AI IS NOT THE FUTURE OF TECHNOLOGY

it's the technology of today that's shaping our future.

Project Background

- **Objective:** To explore the adoption of AI (Artificial Intelligence) in the investment banking sector, focusing on security trading.

- **Current Scenario:**
- **Promise vs. Reality:** Despite the transformative potential of AI, there exists a significant gap between what firms claim regarding AI implementation and the actual progress made.

- **Key Challenges:**

1. High cost associated with AI adoption.
2. Shortage of professionals trained in AI.
3. Ethical and societal implications.
4. Regulatory complexities.

- **Obstacle in Knowledge-Intensive Industries:** Professionals in industries like investment banking may exhibit resistance towards AI integration, potentially due to perceived threats to their roles.

- **Importance:** Addressing these challenges is crucial for realizing the full potential of AI in investment banking, particularly in security trading.

AI IS NOT THE FUTURE OF TECHNOLOGY

it's the technology of today that's shaping our future.

Aim of the Project

- **Objective:** Assist a large investment bank in promoting the adoption of AI tools for securities evaluation among traders.

- **Our Role:**

1. Quant Business Analyst at a consultancy company.
2. Facilitate AI adoption within the bank's trading operations.

- **Key Responsibilities:**

1. Understand and address traders' concerns or resistance towards AI.
2. Promote the benefits and capabilities of AI tools for security evaluation.
3. Foster a culture of AI adoption among traders.

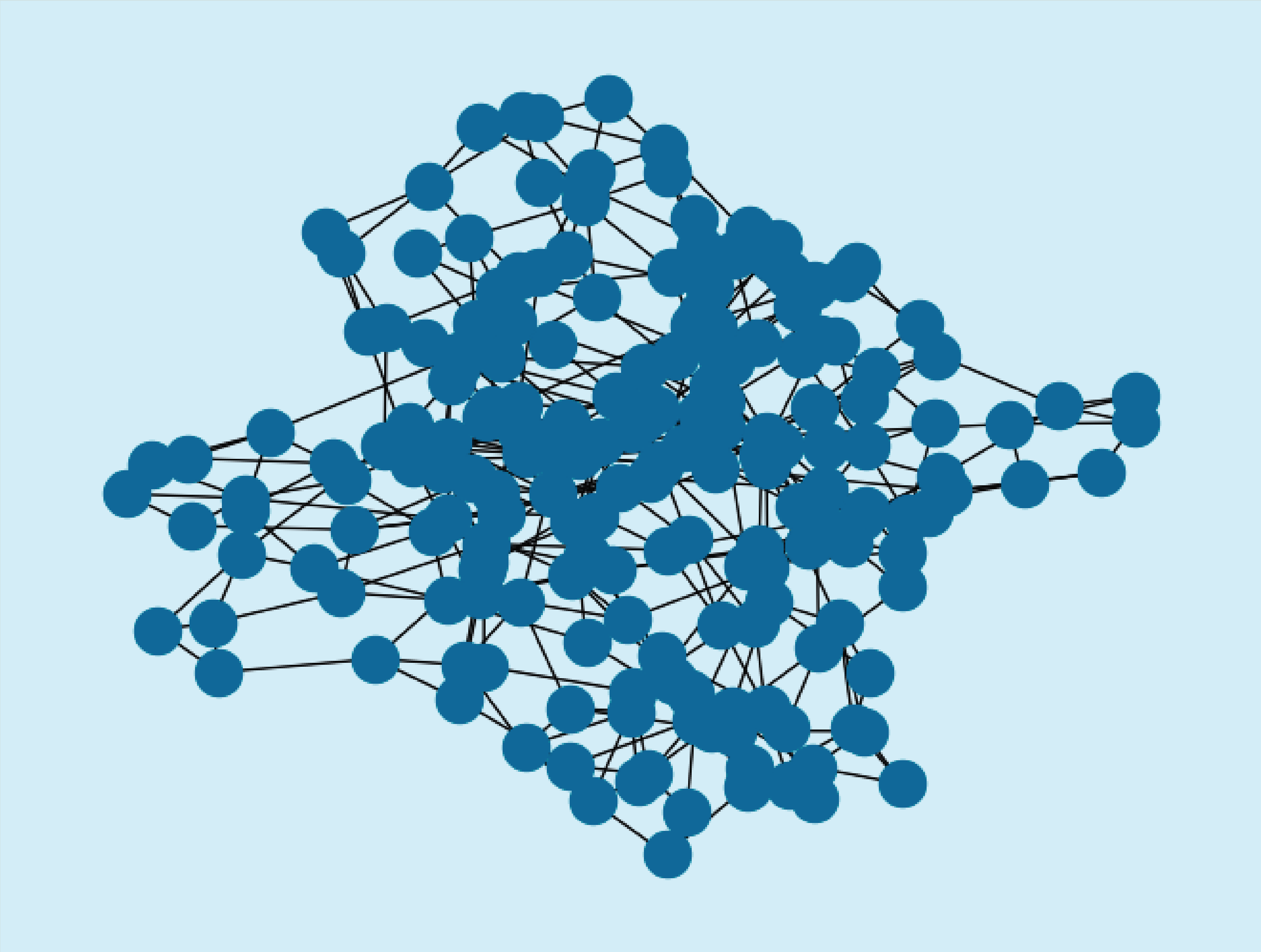
Node Attribute Analysis: Understanding Diversity in the Trading Floor Network

