

Graph Theory Project Topics For Final Year

Social Network Analysis

1. Analysing Instagram influencer networks using centrality measures
2. Detecting community structures in Twitter hashtag networks
3. Measuring information flow patterns in Facebook friend groups
4. Mapping professional connections through LinkedIn network visualisation
5. Identifying key opinion leaders in social media discussions
6. Analysing message spread patterns during viral campaigns
7. Studying friendship circles in university student networks
8. Detecting bot networks in social media interactions
9. Mapping relationship dynamics in online dating platforms
10. Analysing collaborative patterns in academic research networks
11. Detecting influential spreaders in epidemic information flow
12. Studying group formation in multiplayer gaming communities
13. Mapping social influence in YouTube creator networks
14. Analysing Workplace communication Patterns using Graph theory
15. Detecting echo chambers in political discussion networks
16. Studying information bubbles in social media feeds
17. Mapping digital marketplace seller-buyer relationship networks
18. Analysing content-sharing patterns across social platforms
19. Detecting fake news propagation in social networks
20. Studying user engagement patterns in forum communities

Transportation Networks

21. Optimising city bus routes using graph algorithms
22. Analysing traffic flow patterns in urban intersections
23. Planning efficient emergency vehicle response routes
24. Mapping optimal delivery paths for logistics companies
25. Studying airline route optimisation between cities
26. Analysing subway system connectivity and efficiency
27. Optimising school bus routing in suburban areas
28. Studying passenger flow in railway networks
29. Analysing highway interchange bottleneck patterns
30. Mapping bicycle-sharing station network optimisation
31. Studying port-to-port shipping route efficiency
32. Analysing pedestrian movement patterns in cities
33. Optimising package delivery routes for e-commerce
34. Studying ride-sharing vehicle distribution patterns
35. Analysing traffic signal timing using graph theory
36. Mapping optimal evacuation routes during emergencies
37. Studying public transport transfer point efficiency
38. Analysing parking space allocation in urban areas
39. Optimising airport gate assignment using graphs

40. Studying vehicle routing for waste collection

Biological Networks

41. Analysing protein interaction networks in cell signaling
42. Mapping neural pathways in brain connectivity
43. Studying gene regulatory networks in disease progression
44. Analysing metabolic pathways in bacterial colonies
45. Mapping ecological food webs in marine ecosystems
46. Studying pollinator networks in flower communities
47. Analysing disease transmission patterns in populations
48. Mapping bacterial communication networks in microbiomes
49. Studying hormone signaling pathways in plant growth
50. Analysing enzyme interaction networks in metabolism
51. Mapping species migration patterns using graphs
52. Studying cellular signal transduction networks
53. Analysing symbiotic relationships in coral reefs
54. Mapping genetic inheritance patterns using graphs
55. Studying drug interaction networks in treatment
56. Analysing brain region connectivity during tasks
57. Mapping animal social hierarchy networks
58. Studying plant root system network patterns
59. Analysing virus mutation patterns using graphs
60. Mapping ecosystem resource flow networks

Computer Networks

61. Optimising data centre network topology design
62. Analysing packet routing in wireless sensor networks
63. Studying network security vulnerability patterns
64. Mapping cloud service provider connection topology
65. Analysing Internet Backbone Routing Efficiency
66. Studying peer-to-peer network connection patterns
67. Optimising content delivery network distribution points
68. Analysing blockchain network node connections
69. Studying IoT device communication patterns
70. Mapping network traffic flow optimisation
71. Analysing VPN connection routing efficiency
72. Studying edge computing node placement optimisation
73. Mapping network redundancy for fault tolerance
74. Analysing network bottleneck identification patterns
75. Studying mesh network topology optimisation
76. Mapping server load balancing using graphs
77. Analysing network protocol efficiency patterns
78. Studying network intrusion detection patterns
79. Mapping database replication topology optimisation
80. Analysing network bandwidth allocation patterns

Supply Chain Networks

81. Optimising warehouse location for retail distribution
82. Analysing supplier relationship network patterns
83. Mapping pharmaceutical supply chain networks
84. Studying food distribution network optimisation
85. Analysing manufacturing component supply networks
86. Mapping inventory management across multiple locations
87. Studying cross-border supply chain efficiency
88. Analysing raw material sourcing network patterns
89. Mapping sustainable supply chain networks
90. Studying just-in-time delivery network optimisation
91. Analysing cold chain distribution networks
92. Mapping agricultural produce supply networks
93. Studying electronics component supply patterns
94. Analysing retail store distribution networks
95. Mapping emergency supply chain networks
96. Studying reverse logistics network optimisation
97. Analysing spare parts distribution patterns
98. Mapping textile industry supply networks
99. Studying automotive supply chain patterns
100. Analysing construction material distribution networks

