



GitHub Network Intelligence

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OBJECTIVE



To analyse social network graphs on GitHub



Applications



Helps companies in identifying the right talent



Better communities on GitHub

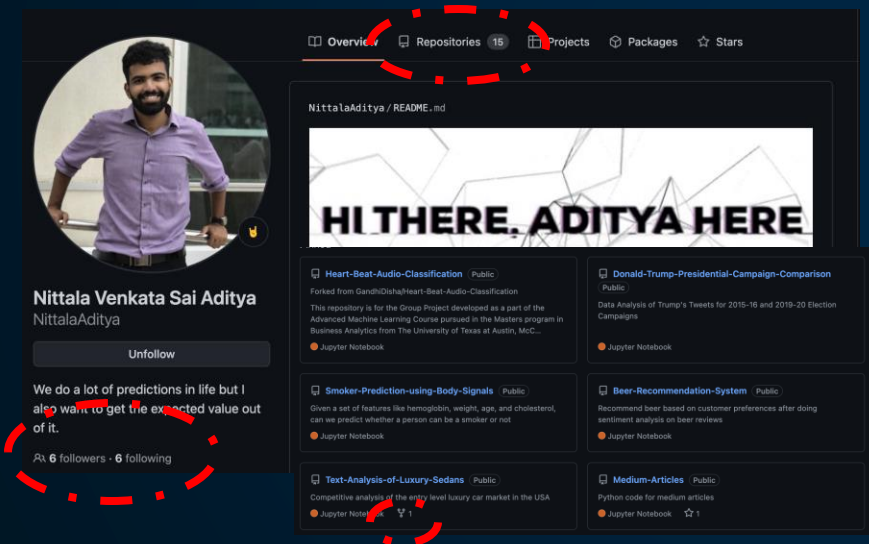


Recommendations for Developers



REPOSITORY AND USER EXAMPLE

Upcoming Popular User



GitHub profile of Nittala Venkata Sai Aditya (NittalaAditya). The profile shows a circular profile picture of a man with a beard wearing a purple shirt. The navigation bar includes Overview, Repositories (15), Projects, Packages, and Stars. The main content area features a large banner with the text "HI THERE. ADITYA HERE" and a grid of repositories. The bio states: "We do a lot of predictions in life but I also want to get the expected value out of it." The user has 6 followers and is following 6 users. Red dashed circles highlight the Repositories tab, the bio, and the first repository "Heart-Beat-Audio-Classification".

Nittala Venkata Sai Aditya
NittalaAditya

Unfollow

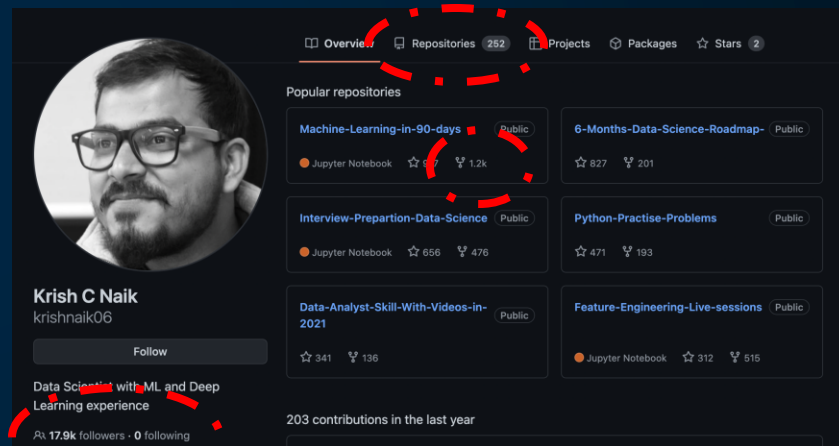
We do a lot of predictions in life but I also want to get the expected value out of it.

At 6 followers · 6 following

Repositories

- Heart-Beat-Audio-Classification** (Public)
Forked from GandhiDisha/Heart-Beat-Audio-Classification
This repository is for the Group Project developed as a part of the Advanced Machine Learning Course pursued in the Masters program in Business Analytics from The University of Texas at Austin, MC...
Jupyter Notebook
- Donald-Trump-Presidential-Campaign-Comparison** (Public)
Data Analysis of Trump's Tweets for 2016-16 and 2019-20 Election Campaigns
Jupyter Notebook
- Smoker-Prediction-using-Body-Signals** (Public)
Given a set of features like hemoglobin, weight, age, and cholesterol, can we predict whether a person can be a smoker or not
Jupyter Notebook
- Beer-Recommendation-System** (Public)
Recommend beer based on customer preferences after doing sentiment analysis on beer reviews
Jupyter Notebook
- Text-Analysis-of-Luxury-Sedans** (Public)
Competitive analysis of the entry level luxury car market in the USA
Jupyter Notebook
- Medium-Articles** (Public)
Python code for medium articles
Jupyter Notebook

Popular User



GitHub profile of Krish C Naik (krishnaik06). The profile shows a circular profile picture of a man with a beard and glasses. The navigation bar includes Overview, Repositories (252), Projects, Packages, and Stars (2). The main content area features a section for "Popular repositories" with a grid of repositories. The bio states: "Data Scientist with ML and Deep Learning experience". The user has 17.9k followers and is following 0 users. Red dashed circles highlight the Repositories tab, the bio, and the repository "Machine-Learning-in-90-days".