Observations

- The network visualization showcases the intricate web of connections among traders, offering a visual understanding of their relationships and the overall network structure.
- There are total 192 nodes which are connected based on the edges between them.
- Each node has an attribute: 'd0' which represents AI rating given by the traders.

Insights

- Analysis of these attributes can provide insights into trader behavior and interactions.
- Further analysis, such as community detection or centrality measures, can reveal patterns and structures within the trading floor network.



In our analysis of the trading floor network, we delve into two crucial measures: density and diameter. These metrics provide essential insights into the connectivity and reach of our network, shedding light on the dynamics of interactions among traders.

Exploring Network Density and Diameter in the Trading Floor Network

Density Analysis:

- Number of Nodes: 192
- Number of Edges: 384
- Density: 0.0209

Interpretation

- The density of 0.0209 indicates a sparse network, suggesting that only about 2.09% of potential connections among traders are realized. This sparse connectivity implies that traders may have limited direct interactions with one another.

- A low density may reflect the nature of trading activities, where interactions are often selective and not every trader is connected to every other trader.

Diameter Analysis

- Diameter: 9

Interpretation

- The diameter of 9 signifies that there exist pairs of traders who are as far apart as 9 connections within the network. This suggests that certain parts of the network are relatively distant from each other.

- While the network exhibits sparse connectivity overall, some nodes are still relatively well-connected, contributing to a shorter path length between them.

Analyzing Node Characteristics and Centrality Measures

These measures shed light on nodes crucial for connectivity, influence, and information flow.

Median 'd0' Value: 4.0

- The median 'd0' value provides a central tendency measure for the distances between nodes in the network.

- This value indicates that half of the nodes in the network are at a distance of 4 or less from each other in terms of 'd0', highlighting a moderate level of proximity among traders.

Degree of Each Node

- The degree of a node represents the number of connections it has with other nodes in the network.

- Node degrees vary across the network, with some nodes having higher connectivity (e.g., Node 138 with Degree 7) and others having lower connectivity (e.g., Node 15 with Degree 2).

- Examining node degrees provides insight into the distribution of connectivity within the network and identifies potential hubs or peripheral nodes.

Degree Centrality

- Nodes with higher degree centrality are pivotal for network connectivity and influence.

- Average Degree Centrality: 0.021

- This signifies that, on average, each node directly connects to around 2.1% of all other nodes. This points to a moderate level of connectivity across the network, where nodes exert a balanced influence on their immediate neighbors.

Betweenness Centrality

- Nodes with high betweenness centrality are vital for network integrity and efficiency, serving as critical intermediaries.

- Average Betweenness Centrality: 0.0195

- This indicates that, on average, each node serves as a crucial intermediary on approximately 1.95% of all shortest paths between pairs of nodes in the network. This indicates a moderate dependency on specific nodes for facilitating communication and maintaining efficient information flow throughout the network.

