processing of detector signals
- Built a data pipeline on a High Throughput Computing (HTC) distributed cluster
- Implemented and optimized multiple **convolutional neural networks** in **Keras**

SKILLS

Programming language: Python, C++, SQL (Presto, Hive)
Framework: PyTorch, Keras, Numpy, Pandas, Scikit-learn, Scipy, Matplotlib, Linux, Git,
Domain skills: Deep learning, Recommendation system, Natural language processing, AWS, Pattern Recognition, Data Science, Data Analysis, Statistics, Hugging Face

EDUCATION

University of Illinois at Urbana–Champaign **IL, U.S.A**
Ph.D., Nuclear, Plasma, and Radiological Engineering, GPA: 3.72/4.00 Aug. 2016 - Aug. 2022

National Tsing-Hua University **Hsinchu, Taiwan**
Master of Science in Nuclear Science, GPA: 4.01/4.30 Jun. 2014
Bachelor of Science in Physics and Nuclear Science, GPA: 3.48/4.00 Jun. 2012

PUBLICATIONS

Yang, S., Tate, A., Longo, R., Gilarte, MS, Cerutti, F., Mazzoni, S., Grosse Perdekamp, M., Bravin, E., Citron, Z., Kühn, B., Nürnberg, F., et al., "Optical Transmission Characterization of Fused Silica Materials Irradiated at the CERN Large Hadron Collider", Under review

Yang, S., Tate, A., Longo, R., Gilarte, MS, Cerutti, F., et al., "Na^{22} Activation Level Measurements of Fused Silica Rods in the LHC Target Absorber for Neutrals Compared to Simulations", Phys. Rev. Accel. Beams, 2022.

Yang, S., Li, M., Reed, M., Hugg, J., Chen, H., Abbaszadeh, S., "Effect of CZT System Characteristics on Compton Scatter Event Recovery." IEEE Transactions on Radiation and Plasma Medical Sciences, no. 1 (2019): 91-97

TECHNICAL REPORTS

Y. Bashan, Z. Citron, B. Cole, M. Grosse Perdekamp, A. Hase, R Karnam, T. Koeth, C. Lantz, S. Lascio, R. Longo, D. MacLean, A. Mignerey, M. Murray, M. Nickel, M. Phipps, S. Popescu, N. Santiago, A. Sickles, S. Shenkar, P. Steinberg, A. Tate, Q. Wang, **S. Yang**. "A Radiation-Hard Zero Degree Calorimeter for 3 ATLAS and CMS Experiments in the HL-LHC era." (2020): 57.

Y. Bashan, **S. Yang,** et al. "A Run 4 Zero Degree Calorimeter for CMS", No. CERN-LHCC-2021-025. 2021

CONFERENCE PRESENTATION

Yang, S., Liu, Y-W H.,"The Collimator Design of Accelerator-based Epithermal Neutron Beam for Boron Neutron Capture Therapy", 16th International Congress on Neutron Capture Therapy, Helsinki, Finland (2014)

Yang, S., et al., "Impact of channel configurations on the bandwidth of a cross-strip electrode with multiple ASICs", Symposium on Radiation Measurements and Applications (2018)

Longo, R.**, Yang, S.,** et al. "Deep Learning to reconstruct the reaction plane in Heavy Ion collisions", 5th ATLAS Machine Learning Workshop (2021)

Przybyl, A., Longo, R., Grosse Perdekamp, M., MacLean, D., Mohammed Rafee, F., Tate, A., **Yang, S.**, Lantz, C., Hoppesch, M., Housenga, M., "A Novel Reaction Plane Detector for the ATLAS Experiment", the American Physical Society (2022)

Ma, X., Longo, R., Grosse Perdekamp, M., **Yang, S.**, et al. "Optical Transmission Measurements of Fused Silica Materials Irradiated to MGy Scale at the CERN Large Hadron Collider.", the American Physical Society (2022).