Krish C Naik
krishnaik06

Follow

Data Scientist with ML and Deep Learning experience

At 17.9k followers · 0 following

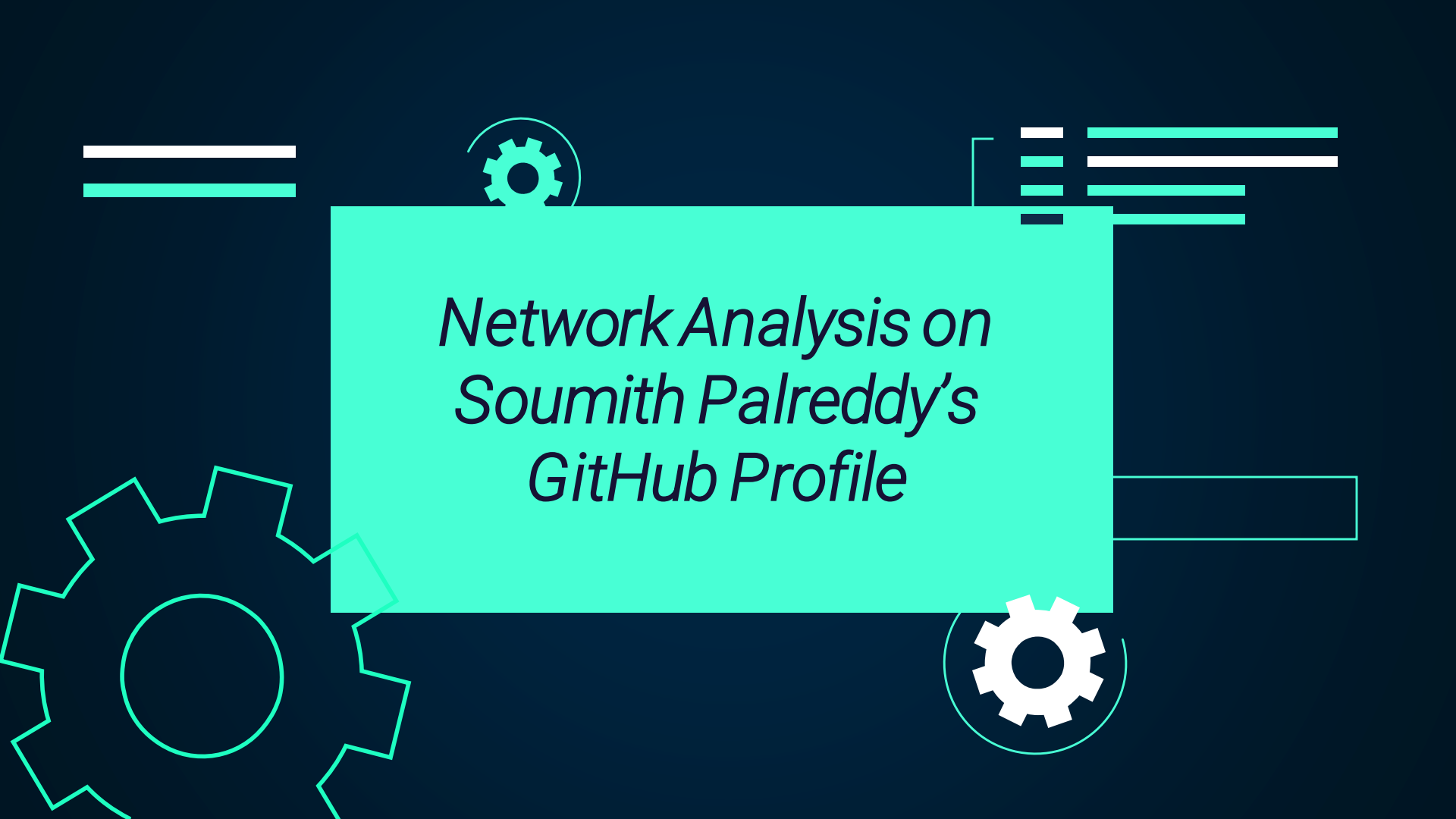
Popular repositories

- Machine-Learning-in-90-days** (Public)
Jupyter Notebook
8.7k stars · 1.2k forks
- 6-Months-Data-Science-Roadmap-** (Public)
827 stars · 201 forks
- Interview-Preparation-Data-Science** (Public)
Jupyter Notebook
656 stars · 476 forks
- Python-Practise-Problems** (Public)
471 stars · 193 forks
- Data-Analyst-Skill-With-Videos-in-2021** (Public)
341 stars · 136 forks
- Feature-Engineering-Live-sessions** (Public)
Jupyter Notebook
312 stars · 515 forks

