Applicant's Information

- Name: Chenshuo Sun
- Email: csun@stern.nyu.edu
- Phone: +1 646-763-7725
- Address: 44W 4th St, New York, NY 10012
- Enrolled School: New York University Stern School of Business
- Enrolled Program: Ph.D.
- Fields of study: Information Systems
- Years of Enrollment: 2017.09 – 2022.5 (expected)
- Years Completed: 2 Yrs. (now in the 3rd Yr.)

Research Interests and Projects

Dear NBER, thanks for providing this great opportunity! I am Chenshuo Sun, an energetic third-year Ph.D. candidate in Information Systems at NYU Stern School of Business. I am applying the NBER Digitization Tutorial 2020 because my area of focus is highly aligned with it. My current research focus on two specific themes: (1) exploit state-of-the-art AI methods (e.g.. multi-view representation learning) to help companies draw a holistic view of consumer behavior and better predict consumer engagement in omnichannel environments; (2) leveraging causal inference approaches and experiments to understand how consumer behaviors are transformed by emerging technologies (e.g., voice-activated devices). These research interests have yielded three working papers at the top-notch business journals and ten talks at top conferences in the field.

The first research project aims at merging consumers' omnichannel behaviors leveraging embedding learning and multi-view learning. Our main findings show that the complementary-based data merger significantly outperforms using a single aspect of behavioral data and alternative data merging methods. The mechanism is that when online data are sparse, exploiting the proposed method prompts offline behavior to complement the online counterpart. Moreover, we conclude that without considering the characteristic of data into the equation, improperly combining multiple data sources may sometimes even backfire. Our proposed method be utilized for better similar user detection and engagement prediction. This work won a prize from the Marketing Science Institute (MSI).

The second project seeks to make use of the observed omnichannel trajectory data to better predict consumers' online and offline activities in the near future, and make the prediction results interpretable leveraging the Shapley value. We find that consumers' trajectory in one world can be used to improve the prediction of their future activities in the other world. On one side of the prediction, we can predict that a consumer will make a purchase online are 2.4 times as good as random, and the omnichannel behavioral data can explain 95.7%. Moreover, we find that consumers' offline trajectory are even more crucial predictors than online state-dependency to predict their future online purchasing, shopping, and travel activities. On the other side of the prediction, we can predict that a consumer will pass by a shopping mall offline is 3 times as good

as random, and the omnichannel behavioral data can explain 78.5%. This work in under the second-round review at *Information Systems Research*, one of the flagship journals in the field.

In the third project, we collaborate with Alibaba to study the effect of voice AI on consumer purchase and search behavior. We leverage a field experiment and a novel algorithm, instrumental forest, to estimate the heterogeneous treatment effect of voice shopping. We find that the usage of voice AI device adoption leads consumers to purchase more quantities and spend more. The positive impact on purchase is more pronounced for high-income, younger, and more active consumers. Moreover, Voice AI does not cannibalize other channels; rather it boosts purchases through PC and mobile channels. The adoption of voice-activated shopping also leads to a larger search breadth and search depth. This work is now under the first-round review at *Marketing Science*, one of the flagship journals in the field.

I really look forward to expanding and deepening my research under NBER's auspices!