Nowadays, social networks form an essential part of our lives. Their analysis helps us better understand various social phenomena, identify individuals influencing society, and model future developments of communities. Often, real-world social networks conform to power-law degree distribution. We oriented our research toward investigating communities surrounding two well-known companies: GameStop and Enron. Using the data obtained from Reddit and Twitter, we have trained machine learning models like Support vector machines and Neural networks to assess the sentiment of the GameStop community. The results confirm the expected positive sentiment following the GameStop price spike in 2021.

We constructed the respective social networks based on the available datasets and identified their vital individuals according to selected centrality measures. Publicly known figures like Ryan Cohen in the case of GameStop and Jeff Skilling in the case of Enron are ranked high according to PageRank and Authority scores. On the other hand, minor influencers from the GameStop community and the upper management of Enron were assigned top ranks of the Hub score and Betweenness centrality. A statistical analysis using the goodness-of-fit test for the power-law degree distribution was performed for both networks. Results indicate a plausible fit only for the in-degree distribution of the Twitter network and for the in- and out-degree distributions of the Enron network ($p = 0.8366$, $p = 0.496$, and $p = 0.546$, respectively).