203 contributions in the last year

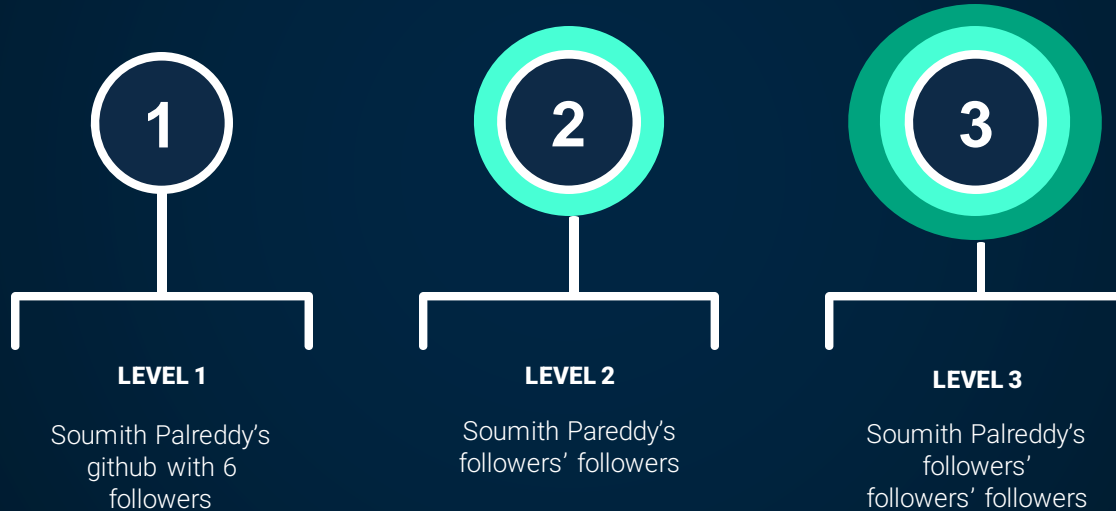
METHODOLOGY





Network Analysis on Soumith Palreddy's GitHub Profile

Levels of GitHub Followers



LEVEL 1 GRAPH

Nodes

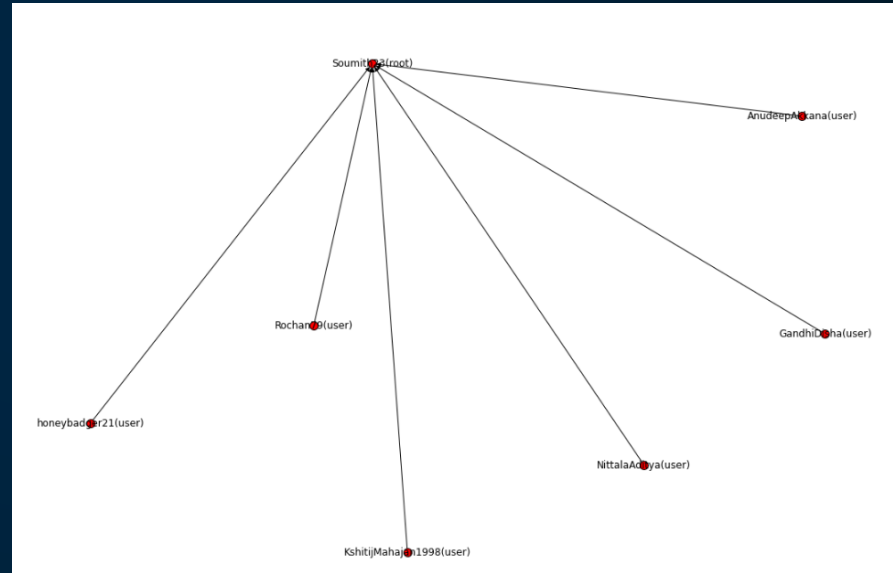
Soumith + 6 Followers

Edges

Denotes the following relation
between 2 users

Examp
les

Aditya follows Soumith, so both
Aditya and Soumith will have nodes
and there will be an edge between
the two showing that relation



