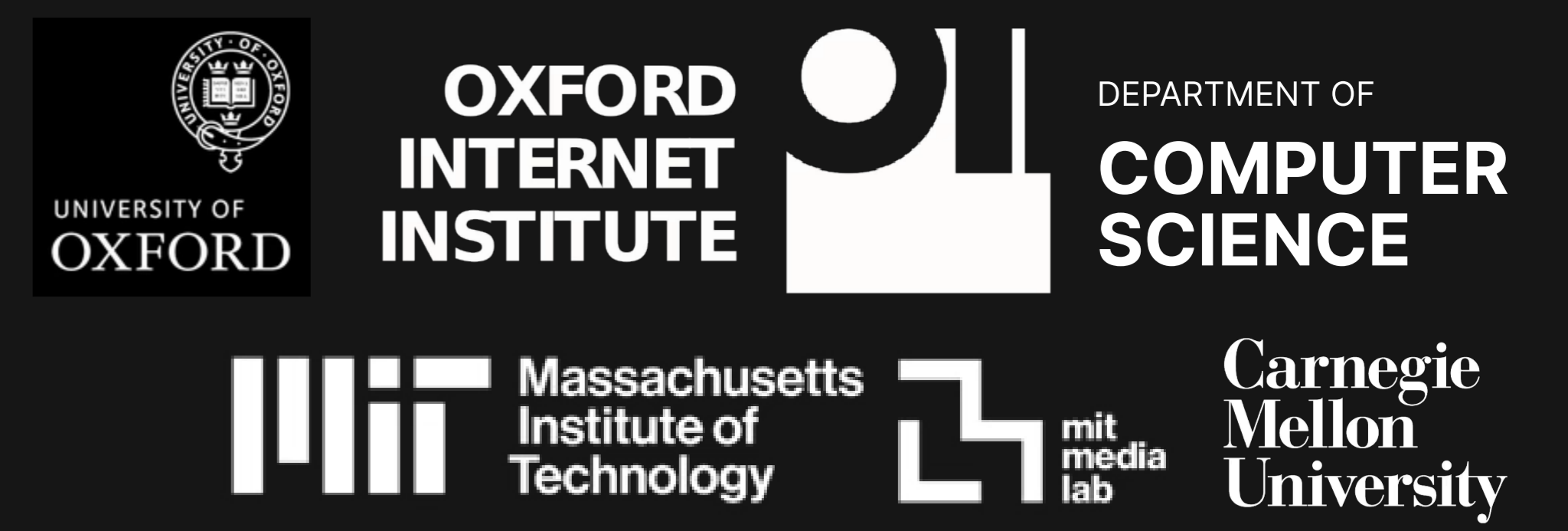


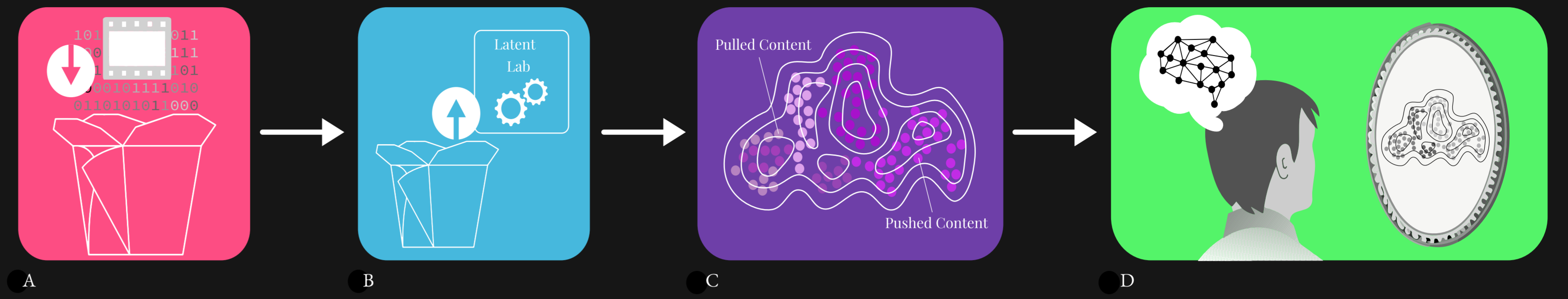
Algorithmic Mirror is an interactive visualization tool that simulates the hidden profiling practices of social media platforms. Rather than offering dashboards of quantitative metrics or metadata counts, Algorithmic Mirror generates an interactive, explorable landscape: a speculative “profile” of young people’s digital traces. By turning opaque inferences into interactive spatial metaphors, the tool invites reflection on how children’s online footprints may be silently transformed into profiles, and how inhabiting such mirrors might alter one’s sense of self.