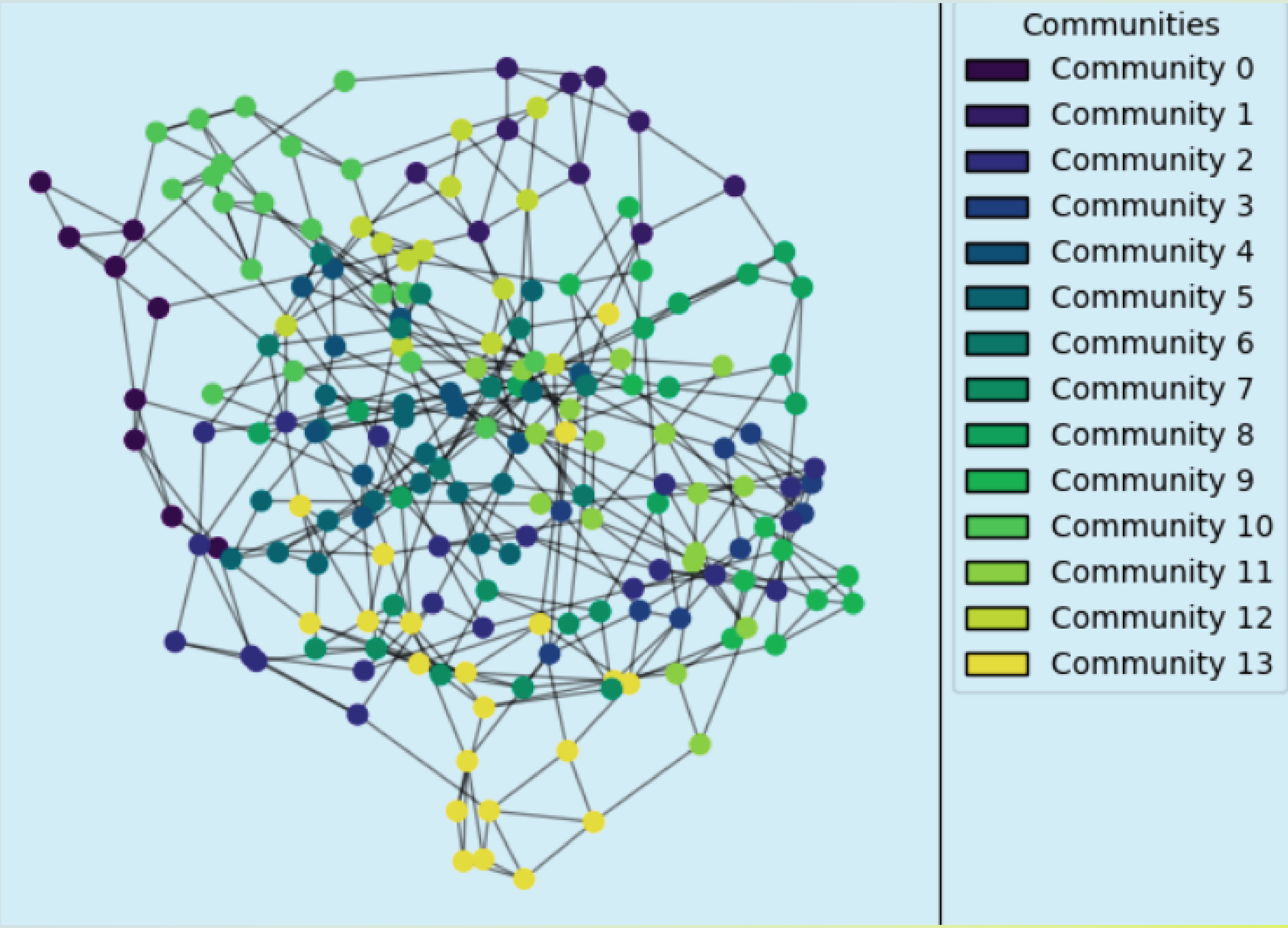
Community Detection and Influential Nodes

Community Detection

- Method: Employed Louvain community detection algorithm.
- Visualization: Communities are visualized using node coloration, with distinct colors representing different communities.
- Insight: The visualization aids in comprehending the network's structure and identifying clusters of nodes with similar connectivity patterns.