LEVEL 2 GRAPH

Nodes

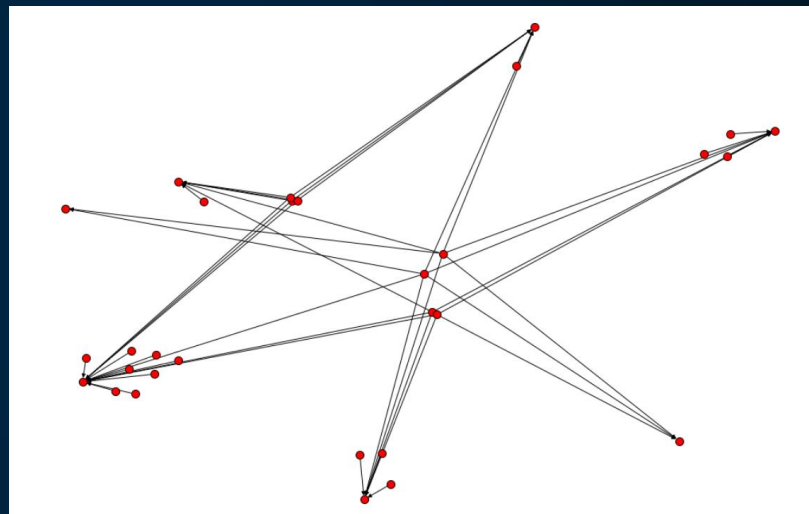
Soumith + 6 Followers +
Followers of 6 Followers

Edges

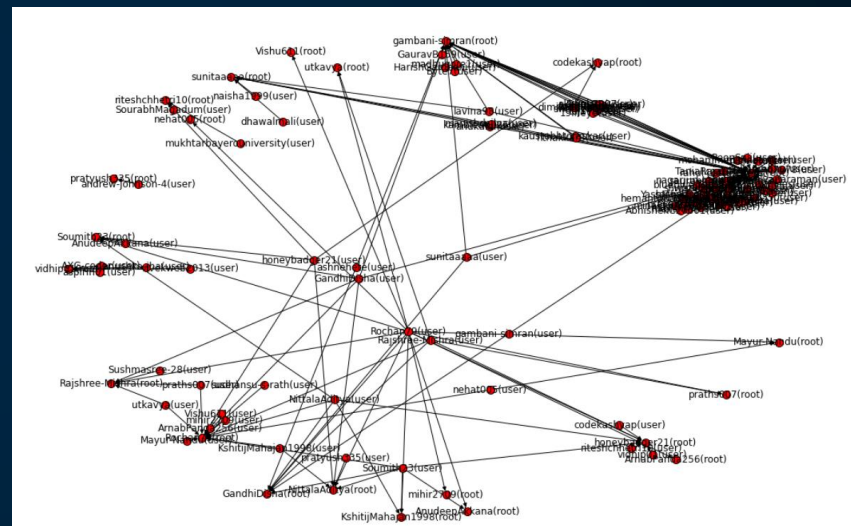
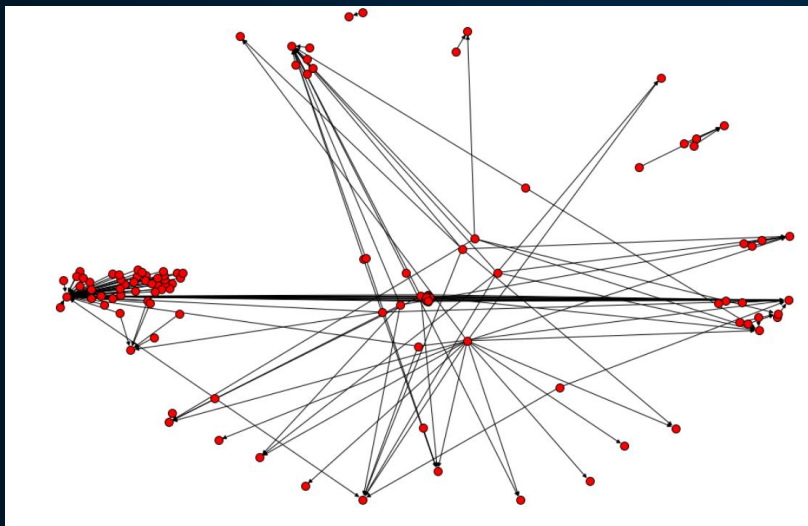
Denotes following relation
between 2 users