# Algorithmic Mirror

Helping Adolescents See and Shape Their Algorithmic Selves

Yui Kondo, Kevin Dunnell, Isobel Voysey, Qing Hu, Victoria Paesano, Phi H Nguyen, Qing Xiao, Jun Zhao, Luc Rocher

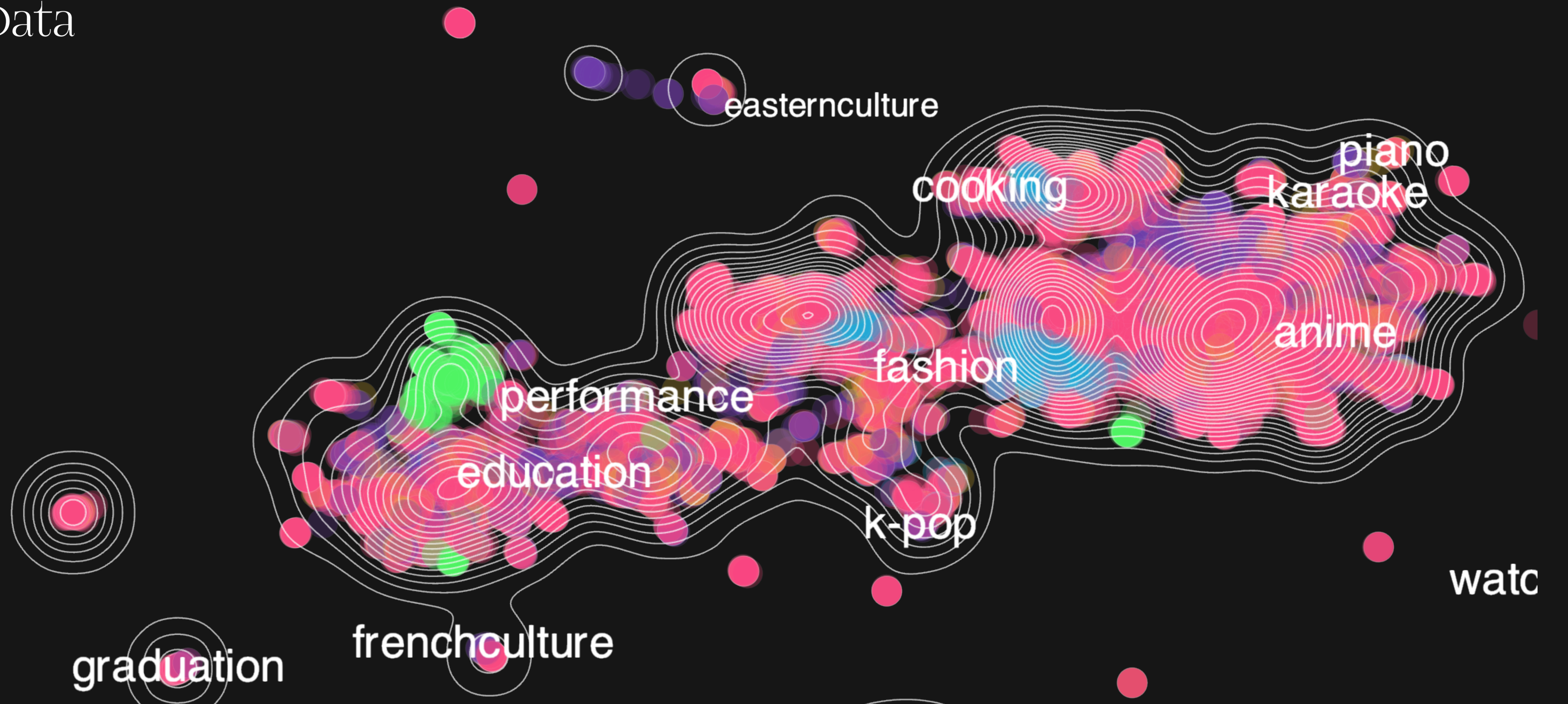


Four-step workflow for reflective exploration of YouTube recommendations in Algorithmic Mirror: (A) Export watch history via Google Takeout, (B) Process via LLM-driven semantic analysis — video descriptions are embedded using OpenAI’s text-embedding-ada-002 and clustered via UMAP, with GPT-4 generating inferred topic labels for each cluster — (C) Generate a semantic map of video topics and sources (pulled vs. pushed content), and (D) Reflect on interests and algorithmic recommendations—illustrated by interconnected nodes. Privacy is fundamental to Algorithmic Mirror’s design. Data is encrypted with secure per-participant access, and only video metadata and embeddings are stored. No PII is retained.

