Definitions
- **Web Scraping** – The process of extracting data from web pages.
- **Network Science** – Extension of graph theory that studies networks (graphs) that represent biological, physical, and social relations.
- **Eigenvector Centrality** – The ranking of each node of a network based on the eigenvector centrality scores of its neighbors.
- **Modularity** – Measures the strength of divisions in a graph.

**LinkedIn**
- **Legend**
  - Yellow Node – Central Insurance
  - Black Nodes – Posts
  - Blue Nodes – Users

**Graph Statistics**
- 11,000 Edges
- 7,400 Likes
- 1,500 Comments
- 400 Empathies

**Eigenvector Centrality**
- Central Insurance has Centrality 1
- Next 11 Highest are Users
- Centrality scores from 0.812 to 0.315

**Modularity**
- At Resolution 1, 111 Groups form.
- Center split between groups 0 and 1.
- Group 0 is largest; CI is in Group 1.
- Most groups formed in branches outside of graph model.

**Sentiment Analysis**
- Web scraped data of over 2,000 tweets mentioning @Central_ins over the past 3 years
- Polarity: Sentiment score of positive, neutral, or negative on a scale of 1 to 1
- Subjectivity: Sentiment score of opinion or fact on a scale of 0 to 1

**Toxicity Analysis**
- Periodic toxicity scoring of tweets mentioning CI using Perspective API
- Tweets scoring over 0.3 are sent to CI’s Slack Channel for timely reaction

**Conclusions**
- Using various forms of web scraping, we created graph models that represent Central Insurance’s presence on four social media platforms. Our insights included:
  - Community Detection in user groups interacting with Central Insurance.
  - Influential Users related to Central Insurance’s social media activity.
  - Full map of Second-Degree Connections for Central on Instagram, Facebook and LinkedIn.
  - Sentiment Scores for user reviews on Twitter.
  - Media-Type Effectiveness for posts on LinkedIn.

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