Thomas Lilly
tlilly@uw.edu
(240) 429-5760

Digital Economics and AI Tutorial Application

Graduate Study

After matriculation in Autumn 2024, I am a second-year Marketing PhD student at the University of Washington's Foster School of Business. I have also completed PhD courses in Duke University's Economics and Computation master's program from 2022 to 2024. Before entering academia, I worked as a Production Engineer at Instagram on machine learning infrastructure, an experience that informs both the computational orientation of my research and my interest in digital platforms. My graduate coursework spans three complementary areas: economics, machine learning, and marketing applications. Each of these areas provides a different analytical lens and toolkit that shapes my approach to studying digital platforms and creator behavior.

I have completed the first-year microeconomics and econometrics sequence offered by the Economics Department at the University of Washington. This training provides the theoretical foundations necessary for modeling strategic behavior, evaluating causal effects, and understanding equilibrium dynamics on digital platforms. My methodological training includes probabilistic machine learning, reinforcement learning, natural language processing, and generative modeling. These courses have equipped me with tools for large-scale data processing, representation learning, and algorithmic evaluation, critical skills for research involving high-dimensional social media data. Within marketing, I have taken doctoral seminars in quantitative marketing, empirical models of online behavior, and judgment and decision-making. Together, these three areas provide a substantial foundation for my research interests in analyzing

how social media creators make strategic decisions to produce, promote, and adapt content within algorithmically mediated environments.

Research Interest

My primary research interests lie at the intersection of quantitative marketing, social media, and machine learning, with a focus on how creators strategically manage content, self-promotion, and audience development. I am particularly interested in how creators learn from their own experience, learn from peers, and adapt promotional and content strategies in the face of uncertainty. I have some preliminary work in this domain, which aims to measure the effectiveness of self-promotion call-to-actions (CTAs) on YouTube and identify learning behavior. I am also interested in studying creator collaboration decisions and platform monetization strategy.

A project I started in the first year of my doctoral program focuses on CTA usage on YouTube. I am assembling a large-scale dataset that contains detected self-promotion and sponsorship CTAs. I currently have engagement data and metadata for 3.3 million videos from over 6,600 channels spanning from 2022 to 2025. I have preliminary estimates that indicate certain CTA types drive "like" actions, and I plan to expand the analysis to include subscription, comment, and "view" actions. I plan to model CTA inclusion as a dynamic decision driven by both personal experience and social learning from peers' performance. The project aims to identify how creators update beliefs about the effectiveness of different CTA strategies and how these adaptations shape downstream engagement. One remaining challenge for this project is determining the best way to incorporate the video and transcript data into the models of

engagement outcomes. The Digital Economics and AI Tutorial will be instrumental in progressing this project to the next stage.

I am also interested in examining how creators choose collaboration partners. While prior research addresses influencer networks and diffusion, little is empirically known about how creators evaluate audience overlap, content complementarities, and algorithmic visibility when forming partnerships. Finally, I am also interested in how platforms make strategic decisions about monetization and product features that affect the visibility of creator sponsorships. Prior theoretical work does not incorporate substitution between ads and sponsorships, nor does it account for platform features that enable automatic skipping of sponsorship segments. I aim to explore these questions using analytical approaches and reinforcement learning simulations that can approximate equilibrium behavior.

The NBER Digital Economics and AI Tutorial would significantly strengthen my ongoing project and help shape my future projects by strengthening my foundation in platform economics and AI-based empirical tools.