Communities and Node Distribution

- Community Composition: Communities range from densely connected groups to sparser clusters.
- Node Distribution: Nodes are grouped into distinct communities based on their connectivity patterns.
- Key Observation: Each community exhibits unique characteristics in terms of node distribution and interconnectivity.



Influential Nodes by Community

- Identification: Influential nodes within each community are determined based on their degree centrality.
- Significance: These nodes exert considerable influence over their respective communities.
- Role: They play pivotal roles in maintaining connectivity and facilitating information flow within their communities.

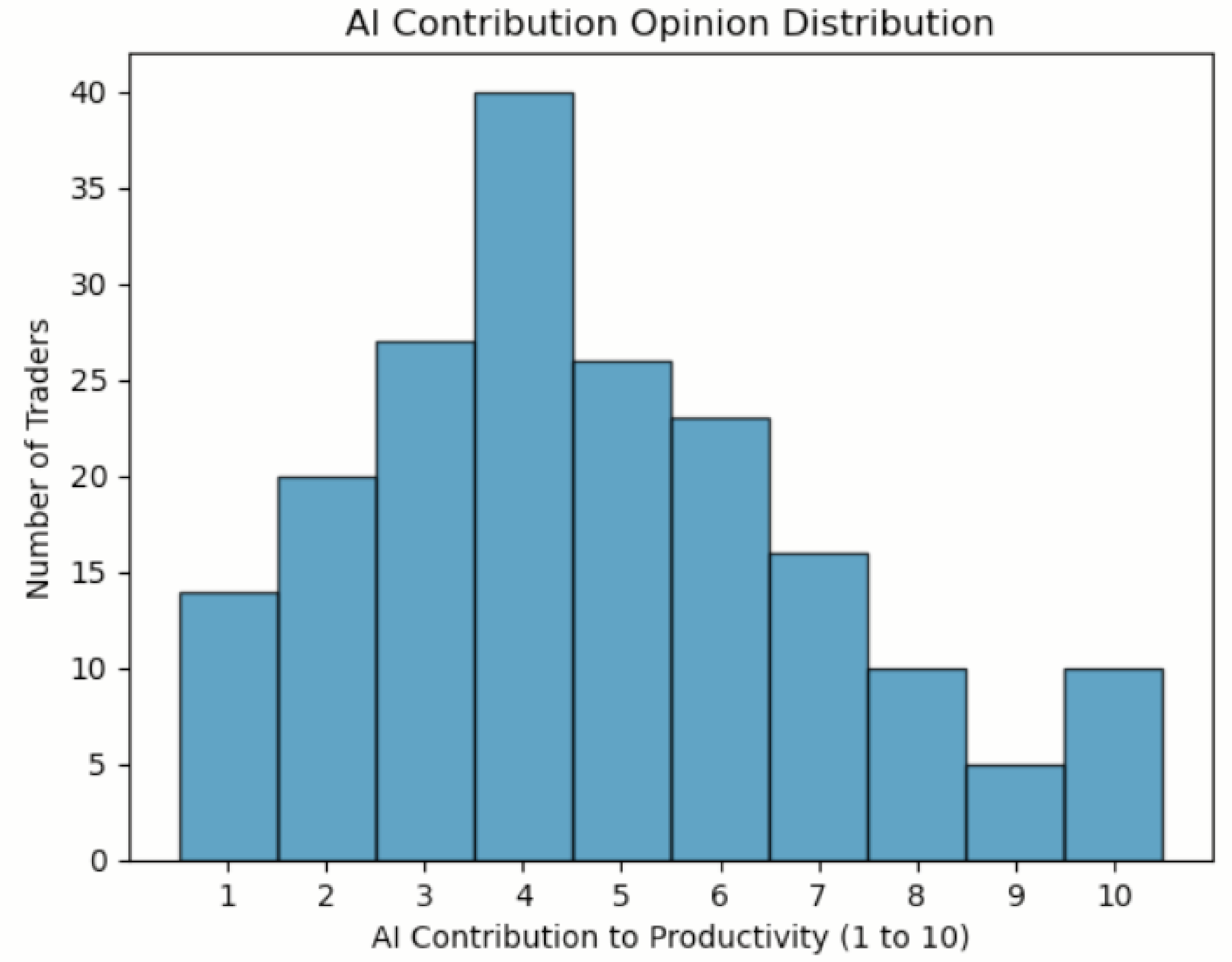
Network Connectivity and Trader Opinions on AI Contribution to Productivity

