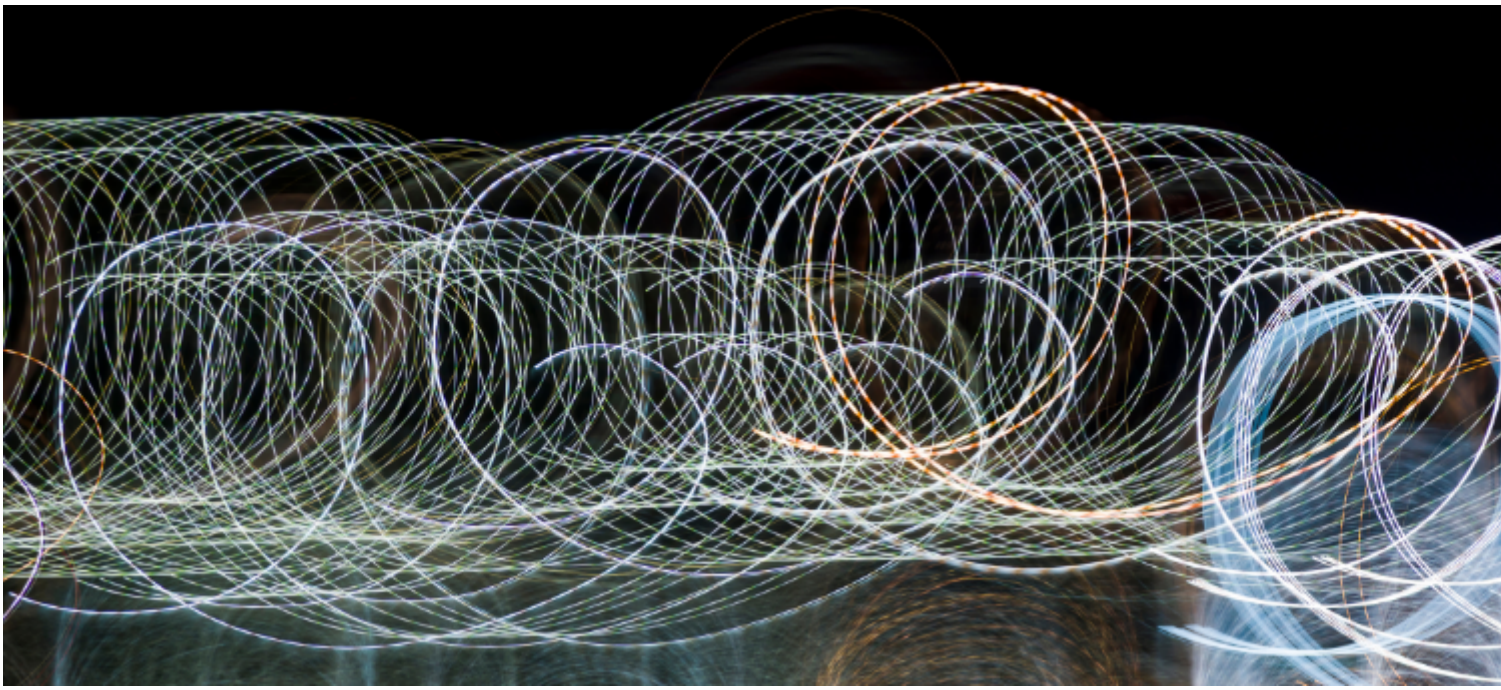
AI Psychometrics and Complexity Science



We use traditional and advanced computational methods, including NLP, to study digital discourse, exploring belief updating, emotional decay, online polarization, and LLM psychometrics. Leveraging semantic embeddings, we gain insights into language structures to understand online behaviour and societal impact.

Summary

We employ both traditional and cutting-edge computational methods, including natural language processing (NLP), to analyze various aspects of digital discourse. Our research explores many different phenomena including how individuals update their beliefs in response to new information, the patterns of emotional decay in social media interactions, and the dynamics of online polarization.

Additionally, we conduct psychometric evaluations of large language models (LLMs) and leverage semantic embeddings to gain deeper insights into linguistic structures and meaning representation. Through a genuinely multidisciplinary approach, we aim to better understand the evolving landscape of online behavior and its broader societal implications.

Currently, we are working on **SYNTHPOP - SYNTHetic Surveys for POPulation Insights**, where we explore the use of digital traces as complementary tools to traditional surveys with LLMs, working to ensure valid applications. In psychometrics, we leverage semantic embeddings to reconstruct survey structures,

while in complexity science, we utilize LLMs for games, social simulations with LLM agents, and modelling rich interactions.

Objectives

- Analyze digital discourse using computational methods, including NLP.
- Study belief updating, emotional decay in social media, and online polarization.
- Conduct psychometric evaluations of LLMs and explore semantic embeddings.
- Investigate digital traces as complementary tools to traditional surveys (SYNTHPOP).
- Use LLMs for games, social simulations, and modelling complex interactions.
- Adopt a multidisciplinary approach to understand online behavior and its societal impact.

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