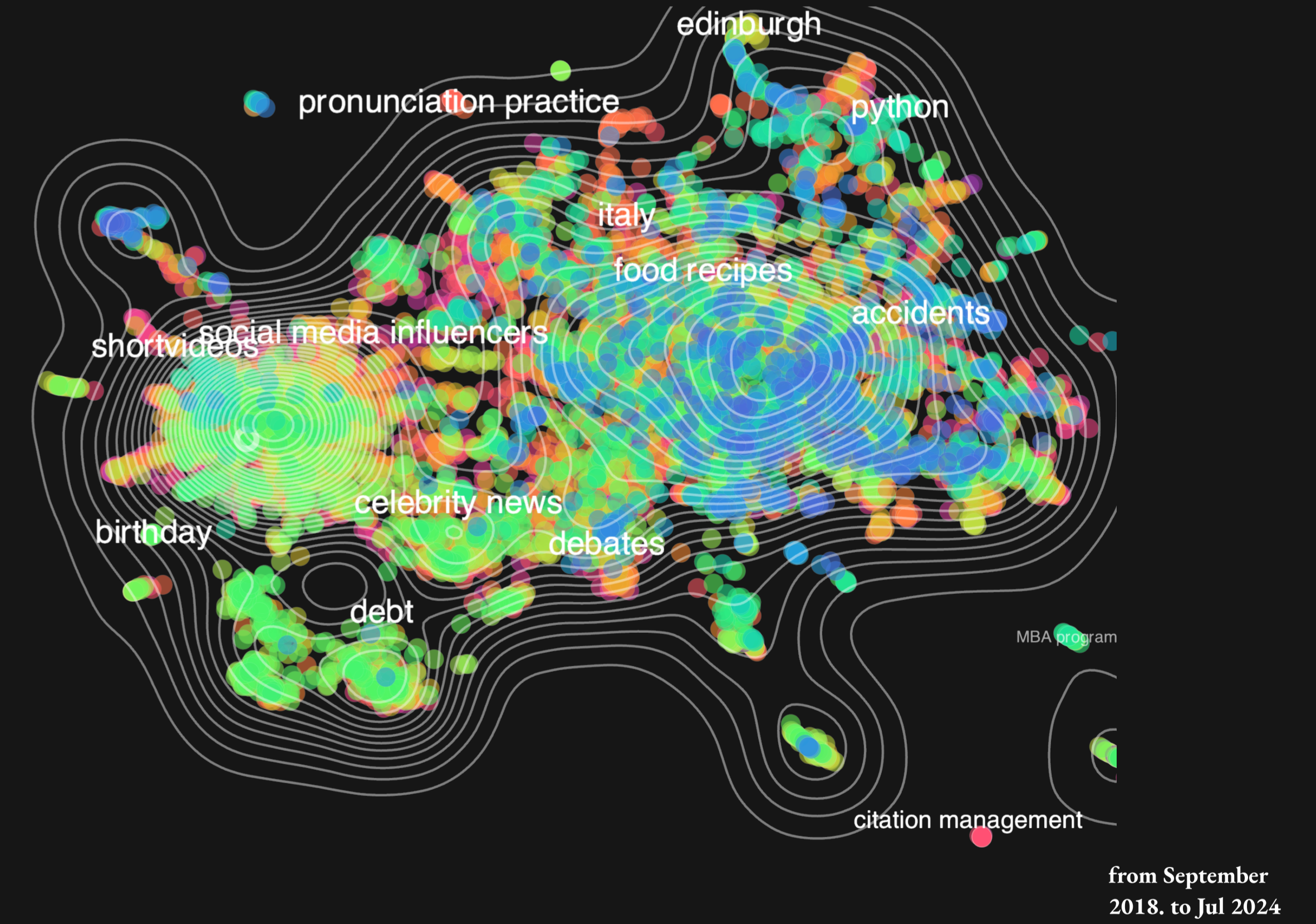