Examp
les

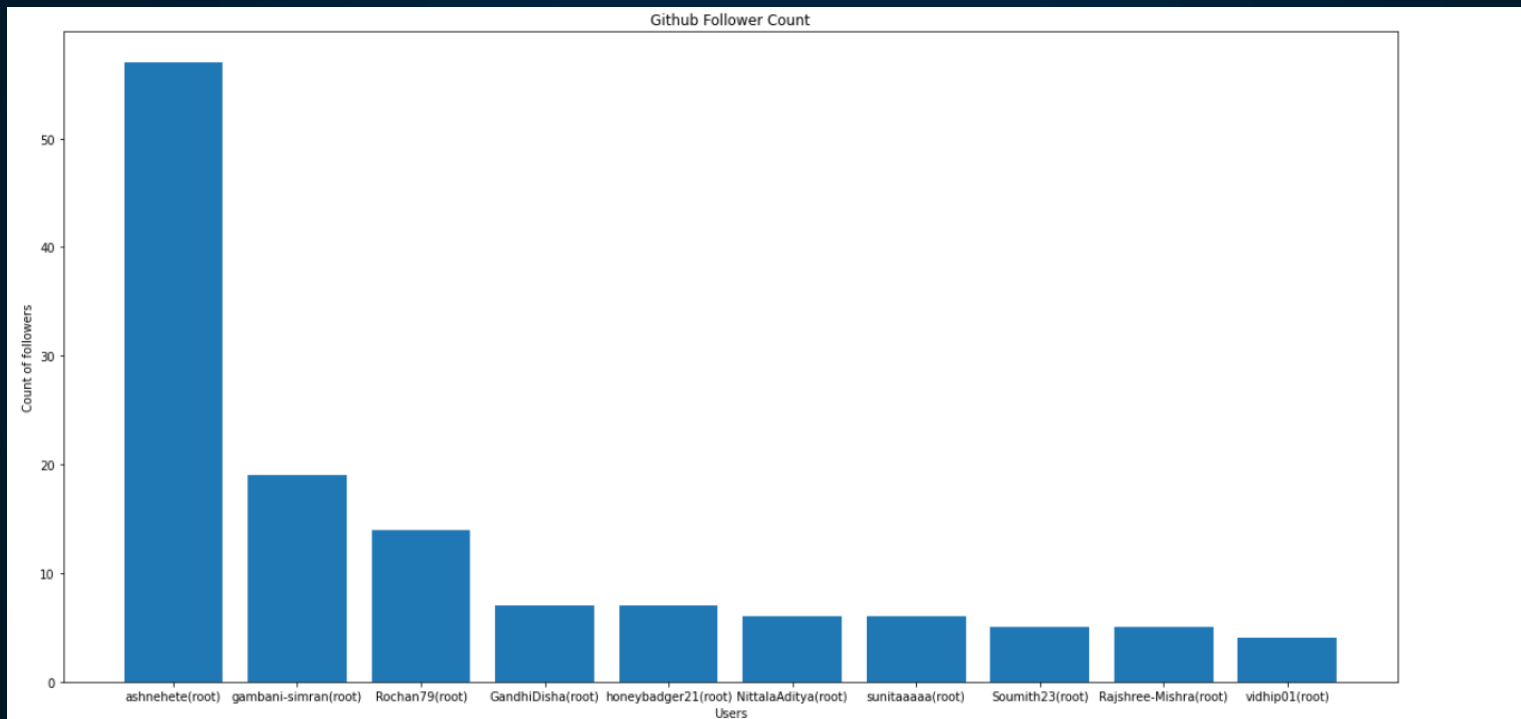
Aditya follows Soumith, so both
Aditya and Soumith will have nodes
and there will be an edge between
the two showing that relation



LEVEL 3 GRAPH



WHO'S FAMOUS AMONG SOUMITH'S FOLLOWERS



USER NETWORK ANALYSIS

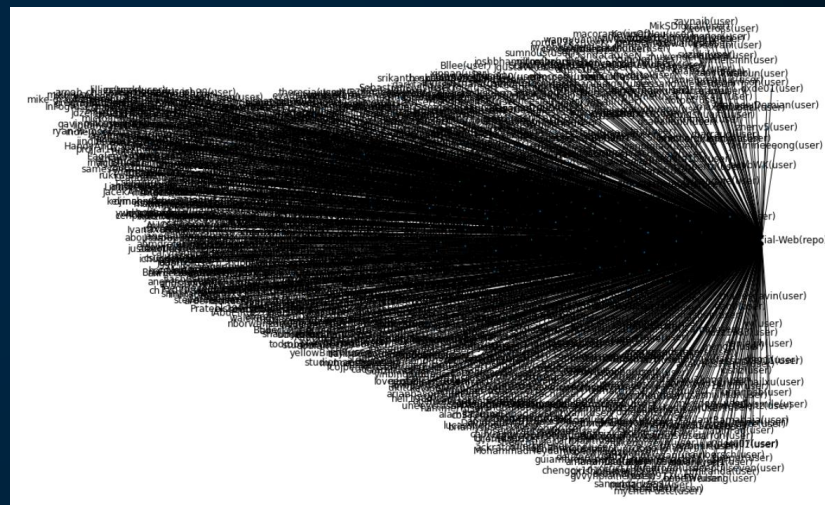
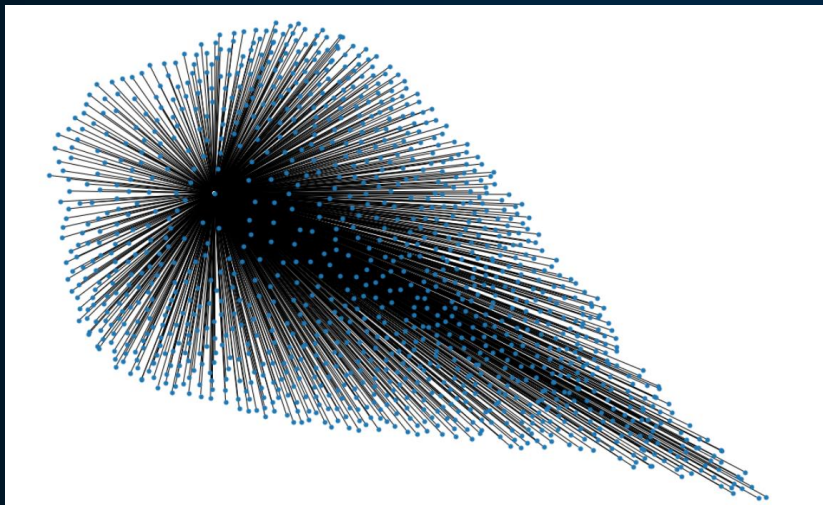
Levels	Nodes	Edges	In Degree	Out Degree
Level 1	7	6	0.86	0.86
Level 2	30	45	1.5	1.5
Level 3	114	152	1.33	1.33

