Sheshansh Agrawal

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Experience

Senior Applied Scientist, Microsoft Bing Ads *Mar 2022 - Present*

- Leading research and deployment of language models for embedding based selection at Microsoft retail advertising.
- Built a large-scale contrastive-learning infrastructure - CORGEE, for training multimodal, multilingual embedding models. Leveraged: C#, Scope, SQL (offline data processing); Cython, Numba, Cnpy (efficient dataloading); Pytorch, Flash-attention, DeepSpeed (efficient training). The infrastructure has been used to scale to upto 256 GPUs with good GPU utilization. It is the goto framework for training retrieval language models at Microsoft retail shopping and ads.
- Models trained with CORGEE serve hundreds of millions of ads every day across Bing, MSN and other Microsoft surfaces. CORGEE embeddings, are state-of-the-art globally within Microsoft, and are utilized by dozens of scientists from multiple teams throughout Microsoft. This has also enabled unification of stack across multiple ad-types across all markets in Bing.
- Optimized models to be inferred online using onnxruntime. This saved over 20% of serving CPU capacity *across* Bing Ads and was appreciated with FY'23 engineering excellence award.

Research Engineer, Microsoft Research India *Aug 2019 - Mar 2022*

Built and published the first personalized dense retrieval technique XPERT. Also worked on extreme multi-label classification algorithms and their applications across Microsoft products.

Education

B.Tech. (Hons.) in Computer Science and Engineering *2015-2019*

Indian Institute Of Technology Bombay, Mumbai, India *CGPA: 9.68/10*

Minor : Applied Statistics and Informatics

Department Rank: 3/123

Publications

- XPERT: Personalized Retrieval over Millions of Items **SIGIR 2023**
  H.Vemuri, Sheshansh Agrawal*, S.Mittal*, D.Saini, A.Soni, M. Varma*
- ECLARE: Extreme classification with label graph correlations **WWW 2021**
  Anshul Mittal, N. Sachdeva, Sheshansh Agrawal, S. Agarwal, P. Kar, Manik Varma
- DECAF: Deep extreme classification with label features **WSDM 2021**
  Anshul Mittal, Kunal Dahiya, Sheshansh Agrawal, D. Saini, S. Agarwal, P. Kar, Manik Varma
- Lexicographic ranking supermartingales: an efficient approach to termination of probabilistic programs **POPL 2018**
  Sheshansh Agrawal, Krishnendu Chatterjee, Petr Novotný

Awards and Positions

- **FY23 Q4, FY21 Q4 Engineering Excellence Award**, Microsoft Ads.
- Represented India at International Science Olympiads
  - **Silver medal** at International Physics Olympiad, Mumbai, India. 2015
  - **Gold medal** at International Olympiad in Astronomy & Astrophysics, Suceava, Romania. 2014
  - **Bronze medal** at International Olympiad in Astronomy & Astrophysics, Volos, Greece. 2013
  - **Silver medal** at International Astronomy Olympiad, Seoul, South Korea. 2012
- **AP (Advanced Performer)** grade in Foundations of Machine Learning, Data Structures and Algorithms, Calculus, Physical Chemistry, Quantum Physics courses.
- **Institute Academic Award**, IIT Bombay. 2016
- **Ranked 4/ 1.4 million** candidates in JEE Mains, India wide engineering entrance examination 2015.
- Elected general secretary of Computer Science department association. 2018-19