Investigating Intersubjective Realities From Novel NLP and Chaos Theory Approach

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Intersubjective realities refer to the belief systems that when accepted by two or more people have real implications for objective reality. The Covid-19 Pandemic was dominated by the emergence of such realities, as rumors and discourse around the disease disseminated through social media platforms, often promoting harmful practices and responses. In a counterterrorist effort, studying the intersubjective quantitatively is imperative in stopping the real consequences of the objective. Twitter (X) data from the publicly available Covid 19 Rumors dataset was used to analyze the structure and opinion change of pandemic discourse. Latent Dirichlet Allocation was used to find main topics to organize related discussions (posts and comments). Techniques from Chaos Theory, such as recurrence quantification analysis (RQA), creating recurrence networks, and building transition matrices, were used to study changes in opinions. Finally misinformation was considered by using NetworkX's centrality measures to identify influential nodes in a network of posts and comments for each topic and associating them with veracity scores. The results of this research suggest that misinformation propagation is sustained through echo chambers, or discourse structures characterized by higher clustering coefficients, and topics with higher veracity exhibited more fluid and open discourse (higher entropy and lower clustering coefficients). Furthermore, the topics related to pandemic statistics often aligned with the latter description, while topics that related to more polarizing issues like mask-wearing aligned with the former description.

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