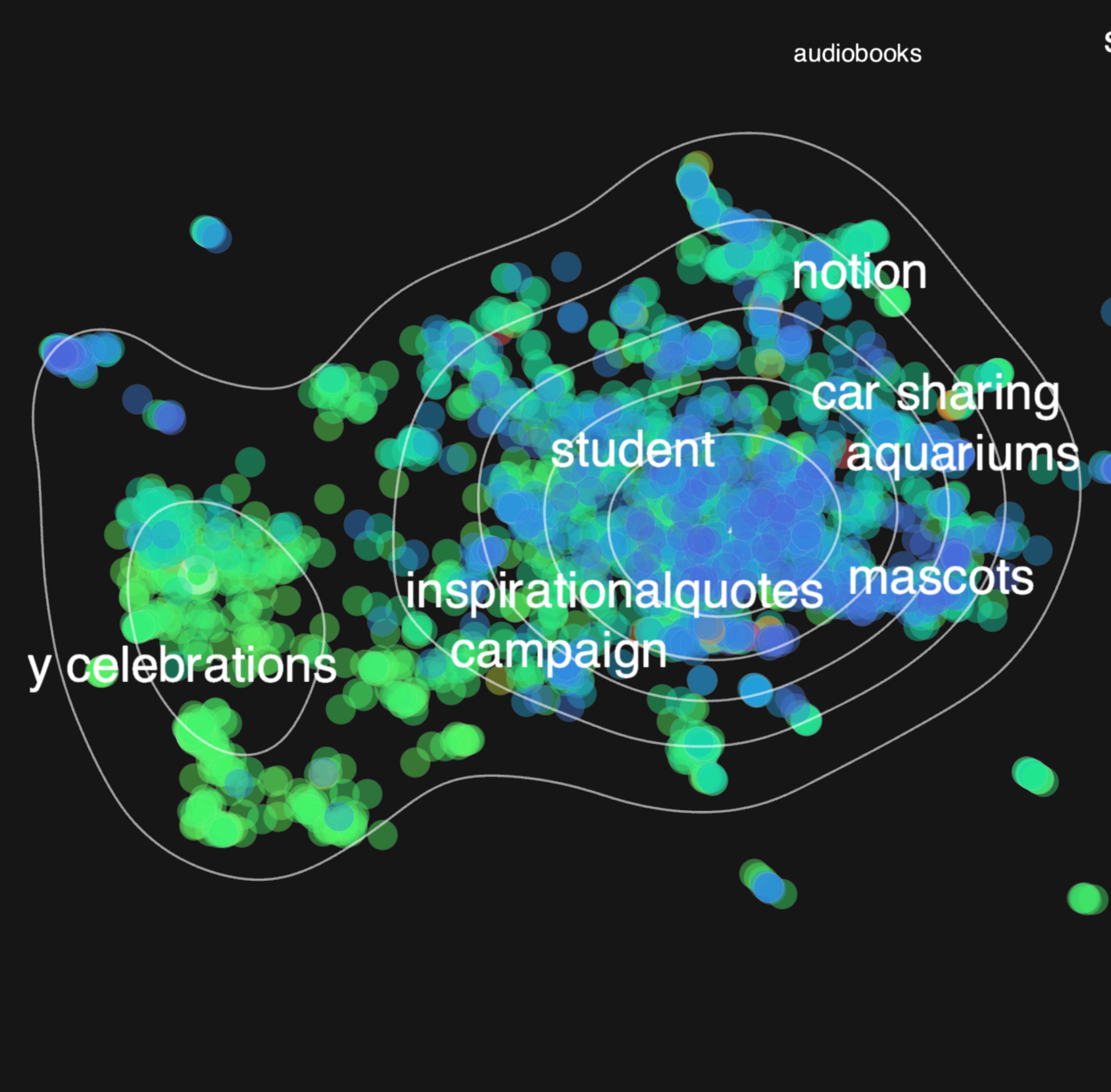
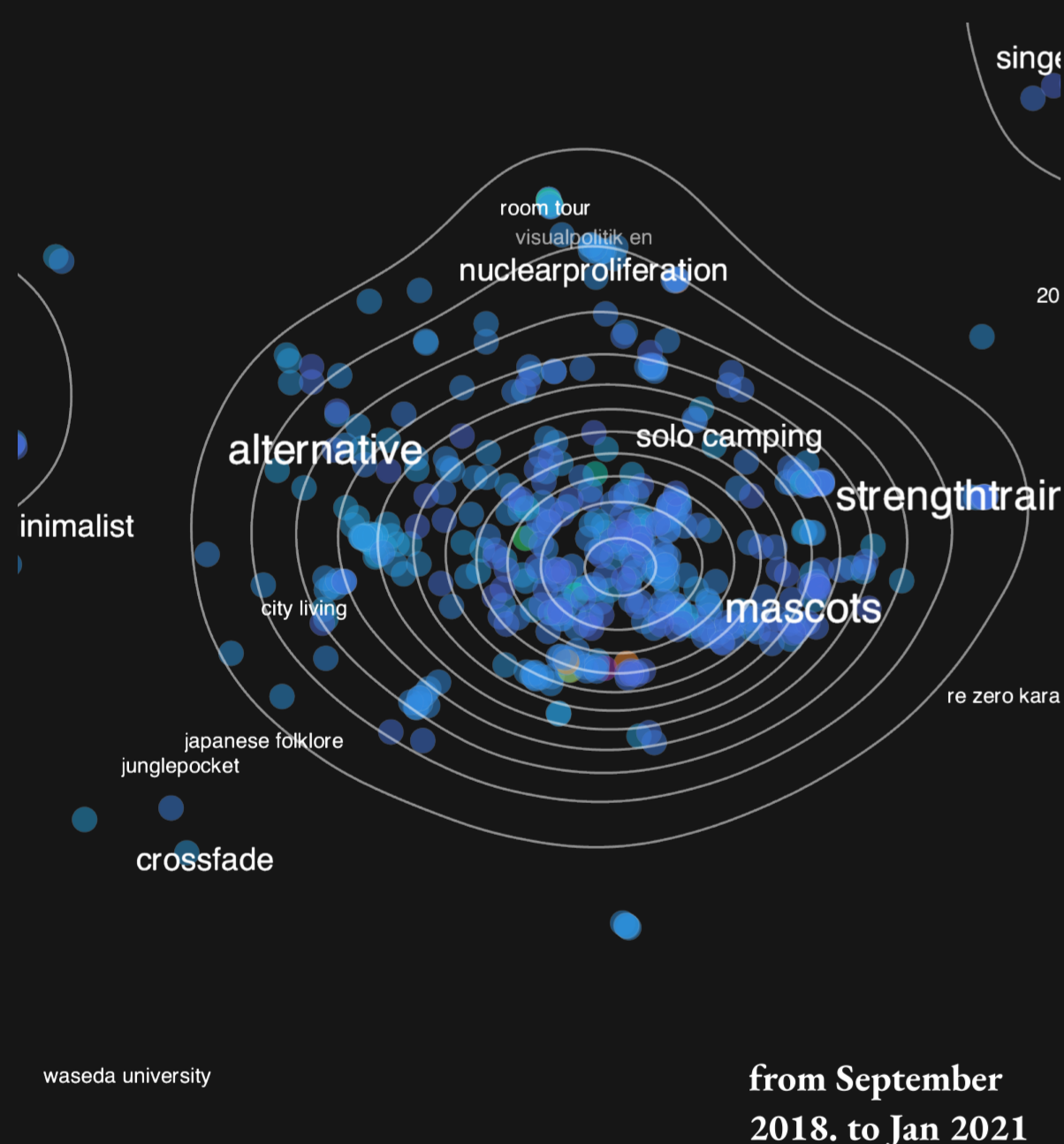
## I. Leveraging Personal Data