Bridges and Connectivity

- Bridge Detection: No bridges are identified within the network.
- Connectivity Analysis:
    - Connected Components: The entire graph forms a single connected component.
    - Implication: No isolated nodes or disjoint subsets exist, ensuring continuous information flow.
- Lack of bridges and presence of a single connected component indicate robust network structure.

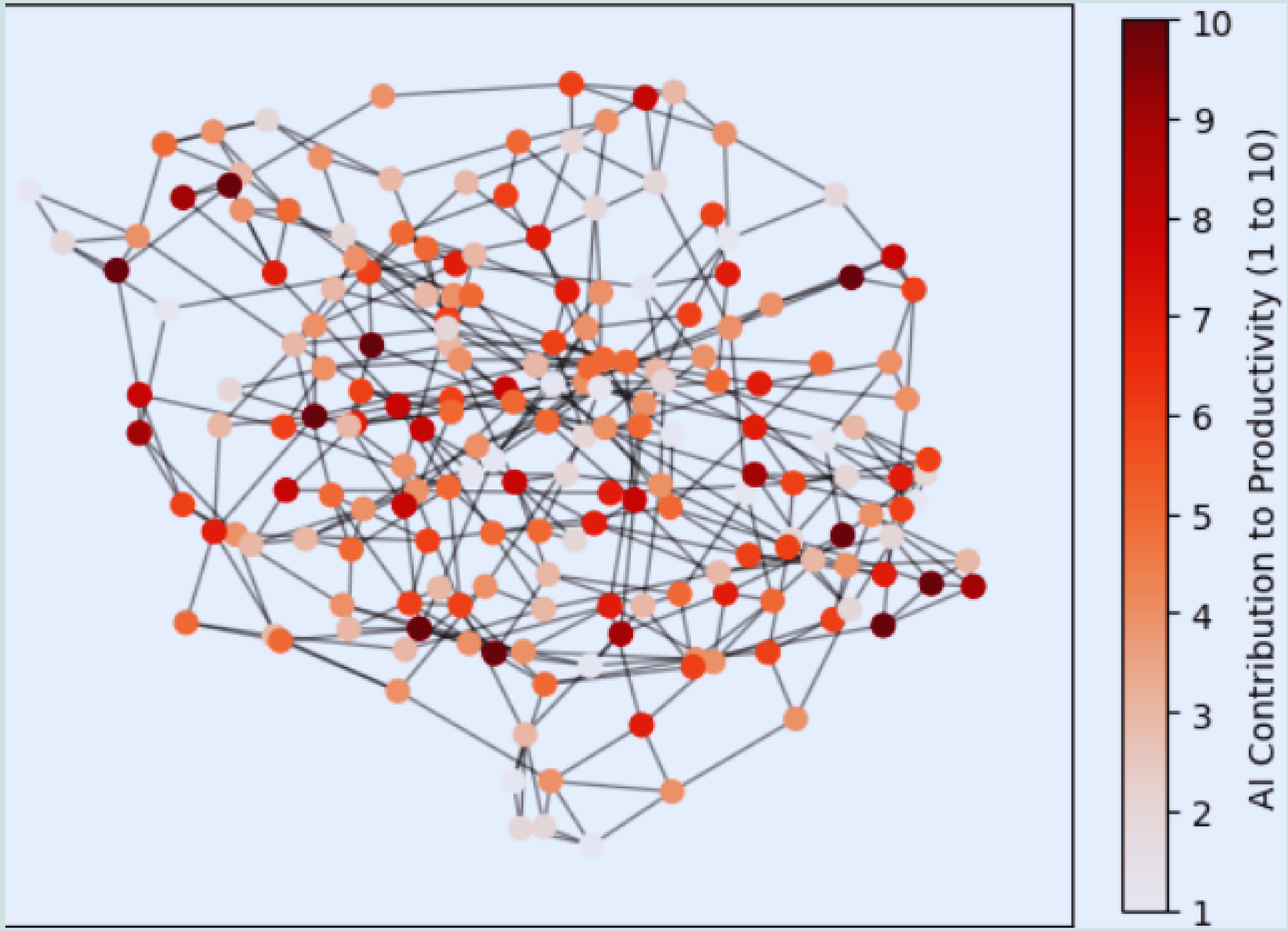
Clustering Coefficient

- Clustering Analysis: Examined the local clustering coefficient for each node.
- Average Clustering Coefficient: Indicates the degree to which neighbors of a node interconnect.
- Insight: Averages at approximately 0.249, indicating the degree to which nodes in the network tend to cluster together. This suggests that, on average, around 24.9% of a node's neighbors are connected to each other.



Attribute Distribution

- Visualized the distribution of opinions using a histogram.
- Each node represents a trader with an opinion score ranging from 1 to 10.
- Provides insights into the overall sentiment distribution regarding AI's contribution to productivity.



Exploring Community-Specific Perspectives on AI's Productivity Impact

