Yohei Nishimura

Ph.D. Candidate, Department of Marketing, University of Wisconsin-Madison

Google Scholar ◇ GitHub ◇ LinkedIn ◇ Personal Website

Education

University of Wisconsin-Madison Madison

Ph.D. Candidate in Business, Quantitative Marketing Sep, 2023 – May, 2027 (expected)

Committee: Neeraj Arora (Chair, Professor, Wisconsin School of Business, Marketing Department)

Masakazu Ishihara (Associate Professor, Stern School of Business, Marketing Department)

Remi Daviet (Assistant Professor, Wisconsin School of Business, Marketing Department)

Ishita Chakraborty (Assistant Professor, Wisconsin School of Business, Marketing Department)

Zhuoxin Li (Associate Professor, Wisconsin School of Business, Operations and Information Management Department)

University of Wisconsin-Madison Madison

M.S. in Computer Science Sep, 2021 – May, 2023

Teikyo University Tokyo

B.E. in Computer Science Apr, 2019 – Mar, 2021

University of Tokyo Tokyo

B.A. in Economics Apr, 2003 – Mar, 2007

Research Interests

Substantive areas: Digital platforms, two-sided markets, digital marketing, human-AI collaboration, marketing research, advertising

Methods: Generative AI, deep learning for vision and text data, machine learning, reinforcement learning, structural models, Bayesian statistics

Doctoral Dissertation / Publications / Working Papers

Doctoral Dissertation:

1. **Match or Content? Decomposing Total Engagement Gain into Match Reallocation and Content Creation on Micro-Influencer Platforms** (Solo-authored)

Published Work:

2. **Leveraging Generative Artificial Intelligence to Create Visual Content in Digital Advertising** (with R. Daviet, 10 citations)
   Marketing Science *(Forthcoming)*

3. **AI-Human Hybrids for Marketing Research: Leveraging LLMs as Collaborators** (with N. Arora and I. Chakraborty, 230 citations)
   Journal of Marketing *(Vol 89, 2025), Winner, 2025 AMA/Marketing Science Institute/H. Paul Root Award*

4. **Gain Consumer Insight With Generative AI** (with N. Arora and I. Chakraborty, 1 citation)
   *Invited paper based on the **Journal of Marketing** article above.*
   ***MIT Sloan Management Review** (Summer, 2026)*

5. **Human-AI Hybrids: The New Power in Marketing Research** (with N. Arora and I. Chakraborty)
   *Invited paper based on the **Journal of Marketing** article above.*
   ***NIM Marketing Intelligence Review** (Vol 18(1), 36-41, 2026)*

Work in Progress:

6. **Generative Priors for Conjoint Analysis: Leveraging LLMs for Data-Scarce Estimation**
   (with N. Arora)

7. **Separating Negotiation Costs from Bargaining Power: Evidence from a B2B Platform**
   (with M. Ishihara)

Teaching Experience

University of Wisconsin-Madison

- Instructor, *Generative AI and Marketing* — Spring 2027 (Planned)
- Teaching Assistant, *Foundations of Statistical Learning for Business Analytics* (MSBA/MBA) Fall 2025
- Teaching Assistant, *Capstone Consulting Practicum* (MSBA/MBA) — Spring 2023, Spring 2024

Waseda University

- Invited Guest Lecturer, *Applied Quantitative Marketing* — July 2025

Professional Experience

Product Manager / Marketing Manager

Mercari Inc., Tokyo	2020 - 2021
Michael Inc., Tokyo (Co-Founder and COO)	2017 - 2020
Donuts Ltd., Tokyo	2016 - 2017

Strategic Consultant / Analyst

YCP Holdings, Tokyo	2013 - 2016
Barclays Japan, Tokyo	2011 - 2012
Ministry of Economy, Trade, and Industry, Tokyo	2007 - 2011

Presentations

- **Wisconsin School of Business**, Research Roundtable in Marketing — Dec 2025
- **Wisconsin School of Business**, Symposium on Artificial Intelligence in Marketing — May 2024
- **Waseda University** — May 2024

Honors and Awards

Winner, AMA/Marketing Science Institute/H. Paul Root Award, Journal of Marketing	2026
AMA-Sheth Doctoral Consortium Fellow	2026

Grants

WSB AI Hub for Business Research Grant (with Neeraj Arora), $7,000 2026

Selected Coursework

Computer Science:

- Machine Learning; Reinforcement Learning; Theory of Reinforcement Learning; Dynamic Programming; Mathematical Machine Learning (audited)
- Deep Learning for Visual Recognition; Learning-Based Methods for Computer Vision; Learning-Based Image Synthesis & Manipulation;
- Advanced Natural Language Processing; Building Interactive Systems

Economics, Quantitative and Modeling Methods:

- Ph.D. Microeconomics I–II (Part II audited); Industrial Organization I–II (audited)
- Ph.D. Econometrics I–II; Applied Econometrics; Quasi-Experimental Designs
- Empirical Models in Marketing; Quantitative Marketing; Bayesian Statistics; Semiparametric Methods

Skills

- Numerical Programming: Python, Julia, R, PyTorch, NumPy, Pandas, BoTorch, Stan, PyMC
- Software Development: Go, Node.js, Google Apps Script, C, Java, JavaScript
- Database/System: SQL, NoSQL, MongoDB, Linux, Google Cloud
- Language: English (Fluent), Japanese (Native)

References

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Paper Summaries

Doctoral Dissertation:

Match or Content? Decomposing Total Engagement Gain into Match Reallocation and Content Creation on Micro-Influencer Platforms

Influencer marketing platforms have grown into a multi-billion dollar industry by matching brands with niche influencers who generate high engagement rates. What ultimately matters for these platforms is the total engagement that sponsored posts generate. It is determined by who is matched with whom, and what sponsored content an influencer creates for the brand they are matched with. However, no prior work jointly examines which of the two contributes more to total engagement. Moreover, even with such a decomposition in hand, economic models alone cannot specify the concrete form that the sponsored content should take.