Algorithmic Mirror draws from users’ real data points, with each user contributing between 20,000 to 40,000 videos. Using LLM-driven semantic analysis, we transform this data into algorithmic inferences of their interests, grounding reflection in personally meaningful data rather than abstract examples.

“Has this mirror changed because I changed it or has it changed because the algorithm has changed it?” - P4



## II. Revealing Temporal Persistence

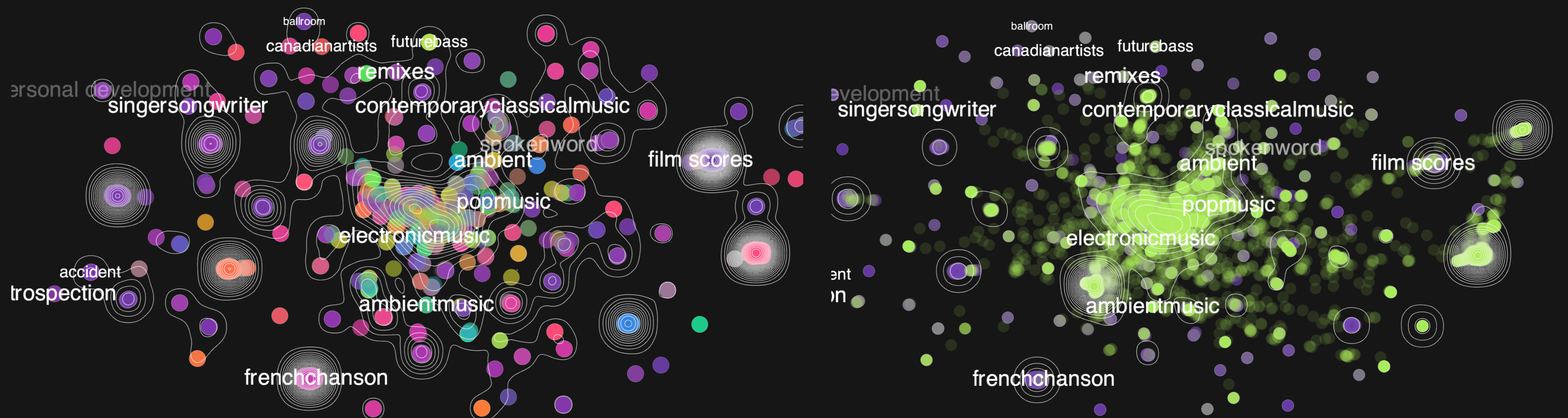


Algorithmic Mirror visualizes how user data accumulates over time rather than as isolated snapshots, revealing how platforms retain past behavior to construct durable identity profiles — particularly consequential for adolescents whose identities are still forming.

“I can imagine it can try to predict how my personality would evolve in the next five years or so [...] it’s a little scary” - P12

## III. Exposing Spatial Reach Across Platforms

Our design combines data from multiple platform, enabling adolescents to see how their interests are tracked and profiled across service boundaries. P2 realized how “different personalities exist within each platform,” suggesting that cross-platform visualization can help young people critically examine the fragmented yet interconnected nature of their algorithmic identities.



Algorithmic Mirror of Spotify listening history

Multi-platform Algorithmic Mirror overlaying YouTube viewing data onto Spotify listening history