NETWORK OF FRIENDS TO THE OTHER FRIENDS BY SOCIAL MEDIA ON FACEBOOK

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ABSTRACT
This research aims to develop Facebook applications, so that these social networking sites can still be used as a data source or a flat form to conduct research on the social networks. The method used in this research is descriptive method, whereas the approach used for social research to track vertical and lateral information flow, identify the sources and destinations to seek limits on resources. The result of this research is the process of crawling to the data facebook by using an Application Programming Interface has been successfully carried out and produce data that is informative, and from these data is visualized through the application Gephi, and can know the name and user id and a network of friends on facebook, and further this research can used to see how big the network of friends who are on social media facebook, and can do the analysis of social networks.

Keywords: Network, friends, social media, facebook

INTRODUCTION

Social capital broadly refers to the resources accumulated through relationships among people (Coleman, 1988). Social capital is an elastic term with various definitions in various fields (Adler & Kwon, 2002), which are understood to be cause and effect (Resnick, 2001; Williams, 2006). Bourdieu and Wacquant (1992) define social capital as "the amount of resources, actual or virtual, obtained by a person or group based on having a durable network of institutional links and recognizing each other more or less institutionalized" (p 14). The resources of this relationship may differ in form and function based on the relationship itself.

Social media is an important venue for interaction and conversation among Indonesian youth. Fully 76% of all teens using social media. Facebook is the dominant platform, with 71% of all teens use them. Instagram and Snapchat also have become increasingly important, with 52% of teens use Instagram and 41% use Snapchat. One-third of teen Indonesia using Twitter and using the other three Google Plus.

In this case, the original incarnation of Facebook is similar to the environment are studied by Hampton and Wellman Hampton, (2002); Hampton and Wellman, (2003), which indicates that information technology is now improving community-based place and facilitate the young generation, social studies previously showed that Facebook users engage in " find " for the people with whom they have an offline connection more than they " content " to meet the foreign person on this Lampe, Ellison, and Steinfeld, (2006).

The Internet has been linked both to the increase and decline in social capital. Nie (2001), for example, argues that the use of the Internet reduces face-to-face time with others, which can reduce one's social capital. However, this perspective has received strong criticism (Bargh & McKenna, 2004). In addition, some researchers have claimed that online interaction can complement or change the interaction of others, reducing the loss of time spent online (Wellman, Haase, Witte, & Hampton, 2001). Indeed, the study of physical communities (eg, Geographic) supported by online networks, such as the Netville community in Toronto or Blacksburg Electronic Village, has concluded that computer-mediated interactions have a positive effect on community interaction, engagement, and social capital Hampton & Wellman , 2003; Kavanaugh, Carroll, Rosson, Zin, & Reese, 2005).

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OVERVIEW ON FACEBOOK

Created in 2004, in 2007 Facebook reportedly has over 21 million registered members and generates 1.6 billion page views each day Needham & Company, (2007). The site is integrated into practice in its daily media: The average user spends about 20 minutes a day on the site, and two-thirds of users log in at least once a day Kate M. Stam, Glen T. Cameron, Antonie Stam, (2014). Leveraging its success among college students, Facebook launched a high school version in early September 2005. In 2006, the company introduced the public to a commercial organization; as of November 2006, nearly 22,000 organizations have Facebook directory (Smith, 2006). In 2006, Facebook has been used in more than 2,000 US colleges and is the seventh most popular site on the World Wide Web with respect to the number of page views Kate M. Stam, Glen T. Cameron, Antonie Stam, (2014)

Social capital has been linked to a variety of positive social outcomes, such as better public health, lower crime rates, and more efficient financial markets (Adler & Kwon, 2002). According to some measures of social capital, significant resources have declined in the US over the last few years (Putnam, 2000). When a decline in social capital, a community experience increased social disorder, reduced participation in community activities, and potentially more distrust among members of the public. Greater social capital to increase the commitment to the community and the ability to mobilize collective action, among other benefits. Social capital can also be used for negative purposes, but in general social capital is seen as a positive effect of the interaction between participants in social networks (Helliwell & Putnam, 2004).