To answer these questions, using proprietary data from a micro-influencer marketing platform, I develop a joint model of two-sided selection and endogenous content creation, then calculate a benchmark that decomposes the total engagement gain into match reallocation and content creation. The central finding from the counterfactual analysis is that post-match content creation is a larger source of total engagement gain than match reallocation. Specifically, post-match adjustment optimization explains 74.9% of the total engagement improvement, while match reallocation explains 25.1%. To help realize these gains in practice, I integrate a generative image model to visualize what a sponsored post would look like for any hypothetical brand-influencer pair under the model's optimized content. This visualization helps influencers create sponsored content aligned with the model-implied optimal adjustments.

Published Papers

Leveraging Generative Artificial Intelligence to Create Visual Content in Digital Advertising *(Marketing Science, Forthcoming)*, with R. Daviet

Generative artificial intelligence (AI) for image synthesis has the potential to transform the digital advertising industry. However, a wide range of uncertainties persists regarding its integration into traditional advertising processes, including effective implementations, training methodologies, and achievable performance gains. Specifically, two core challenges limit its practical adoption: a search problem of finding high-performing visuals in a vast creative space, and an alignment problem of ensuring brand and campaign compatibility. This paper proposes a novel end-to-end framework that combines a generative AI model with two predictive Bayesian neural networks to identify high-performance and brand-acceptable visuals. We develop a cost-effective Bayesian active learning approach that simultaneously solves the dual objectives of performance and alignment. We test the framework in a live advertising campaign for an outdoor activities company. Our system generated a portfolio of visuals achieving a higher mean click-through rate and lower variance than creatives from both a professional human designer and a competing AI model optimizing purely for aesthetics. This research provides a validated methodology that bridges the gap between the theoretical potential of generative AI and its practical application, offering a cost-effective solution to the critical search and alignment problems in creative design.

AI-Human Hybrids for Marketing Research: Leveraging LLMs as Collaborators *(Journal of Marketing, Vol 89, 2025)*, with N. Arora and I. Chakraborty

Our central premise is that a human–LLM (large language model) hybrid approach leads to efficiency

and effectiveness gains in the marketing research process. In qualitative research, we show that LLMs can assist in both data generation and analysis; LLMs effectively create sample characteristics, generate synthetic respondents, and conduct and moderate in-depth interviews. The AI–human hybrid generates information-rich, coherent data that surpasses human-only data in depth and insightfulness and matches human performance in data analysis tasks such as generating themes and summaries. Evidence from expert judges shows that humans and LLMs possess complementary skills; the human–LLM hybrid outperforms its human-only or LLM-only counterpart. For quantitative research, the LLM correctly picks the answer direction and valence, with the quality of synthetic data significantly improving through few-shot learning and retrieval-augmented generation. We demonstrate the value of the AI–human hybrid by collaborating with a Fortune 500 food company and replicating a 2019 qualitative and quantitative study using GPT-4. For the empirical investigation, we design the system architecture and prompts to create personas, ask questions, and obtain responses from synthetic respondents. We provide road maps for integrating LLMs into qualitative and quantitative marketing research and conclude that LLMs serve as valuable collaborators in the insight generation process.

Work in Progress

Generative Priors for Conjoint Analysis: Leveraging LLMs for Data-Scarce Estimation *(with N. Arora)*
Reliable individual-level part-worth estimation in conjoint analysis typically requires many choice tasks per respondent, limiting field feasibility. We propose using large language models (LLMs) to construct personalized, informative priors for individual-level Bayesian estimation. We use an LLM to simulate diverse synthetic personas and obtain preliminary part-worths, then train a lightweight MLP to map persona text embeddings to part-worth vectors; at estimation time, each real respondent's embedded profile produces a personalized prior that anchors inference from the first response. In simulations spanning 27 conditions (noise level $\times$ description depth $\times$ question count), the method reduces mean squared error by 30–39% on average relative to standard hierarchical Bayes, with significant gains in every condition. In the field experiment, we will implement a 2×2 between-subjects design that crosses attribute complexity (a reduced 4-attribute design versus the full 8-attribute design) with D-optimal design initialization ($\beta_0 = 0$ versus an LLM-derived aggregate prior $\bar{\beta}_{\mathrm{LLM}}$), allowing us to test both estimation gains and design-efficiency gains from LLM-based priors. The study will recruit hundreds of respondents per cell and estimate individual-level part-worth parameters using Bayesian inference.

Separating Negotiation Costs from Bargaining Power: Evidence from a B2B Platform *(with M. Ishihara)*
We study price formation on a business-to-business wholesale platform that offers sellers two channels to transact with retailers: a posted price and a private chat-based negotiation channel. Despite the availability of buyer-specific negotiation, the vast majority of sellers employ uniform posted prices, and the few who adjust prices do so through discrete discount tiers rather than continuous, buyer-specific bargaining. Motivated by these facts, we propose a structural model that separately identifies buyers' negotiation costs and bargaining power, which are typically confounded in observed transaction prices. Our identification strategy exploits three features unique to this platform: (i) the simultaneous observability of posted-price purchases and negotiated purchases for the same product, (ii) clickstream data that reveal buyers' outside options through

their browsing of competing sellers, and (iii) detailed chat logs, which, when embedded into dense vector representations, allow us to reconstruct the sequential bargaining process. Counterfactual analyses will quantify how much transaction volume would rise if negotiation costs were halved, allowing us to evaluate whether platform investmentssuch as UI redesigns or LLM-assisted suggestion of negotiation phrasescan increase platform surplus.