

# Yuta Saito

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**Last Updated** June 1, 2020

## Research Interests

My research lies at the intersection of machine learning and causal inference called *counterfactual machine learning*. I am interested in the counterfactual nature of logged bandit feedback obtained from interactive systems, and ways of using biased real-world datasets to assist better decision making.

## Education

**2016 - Present** **Tokyo Institute of Technology**  
B.Eng. in Industrial Engineering and Economics  
Research Field: Counterfactual Machine Learning, Causal Inference, Information Retrieval

## Publications (refereed)

1. Yuta Saito and Shota Yasui. “**Counterfactual Cross-Validation: Stable Model Selection Procedure for Causal Inference Models**”, In *Proceedings of 37th International Conference on Machine Learning (ICML2020)*, 2020.
2. Yuta Saito. “**Asymmetric Tri-training for Debiasing Missing-Not-At-Random Explicit Feedback**”, In *Proceedings of the 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR2020)*, 2020.
3. Yuta Saito, Gota Morishita, and Shota Yasui. “**Dual Learning Algorithm for Delayed Conversions**”, In *Proceedings of the 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR2020)*, 2020 (short paper).
4. Yuta Saito, Hayato Sakata, and Kazuhide Nakata. “**Cost-Effective and Stable Policy Optimization Algorithm for Uplift Modeling with Multiple Treatments**”, In *Proceedings of the 2020 SIAM International Conference on Data Mining (SDM2020)*, 2020.
5. Yuta Saito, Suguru Yaginuma, Yuta Nishino, Hayato Sakata, and Kazuhide Nakata. “**Unbiased Recommender Learning from Missing-Not-At-Random Implicit Feedback**”, In *Proceedings of the 13th International Conference on Web Search and Data Mining (WSDM2020)*, 2020.
6. Yuta Saito, Hayato Sakata, and Kazuhide Nakata. “**Doubly Robust Prediction and Evaluation Methods Improve Uplift Modeling for Observational Data**”, In *Proceedings of the 2019 SIAM International Conference on Data Mining (SDM2019)*, 2019.

## Workshop Papers (refereed)

1. Yuta Saito. “**Offline Recommender Learning Unsupervised Domain Adaptation Meets**”, *The first forum for newcomers to ML co-located with NeurIPS (NewInML2019)*, 2019.

2. [Yuta Saito](#). “**Unbiased Pairwise Learning from Implicit Feedback**”, *NeurIPS 2019 Workshop on Causal Machine Learning (CausalML2019)*, 2019.

## Preprints and Under Review Papers

1. [Yuta Saito](#). “**Dual Matrix Factorization for Recommendation with Missing-Not-At-Random Implicit Feedback**”.
2. [Yuta Saito](#). “**Unbiased Recommender Learning from Biased Graded Implicit Feedback**”.
3. [Yuta Saito](#). “**Doubly Robust Estimator for Ranking Metrics with Post-Click Conversions**”.
4. [Yuta Saito](#). “**Unbiased Pairwise Learning from Biased Implicit Feedback**”.
5. Masahiro Nomura and [Yuta Saito](#) (equal contribution). “**Multi-Source Unsupervised Hyperparameter Optimization**”.

## Work and Internship Experiences

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| <b>Apr 2020 - Present</b>  | <p>Sony Corporation, Shinagawa, Tokyo, Japan<br/> <i>Research Partner (under an outsourcing agreement)</i></p> <p>Empirical study on heterogeneous causal effect prediction and its application to treatment optimization.</p>                                       |
| <b>Apr 2020 - Present</b>  | <p>CyberAgent, Inc., AI Lab, Shibuya, Tokyo, Japan<br/> <i>Research Partner (under an outsourcing agreement)</i></p> <p>Research on counterfactual machine learning. Published one short paper and two workshop papers at top-tier machine learning conferences.</p> |
| <b>Apr 2020 - Present</b>  | <p>SMN Corporation, a.i lab., Osaki, Tokyo, Japan.<br/> <i>Research Partner (under an outsourcing agreement)</i></p> <p>Research on debiasing methods for recommender systems and learning-to-rank.</p>  |
| <b>Feb 2020 - Present</b>  | <p>ZOZO Technologies, Inc., Aoyama, Tokyo, Japan<br/> <i>Research Partner (under an outsourcing agreement)</i></p> <p>Empirical study on off-policy evaluation and its application to a large-scale fashion e-commerce recommender system.</p>                       |
| <b>Nov 2019 - Present</b>  | <p>Jinch Co., Ltd., Suginami-ku, Tokyo, Japan<br/> <i>Part-time Researcher</i></p> <p>Research on off-policy evaluation (joint with Yusuke Narita).</p>  |
| <b>Mar 2019 - Jun 2019</b> | <p>Nakata Lab, Tokyo Institute of Technology, Meguro-ku, Tokyo, Japan.<br/> <i>Research Assistant</i></p> <p>Research on uplift modeling.</p>  |
| <b>Dec 2017 - Sep 2019</b> | <p>SMN Corporation, a.i lab., Osaki, Tokyo, Japan.<br/> <i>Research Internship</i></p> <p>Research on uplift modeling and recommender systems. Published three full papers at top-tier machine learning conferences.</p>   |

## Professional Activities

### Conference Oral Presentations

- Feb 2020** International Conference on Web Search and Data Mining (WSDM)  
*“Unbiased Recommender Learning from Missing-Not-At-Random Implicit Feedback”*
- Dec 2019** NeurIPS Workshop on Causal Machine Learning  
*“Unbiased Pairwise Learning from Implicit Feedback”*
- May 2019** SIAM International Conference on Data Mining (SDM)  
*“Doubly Robust Prediction and Evaluation Methods Improve Uplift Modeling for Observational Data”*

### Selected Invited Talks

- Oct 2019** Mitsubishi UFJ Research and Consulting / Metrics Work Consultants Inc., Minato-ku, Tokyo, Japan  
*“Intesection of Causal Inference and Machine Learning: An Overview”*
- Jul 2019** Sony Corporation., Osaki, Tokyo, Japan  
*“Recent Topics on Counterfactual Machine Learning”*
- May 2019** CyberAgent, Inc., AdTech Studio., Shibuya, Tokyo, Japan  
*“Unsupervised Domain Adaptation and Its Application to CTR Prediction”*

## Languages

Japanese (native), English

## Referees

Available upon request.