The background is a dark blue gradient. It features several decorative elements: a large white gear outline in the bottom left corner; a smaller white gear outline in the top center; a white gear outline in the bottom right corner; and various white and light blue horizontal and vertical lines scattered across the top and right sides. A large, solid light blue rectangle is centered on the slide, containing the title text.

Network Analysis on “Mining the Social Web” Repo

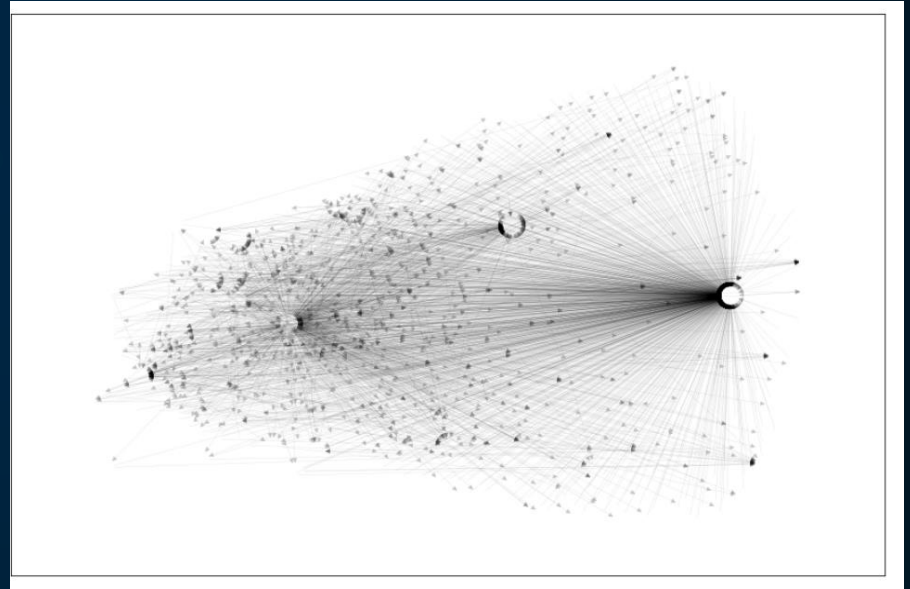
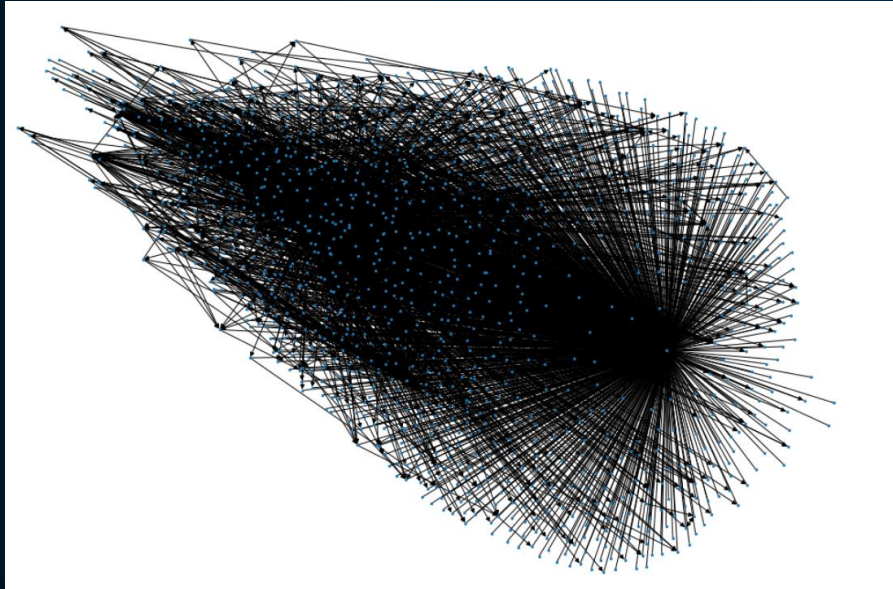
REPO EGO GRAPH (LEVEL 1)