Network Visualization

- Nodes color-coded based on the normalized 'd0' values, representing traders' opinions on AI's contribution to productivity.
- Darker shades indicate higher opinion scores, while lighter shades indicate lower scores.
- Enables visual exploration of opinion distribution and spatial arrangement of nodes within the trading floor network.

Median Opinion Scores by Community

- Calculated the median opinion score for each community (14) based on traders' perceptions of AI's contribution to productivity.
- Provides insights into the central tendency of opinions within each community.
- Helps identify variations in opinions across different groups within the trading floor network.

Significance in Trading Floor Network Analysis

- Understanding community-specific opinions is crucial for identifying potential trends and sentiments.
- Allows traders to adapt their strategies based on prevailing opinions within their respective communities.
- Facilitates targeted communication and decision-making processes to maximize trading floor efficiency and profitability.

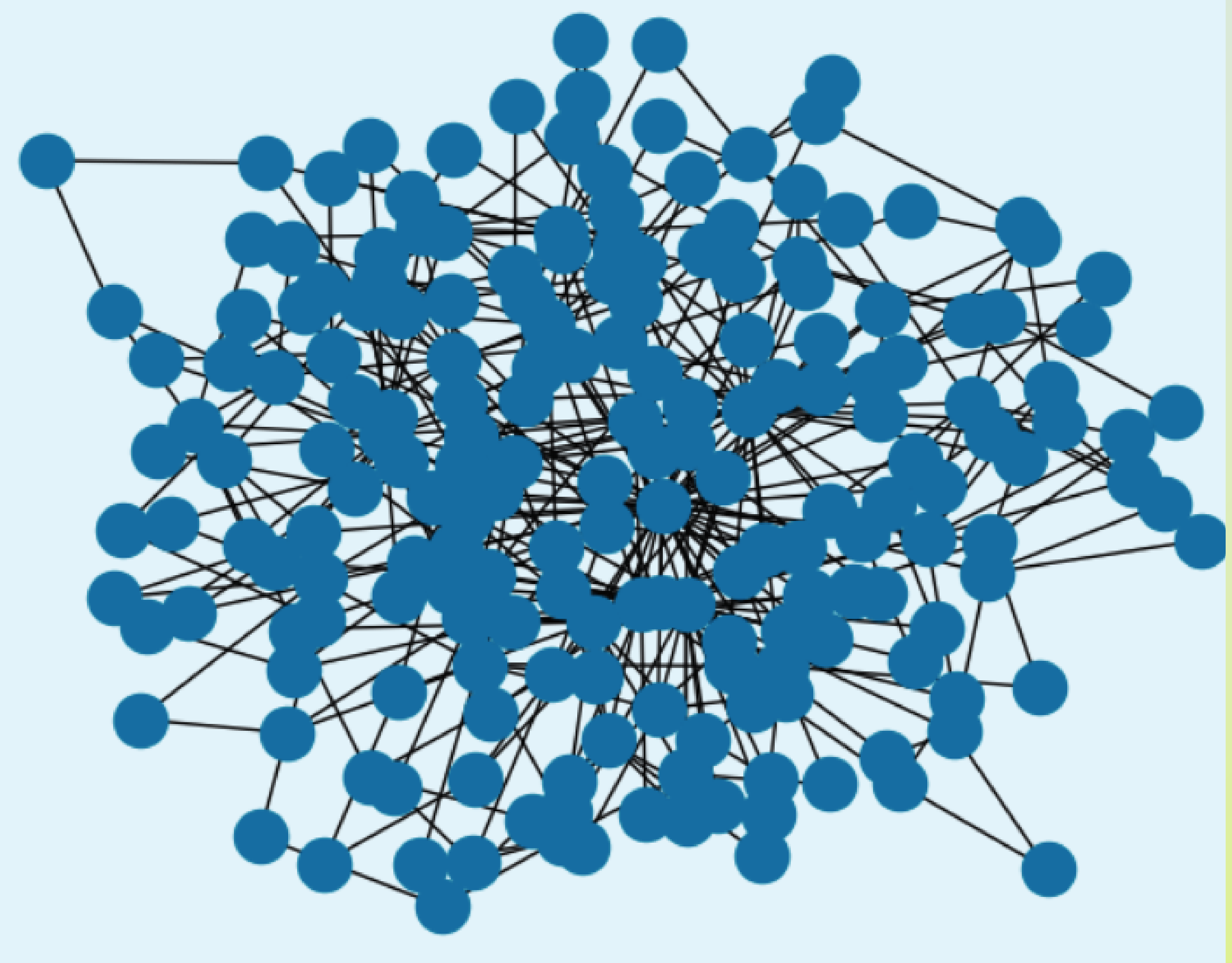
Simulating a Random Network for Comparison

