Soumyajit De

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Self-motivated Machine Learning Engineer with 9 years of experience, specialising in driving business-impactful projects. Proficient in planning, deriving data-driven insights, and delivering metric-focused iterative improvements through fast innovation.

Education

IIT Bombay
MTech in Computer Science (ML)
2014 | Mumbai, IN

WB UTech
BTech in Computer Science
2011 | Kalyani, IN

Technical Skills

Languages: C/C++, C#/Java, Python, SQL, Bash, Haskell
Libraries & Tools: MapReduce (Scope), PyTorch, Keras, Huggingface, ONNX, Pandas, Matplotlib, SciPy, NumPy, SkLearn, LangChain, PySpark, Jupyter, Docker, Kubernetes, Tensorboard, WandB, Azure Data Factory, Azure Data Lake Storage, Azure Data Lake Analytics, Distributed FS (Cosmos), Kafka, BLAS, LaPack, Intel MKL, GDB, JDB, Valgrind, Perf, RESTful APIs, OAuth, Git, Conda, Pip
Experience: Click-prediction, LLM, Generative modeling, GPT prompting

Links

Github: github.com/lambday
LinkedIn: linkedin.com/in/desoumyajit

Honours

10th-Board Exam: State Rank: 1st Recipient of Chief Minister's **Gold Medal**.

Quarterly Excellence Awards (Q4 2019-2020, Q1 2021-2022)

Publications

[1] D. J. Sutherland, H. Tung, H. Strathmann, S. De, A. Ramdas, A. J. Smola, and A. Gretton, *Generative models and model criticism via optimized maximum mean discrepancy*, in 5th International Conference on Learning Representations, ICLR 2017, Toulon, France, April 24-26, 2017, Conference Track Proceedings, 2017. Link.

Industry Experience

MICROSOFT | Senior Data & Applied Scientist, Search Advertising R&R
Dec 2018 - Present | Bangalore, IN
Responsible for improving the clickability & quality of Search Ad-Extensions & Dynamic Search Ads (DSA) across EMEA, APAC & LATAM markets.

- Introduced click-prediction (CP) models for extensions & DSA headlines utilising historical signals, contributing **3-6% revenue** across tiers.
- Developed a global feature-store, upgrading on the region-specific design, extending ranking service **from 5 to 100+ markets**.
- Incorporated semantic query-context signals into a Siamese BERT model for CP, resulting in a **+3% ΔAUC** on impressed ads.
- Curated an offline selection approach for autogenerated extensions using historical query-context features. Explpoited marginalised scores from a semantic CP model while allowing for random exploration. Scaled & globalised this pipeline, **enabling daily ranking of $\sim$10B items**.
- Addressed a combinatorial variant ranking problem by formulating a theoretical approach, conducting large-scale hypothesis testing, defining features, and using DCNv2 model. This resulted in an offline **+4% ΔAUC** on impressed ads.
- Designed an E2E personalisation paradigm leveraging long-term and real-time user-interest signals to provide a personalised ranking scheme, making the items more relevant and diverse.

ORACLE | Senior Software Engineer, Cloud Infrastructure
Jul 2014 – Apr 2016, Sep 2016 – Dec 2018 | Bangalore, IN

- Designed & implemented a majority of the Marketplace REST API.
- Employed batch-processing & application-layer caching to reduce the response times of multi-page GET-calls from $\sim$**2 mins to** $\sim$**10 secs**.
- Implemented a seamless onboarding workflow of existing SaaS customers to PaaS service offerings within a tenant automation framework.

Research Experience

UNIVERSITY COLLEGE LONDON | Research Assistant, Gatsby Unit
May 2016 – Jul 2016 | London, UK

- Devised a cache-friendly algorithm for non-parametric two-sample tests involving MMD estimator that showed $\sim$**300x speed-up** over naïve implementation.
- Proposed & implemented a multi-threaded variant that outperformed competing algorithms, built with state-of-the-art solvers, by **reducing the runtime tenfold**.
- Co-authored a paper [1] where this is utilised in a discriminator for GANs.

Open Source Experience

SHOGUN ML LIBRARY | Core Contributor | 94,221 LOC changes
2013, 2014, 2016 | Google Summer of Code

2016 Co-mentored in designing Shogun's Linear Algebra library.
2014 Designed & developed a framework for kernel-based hypothesis tests.
Added a family of feature selection algorithms on this framework.
2013 Developed a framework for computing rational approximations of linear-operator functions where exact computation is impractical.
Implemented an estimator for log-det of high-dimensional, sparse matrices arising in the log-likelihood computation of large Gaussian densities.