Edges indicate 'gazing'



CONNECTIONS AMONG STARGAZERS (LEVEL 2)

Edges indicate 'repo gazing' and 'within gazers following'



LEVEL - 2 OBSERVATIONS

Most popular users based on degree & followers among stargazers

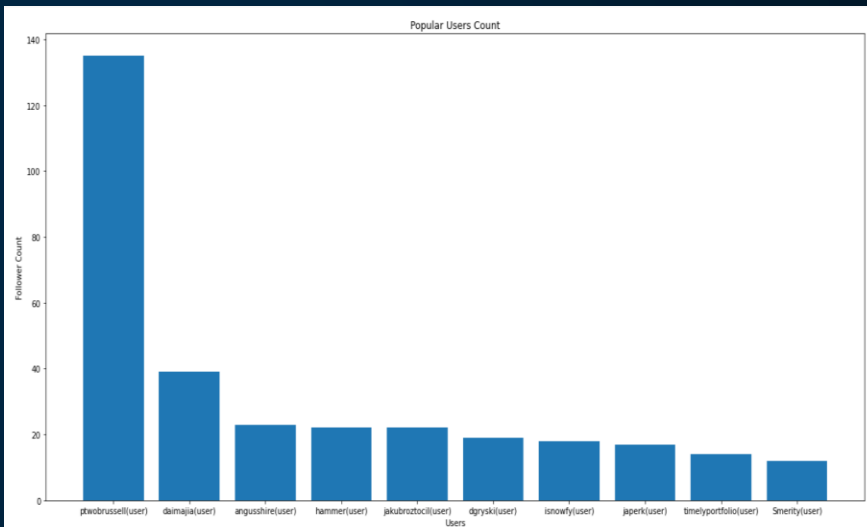
Angus Hung - PhD UC Berkeley, 11.k followers & 213k stars

Rohithadassanayake - 11.8k followers

VagrantStory - Developer Program Member, 17.3k followers

Mathew Russell - Owner & Author of the 'Mining the social web' repo

Daimajia - Student, 22.1k followers and 2.9k stars



```
[('ptwobrussell(user)', 136), ('VagrantStory(user)', 102), ('trietptm(user)', 71),  
 ('rohithadassanayake(user)', 68), ('daimajia(user)', 44), ('mcanthony(user)', 34), ('JT5D(user)',  
 32), ('andrewwxy(user)', 31)]
```


LEVEL-2 CENTRALITY STATS

Degree Centrality

```
[('angusshire(user)', 0.41288191577208916), ('ptwobrussell(user)', 0.11147811725846407), ('VagrantStory(user)', 0.08340214698596202), ('trietptm(user)', 0.057803468208092484), ('rohithadassanayake(user)', 0.05532617671345995), ('daimajia(user)', 0.03550784475639967), ('mcanthony(user)', 0.027250206440957884), ('JT5D(user)', 0.02559867877786953), ('andrewwxy(user)', 0.02477291494632535), ('hammer(user)', 0.023121387283236993)]
```

Betweenness Centrality

```
[('angusshire(user)', 0.014194880776259482), ('trietptm(user)', 0.0026759413566630895), ('samholt(user)', 0.0011850734656830297), ('rohithadassanayake(user)', 0.0010883959338893773), ('VagrantStory(user)', 0.0008561830456452001), ('daimajia(user)', 0.0007513012516790038), ('uetchy(user)', 0.0007052652120248737), ('hammer(user)', 0.0005859658894985315), ('JT5D(user)', 0.0005794514477137015), ('miku(user)', 0.000548444589876096)]
```

Closeness Centrality

```
[('ptwobrussell(user)', 0.11366949912540067), ('dgryski(user)', 0.03967540943114316), ('odewahn(user)', 0.037430069834464424), ('samuel(user)', 0.036335725931101646), ('daimajia(user)', 0.03464341639762599), ('japerk(user)', 0.033993252804069896), ('mcydon(user)', 0.03385091994408553), ('miku(user)', 0.03206929257860735), ('albertsun(user)', 0.03193457380571307), ('acdha(user)', 0.03148713395545476)]
```


STARRED REPOS OF STARGAZERS (LEVEL 3)