Simulated Network Overview

- Model Used: Barabási-Albert model
- Number of Nodes: 192
- Number of Edges: 380
- Opinion Assignment: Randomly assigned opinions (d0) ranging from 1 to 10 to represent traders' views on AI's productivity contribution.

Simulated Network Metrics

- Average Degree Centrality: 0.0207. This signifies that, on average, each node directly connects to around 2.07% of all other nodes.
- Average Betweenness Centrality: 0.0116. This indicates that, on average, each node serves as a crucial intermediary on approximately 1.95% of all shortest paths between pairs of nodes in the network
- Average Clustering Coefficient: 0.249. This suggests that, on average, around 24.9% of a node's neighbors are connected to each other.



Key Findings

- Traders' opinions on AI's productivity contribution vary, with a median 'd0' value of **6.0** across all nodes.
- This indicates that, on average, traders have a moderately positive opinion regarding AI's contribution to their productivity.
- Overall, the majority perceive AI as significantly beneficial to their effectiveness in evaluating securities, although individual opinions vary.

Comparison of Real vs Simulated Network Metrics

Metric	Original Network	Simulated Network
Number of Nodes	192	192
Number of Edges	383	380
Average Degree Centrality	0.0209	0.0207
Average Betweenness Centrality	0.0195	0.0116
Average Clustering Coefficient	0.2494	0.2494
Median 'd0' Value	4.0	6.0

AI Journey: Sustaining the Diffusion of AI in Investment Banking

Identifying Client needs & Building Awareness

Assess client needs and raise AI awareness

Creating Pilot Programs

Develop small-scale AI initiatives to demonstrate feasibility and benefits

Evolving Support Systems

Offer ongoing assistance to traders for smooth AI tool integration and issue resolution.

Scaling Up Implementation

Expanding AI tool deployment organization-wide

Continuous Improvement and Adaptation

Iterative refinement of AI tools and strategies based on feedback and market dynamics.

Measurement and Impact Assessment

Assessing the effectiveness of AI integration on trader engagement and productivity.

Cultural Transformation

Fostering a shift in AI attitudes and fostering adoption among traders.

Strategic Roadmap for Future Growth

Strategic plan for long-term AI integration and organizational progress

AI DOESN'T REPLACE OUR CREATIVITY, IT EMPOWERS IT.

THANK YOU !!!