Power Grid Networks

101. Optimising renewable energy distribution grid design
102. Analysing smart grid connection patterns
103. Studying power transmission line efficiency
104. Mapping electrical substation network optimisation
105. Analysing power grid vulnerability patterns
106. Studying microgrid connection topology optimisation
107. Mapping solar farm distribution networks
108. Analysing wind farm connection patterns
109. Studying power grid fault tolerance
110. Mapping energy storage facility networks
111. Analysing power consumption pattern networks
112. Studying electrical load balancing patterns
113. Mapping emergency power distribution networks
114. Analysing Grid Modernization Using Graph Theory
115. Studying power grid restoration patterns
116. Mapping electric vehicle charging networks
117. Analysing power quality monitoring networks
118. Studying grid integration of renewable sources
119. Mapping power backup system networks
120. Analysing smart meter deployment patterns

Urban Planning Networks

121. Optimising green space connectivity in cities
122. Analysing urban facility accessibility patterns
123. Mapping emergency service coverage networks
124. Studying pedestrian walkway connection patterns
125. Analysing urban water distribution networks
126. Mapping waste collection route optimisation
127. Studying urban heat island effect patterns
128. Analysing City Surveillance Camera Networks
129. Mapping public WiFi hotspot coverage
130. Studying urban noise pollution patterns
131. Analysing underground utility network connections
132. Mapping urban drainage system networks
133. Studying smart city sensor deployment
134. Analysing urban air quality monitoring
135. Mapping Urban Disaster Evacuation Routes
136. Studying urban lighting network optimisation
137. Analysing Urban Bicycle Lane Networks
138. Mapping urban food desert patterns
139. Studying urban parking facility networks
140. Analysing urban pollution monitoring patterns

Economic Networks

141. Analysing cryptocurrency trading network patterns
142. Mapping international trade relationship networks
143. Studying stock market correlation patterns
144. Analysing bank transaction network patterns
145. Mapping business partnership network connections
146. Studying venture capital investment networks
147. Analysing real estate market connection patterns
148. Mapping commodity trading network relationships
149. Studying insurance claim pattern networks
150. Analysing foreign exchange trading networks
151. Mapping Corporate Ownership Network Patterns
152. Studying startup ecosystem connection patterns
153. Analysing mutual fund investment networks
154. Mapping credit card transaction patterns
155. Studying economic interdependence networks
156. Analysing merger and acquisition patterns
157. Mapping supply and demand network
158. Studying cryptocurrency blockchain transaction patterns
159. Analysing bond market connection networks
160. Mapping financial risk propagation patterns

Telecommunications Networks

161. Optimising mobile tower placement using graphs
162. Analysing call routing pattern optimisation

163. Studying 5G network coverage optimisation
164. Mapping fiber optic cable network design
165. Analysing satellite communication patterns
166. Studying radio frequency interference networks
167. Mapping cellular network handover patterns
168. Analysing network congestion point identification
169. Studying signal strength optimisation patterns
170. Mapping telecommunications backbone networks
171. Analysing network coverage hole detection
172. Studying emergency communication network design
173. Mapping submarine cable network optimisation
174. Analysing rural telecommunication network design
175. Studying network capacity planning patterns
176. Mapping broadcasting network topology
177. Analysing public telecommunication service access
178. Studying mobile data usage patterns
179. Mapping high-speed Internet connection networks
180. Analysing cellular data optimisation patterns

Environmental Networks

181. Mapping water resource management networks
182. Analysing wildlife migration network patterns
183. Studying carbon footprint in supply chain networks
184. Mapping renewable energy source distribution
185. Analysing pollutant flow in water bodies
186. Studying forest fire spread networks
187. Mapping waste recycling route optimisation
188. Analysing biodiversity hotspot connections
189. Studying air pollution distribution patterns
190. Mapping renewable resource usage in communities
191. Analysing protected area connectivity for conservation
192. Studying deforestation patterns in tropical areas
193. Mapping renewable energy access in rural areas
194. Analysing urban green space connectivity
195. Studying climate data connection across regions
196. Mapping flood risk management networks
197. Analysing species dispersal in fragmented habitats
198. Studying invasive species spread patterns
199. Mapping environmental sensor deployment networks
200. Analysing soil erosion pattern networks

Healthcare Networks

201. Mapping patient referral network in hospitals
202. Analysing disease outbreak patterns in communities
203. Studying Healthcare Resource Allocation Networks
204. Mapping telemedicine network connectivity