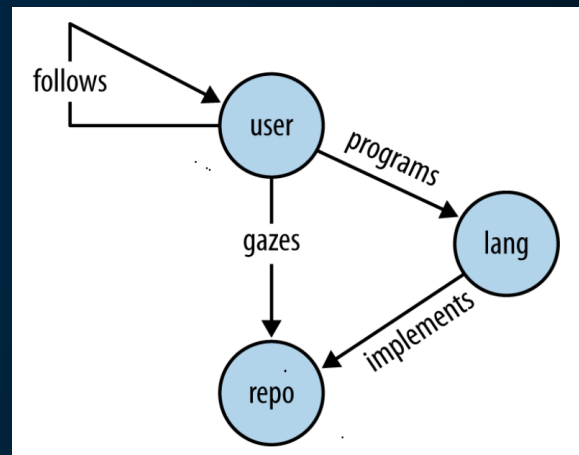
Nodes - Seed Repository + 1176 Stargazers + Starred
Repositories of stargazers Edges - 'Stargazing'

Repo Name	# Stargazers
Mining-the-Social-Web	1212
dotfiles	178
bootstrap	166
tensorflow	166
d3	165
System-design-repo	151
Free-programming-books	136

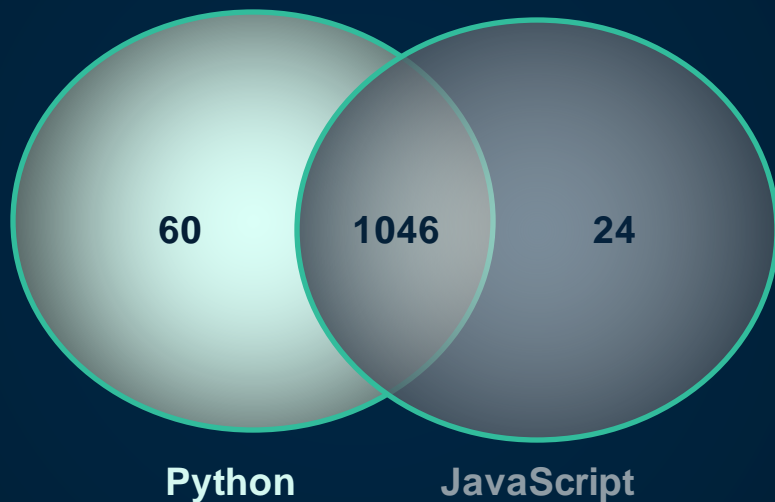
REPOSITORY NETWORK ANALYSIS

Number of Stargazers = 1212 (1213 nodes)

Levels	Nodes	Edges	In Degree	Out Degree
1	1213	1212	0.99	0.99
2	1213	2695	2.22	2.22
3	145898	309042	2.18	2.18



LANGUAGE OF THE STARRED REPOS (LEVEL 4)



The 2 most popular languages are Python and JavaScript

FUTURE SCOPE



Performance Tracking

assess the number of commits and pull requests to define user importance and impact of individual contributions in a community



Tech-stack Insights

Identify the key trends and traction on the programming languages



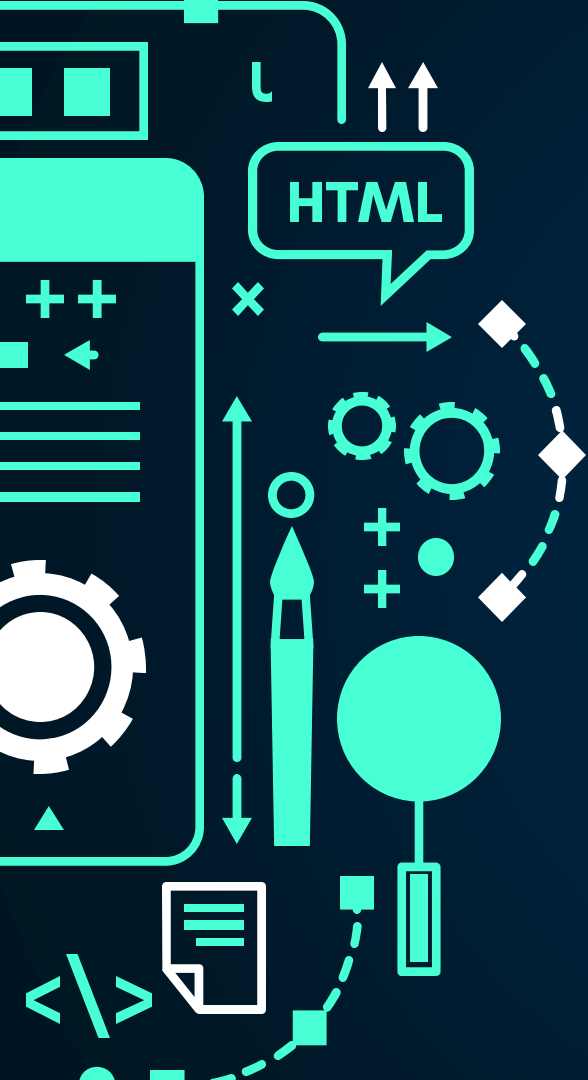
Additional Analytics

centrality measures, we can use cliques or bipartite algorithms to derive insights



Project Management

can identify bottlenecks in workflows and improve project management by analyzing user-repository interactions



THANKS!