Report on the outcomes of a Short-Term Scientific Mission[1]

Action number: CA21129

Grantee name: Dr Johannes B. Gruber

Details of the STSM

Title: Computational Analysis of Opinion Formation through Feedback Loops in Social Media Networks

Start and end date: 09/09/2025 to 13/09/2025

Description of the work carried out during the STSM

During the Short-Term Scientific Mission at VU Amsterdam (September 9-13, 2025), we successfully initiated a collaborative methodological study on opinion-aware feedback mechanisms in social media networks. The research visit focused on developing computational approaches to analyze how algorithmic and human feedback loops influence opinion formation on the Bluesky platform.

The work progressed largely according to the planned timeline with three main activities:

Task I.I - Collaborative Brainstorming (September 10): We conducted intensive brainstorming sessions at VU to discuss methodological challenges in measuring opinion formation through feedback loops. These discussions established conceptual foundations for computational opinion dynamics analysis, focusing on two key aspects: (1) opinion exposure measurement across different algorithmic conditions, and (2) opinion formation assessment through knowledge acquisition and opinion development tracking.

Task I.II - Research Infrastructure Development (September 11-12): We adapted the existing Bluesky experimental framework for opinion-focused analysis. This included developing opinion detection algorithms and establishing exposure metrics to track users' engagement with opinion-rich content. The in-person collaboration proved essential for technical implementation and we were able to adapt the technical requirements to emerging methodological considerations and vice versa.

[1] This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the GH for payment of the Grant.

Task I.III - Conference Abstract Preparation (September 12): We started drafting a work-in-progress abstract documenting our initial methodological approach for submission to ICA 2026.

Description of the STSM main achievements and planned follow-up activities

We developed novel computational approaches for real-time opinion analysis in social media environments, specifically adapting Bluesky's customizable feed architecture for experimental manipulation of opinion exposure. The research infrastructure now enables tracking and quantifying users' exposure to opinion-rich content across different algorithmic conditions, extending beyond traditional sentiment analysis to capture dynamic opinion visibility patterns. We established experimental protocols for studying opinion formation that can be adapted for other social media platforms, contributing to evidence-based standards for opinion mining evaluation.

This work directly advances WG2 goals by moving from static content analysis to examining dynamic processes through which opinions spread and influence public discourse. The research bridges academic computational methods with real-world opinion formation processes, supporting the Action's aim of creating culturally sensitive computational approaches across multiple European media systems.