205. Analysing patient-doctor communication networks
206. Studying infection transmission in hospital settings
207. Mapping pharmaceutical distribution networks
208. Analysing healthcare provider collaboration patterns
209. Studying healthcare accessibility in rural areas
210. Mapping diagnostic test network patterns
211. Analysing patient support group connections
212. Studying hospital supply chain optimisation
213. Mapping healthcare data exchange networks
214. Analysing mental health service access patterns
215. Studying medical research collaboration networks
216. Mapping vaccination distribution networks
217. Analysing Healthcare insurance network structures
218. Studying rehabilitation service network optimisation
219. Mapping blood bank and donor networks
220. Analysing Healthcare Worker Deployment Patterns

Educational Networks

221. Mapping student-teacher relationship networks
222. Analysing knowledge-sharing networks in schools
223. Studying course dependency networks in curricula
224. Mapping Alumni Network Connections
225. Analysing peer learning network patterns
226. Studying research collaboration across universities
227. Mapping mentorship network optimisation
228. Analysing digital learning resource usage patterns
229. Studying school-to-school collaboration networks
230. Mapping online learning group dynamics
231. Analysing Academic Journal Citation Networks
232. Studying student social network interactions
233. Mapping educational content recommendation networks
234. Analysing professional development network connections
235. Studying extracurricular activity participation patterns
236. Mapping school counsellor access networks
237. Analysing student mobility across campuses
238. Studying inter-school academic competition networks
239. Mapping school board governance networks
240. Analysing career counselling network optimisation

Specialised Graph Theory Project Topics

1. Social media influence analyser using NetworkX and Python
2. Path optimisation calculator with Java and JGraphT
3. Network vulnerability detector using Python and GraphML
4. Traffic flow simulator with C++ and Boost Graph
5. Neural network visualiser using D3.js and JavaScript

6. Graph database implementation using Neo4j and Java
7. Minimum spanning tree calculator with Python visualisation
8. Network centrality analyser using R and graph
9. Graph coloring algorithm visualiser using JavaScript
10. Shortest pathfinder with interactive web interface
11. Community detection tool using Python and Gephi
12. Disease spread simulator using NetworkX API
13. Social network analyser with MongoDB integration
14. Graph matching algorithm implementation in Java
15. Network flow calculator with visualisation tools
16. Graph drawing algorithm implementation using SVG
17. Topological sort visualiser with JavaScript
18. Graph isomorphism detector using Python
19. Maximum clique finder with GUI interface
20. Graph partition optimiser using machine learning

Graph Theory Project Topics for CSE

21. Implementing distributed graph processing systems
22. Developing graph-based recommendation engines
23. Creating graph database management systems
24. Building social network analysis tools
25. Designing network routing optimisation algorithms
26. Developing graph-based machine learning models
27. Creating graph visualisation frameworks
28. Implementing graph compression algorithms
29. Building graph-based security analysis tools
30. Developing distributed graph algorithms
31. Creating graph pattern mining systems
32. Implementing graph clustering algorithms
33. Building graph-based anomaly detection systems
34. Developing graph indexing techniques
35. Creating graph stream processing systems
36. Implementing graph matching algorithms
37. Building graph-based search engines
38. Developing graph partitioning systems
39. Creating graph-based data integration tools
40. Implementing graph neural networks

MSc Mathematics Project Topics in Graph Theory

41. Spectral analysis of random geometric graphs
42. Ramsey's theory applications in social networks
43. Algebraic properties of graph automorphisms
44. Topological graph theory in network design
45. Graph decomposition methods and applications
46. Extremal graph theory in biological networks

47. Random walk analysis on directed graphs
48. Graph homomorphisms and their properties
49. Chromatic polynomials of planar graphs
50. Graph entropy measures and applications
51. Perfect graphs and their characterisations
52. Graph minor theory applications
53. Eigenvalue analysis of graph Laplacians
54. Graph pebbling problems and solutions
55. Zero-forcing sets in graph theory
56. Graph saturation numbers analysis
57. Graph domination theory applications
58. Graph reconstruction problems
59. Graph labelling schemes analysis
60. Graph factorisation methods study

Graph Theory Research Papers

61. Advanced algorithms for dynamic graph processing
62. Novel approaches to graph neural networks
63. Theoretical foundations of graph embeddings
64. Applications of hypergraph theory
65. Quantum algorithms for graph problems
66. Graph-based natural language processing methods
67. Advances in graph stream processing
68. Complex network analysis techniques
69. Graph-based knowledge representation systems
70. Probabilistic approaches to graph mining
71. Graph theory in biological networks
72. Temporal graph analysis methods
73. Graph-based anomaly detection systems
74. Mathematical foundations of graph databases
75. Graph theory in social network analysis
76. Applications of graph theory in chemistry
77. Graph-based computer vision techniques
78. Random graph models and applications
79. Graph theory in wireless networks
80. Spectral graph theory advances