

**Uthaipon “Tao” Tantipongpipat**  
**Data Scientist / Machine Learning Researcher**

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## SUMMARY

Data Scientist and machine learning researcher with 5-year industry experience after a Theoretical Computer Science PhD. Led a team on ML development by planning and executing quarterly milestones in LLM and ranking and recommendation systems. Has driven successful cross-functional projects (resulting in 3+ billions press click-read) and impacted engineers by applying research to set company-wide metrics. Track record (10+) of top-tier peer-reviewed publications in ML, algorithms, and statistics, with emphasis on algorithms, ML fairness and privacy, and optimization.

## EXPERIENCE

**Agoda, Bangkok, Thailand - Lead Data Scientist**

Jan 2023 - Now

### Front-end LLM

- Led quarterly planning across Product and Engineering; owned and drove the design of the LLM agentic flow in collaboration with C-level stakeholders. Applied internal causal inference tools based on counterfactual analysis to estimate \$3M in annual profit and \$3M in annual loyalty value from initiatives under my leadership.
- Discovered and led LLM security enhancement project, identifying and resolving prompt leak vulnerabilities while improving model performance (-3% hallucination rate). Proactively discovered upcoming modeling issues and fixed to get \$360k annual value impact instead of -500k.
- Drove supply data analysis resulting in 9% chatbot answer uplift, translating to 30k bookings or \$550k total value annually (\$300k margin and \$250k loyalty value).
- Spearheaded and aligned automated LLM evaluation framework, improving mean F1 score from 66% to 87% and isolating a 15% ambiguous user segment, enhancing labeling clarity and discovering new behavioral insights.

### Ranking

- Implemented and optimized TensorFlow Decision Forest model, and transformed and optimized RNN with attention dataset, improving offline validation metrics by 1-2%.
- Originated and led loyalty-personalized ranking via user-specific parameter; additionally reduced MSE by 50% for loyalty and profit prediction through a new statistical model to support ranking optimization.
- Designed, optimized, and maintained Scala Spark data pipelines with resource-efficient architectures.
- Built a CTR model, reducing RMSE by 75%, to support revenue optimization for the advertising team.

**Researcher (contractor), remote - Human Rights Data Analysis Group and Carnegie Mellon**

*University*

May 2024 - Now

- Analyze the impact of different covariate combinations on racial disparities in recidivism risk assessment models and examine heterogeneity in covariate effects across sites.

**Twitter (now X), remote US - Machine Learning Researcher**

Jun 2020 - Jan 2023

- Led Twitter's image cropping algorithmic bias audit resulting in a published academic paper and \$1.5M press ad equivalency and 3B readership from 500 news articles in 49 countries. Further follow-up work by team members resulted in additional \$1.4M, 2.7B reads, and 800 articles from 47 additional countries, and contributed to the decision to remove the algorithm in production.

- Proposed a 13-18% precision-recall video classification model improvement with no additional cost to partnering team to fix offensive misclassifications on Tweet topic annotations and discovered correlation bias with demographics despite a lack of private individual data.
- Established a data-driven guideline for company-wide engineers to adopt an inequality metric in A/B statistical testing and got business approval from leadership to finally deploy the metric.
- Published two papers in a social computing conference and one in a data science journal.

### **Microsoft, Redmond WA - Research Intern**

May 2019 - July 2019

- Implemented privacy guarantee on large-scale natural language processing models (RNNs and LSTMs) to protect against personal deidentification due to model usage. Led to a NeurIPS paper.
- Researched private correlation clustering algorithm, private submodular optimization, and surveyed literature for private stochastic gradient descent for training deep models.

## **EDUCATION**

### **Georgia Institute of Technology, Atlanta GA**

Aug 2016 - May 2020

*PhD in Algorithms, Combinatorics, and Optimization, School of Computer Science. Outstanding (Best) Student. GPA 4/4*

### **University of Richmond, Richmond VA**

Aug 2012 - May 2016

*BS in Mathematics, with Thesis (Algebraic Combinatorics). Merit-based full-ride scholarship. GPA 3.97/4*

### **University of Oxford, Oxford UK**

Oct 2014 - Jun 2015

*Study Abroad Program in Mathematics and Computer Science. First Class (A+ equivalent).*

## **SELECTED PUBLICATIONS**

- Measuring Disparate Outcomes of Content Recommendation Algorithms with Distributional Inequality Metrics Patterns Journal 2022
- Image Cropping on Twitter: Fairness Metrics, their Limitations, and the Importance of Representation, Design, and Agency CSCW 2021
- Fast and Memory Efficient Differentially Private-SGD via JL Projections NeurIPS 2021
- Differentially Private Mixed-Type Data Generation for Unsupervised Learning IISA 2021
- The Price of Fair PCA: One Extra Dimension NeurIPS 2018

See Google Scholar [https://scholar.google.co.th/citations?hl=th&user=nzO\\_5FMAAAJ](https://scholar.google.co.th/citations?hl=th&user=nzO_5FMAAAJ) for the full list.

## **SELECTED AWARDS**

- **Impact Recognition** Award, CSCW (the social computing conference) 2021
- **Best Reviewer** (top 10%) of NeurIPS (top-tier machine learning conference) 2019
- **1st Prize and People's Choice**, The Unlinkable Data Challenge, NIST, US Department of Commerce 2018
- **Honorable Mention** (top 2.5%), William Lowell Putnam Mathematical Competition 2015
- **Bronze Medal and Honorable Mention**, Asia-Pacific Mathematics Olympiad (APMO) 2010, 2011
- **Gold Medal and Bronze Medal**, IWYMIC International Mathematics Competition 2008, 2009
- **Two Gold Medal**, Thailand National Mathematical Olympiad 2008, 2009

## **SKILLS**

**Technical:** Python (pandas, numpy, scipy, sklearn), Scala, PySpark, Scala Spark, SQL (BigQuery, Impala), Java, C++, Tensorflow, PyTorch, Kubeflow, Hadoop/Vast, Git, GCP, Superset, Grafana, Mathematica

**Languages:** Thai (native); English (full proficiency)