Disclosure of social networking site users to call attention from strangers' unncessary very likely lead to online victims. It is very easy to join a social networking site. But without the proper knowledge about security measures, someone can be an easy trap for third parties such as hackers (Gross & Acquisti, 2005).

Therefore it becomes very important for a person to read privacy policies and measures offered by the site to have a secure online network. Furthermore, the blog also stated privacy policy changes brought out by popular sites such as Facebook and Twitter and how it has affected users. One of the main reasons cited by experts and research studies for such incredible popularity of social networking sites is the emergence of sites offering connectivity in the scope of this virtual world almost any time of day. People get in touch with people close to services such as Facebook, Twitter, Orkut, LinkedIn, MySpace, etc. (Dutton, 2004). In the social networking site, to share personal information and provide updates from day to day there is a recent trend. These sites serve brigade very young especaially age group between 15 to 25 years. Sometimes it has been observed that children use these sites to share news or information rather than share them privately. Even if they met in the morning in college, mosly information is shared through social media sites. This shows the growing dependence on these sites (Kabay, 2010). It is quite strange to note that the process of communication is increasingly influenced by the progress of the Internet. With a controversial change made by popular social networking site Facebook in 2009,

By analyzing the behavior of personal information from users, it has been found that this factor mainly revolve around hobbies and interests although it also has other direction. As for insance, semi-public information may include school or work detail, while the personal information may include a drink or a drug habit or sexual orientation, etc. (Gross & Acquisti, 2005). Openness users of social networking sites to call the attention of strangers' unncessary very likely lead to online victims.

It is very easy to join a social networking site. But without accurate knowledge of the security measures, one can be an easy trap for third parties such as hackers (Gross & Acquisti, 2005).

RESEARCH METHODOLOGY

Time and Place Research

This research requires time of the month October 2016 s / d in February, 2017, in this study the authors use the social networking site Facebook as a research object.

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Method Of Collecting Data

Data were collected by using the Facebook Graph API version 2.8. to undertake the development of applications first before getting a facebook user data to be carried out research on social networks. And test whether the Graph API version 2.8. can still be used to collect the data needed to build a social network, will be built a facebook app for collecting user data stored on social networking sites. This data will then be used to build a social network.

Descriptive Research Methods

This research can be generally classified in Data Science Analitycs. This knowledge areas related to the analysis, development, use of information technology-based products. Research approach, based on the scientific method and consists of four main iterative phase to be performed:

1. Authentication.

2. Connect with facebook API.

3. Withdrawal of data (collecting data).

4. Visualization of data.

The research approach described above in the form of a framework thoght as in Figure 1.

The method used in this research is descriptive method (Sugiyono: 2009, and Arikunto, 2010: 3).

DATA ANALYSIS METHOD

(Pryke, 2004), stated Social Network Analysis (SNA) is a tool to map relationships important knowledge between individuals, whereas according to (Wellman, 1997) Social Network Analysis (SNA) is an approach that is used for social research to track the flow of information vertically and lateral, identify the sources and destinations to seek limits on resources.

Social Network Analysis (SNA) was developed to understand the relationships (edge) of actors (nodes) that exists in a system with 2 focus, the actors and the relationships between actors in a particular social context. The focus help the understanding of how to position the actors that there can affect access to existing resources, for example goods, capital and information. This shows that the economic activity associated with social structures that eventually led to the concept of social capital. Information is one of resources or the most important flow in a network so as Social Network Analysis (SNA) is often implemented to identify the flow of information.

According Serrat (2009) In theory by identifying the information flow can help improve strategies that could spur the actors to share information than to create a new strategy. At the time the actors have access to resources that exist, the actors will form a cluster, in which the actor with the most excellent position will have more information than others. Usually actors have access to various sources incorporated in the various clusters, and this usually gives strength / power because they act as intermediaries for their contacts and access a bit. It is worth to note is that the information flow is happening is not necessarily commensurate, in the sense that the hierarchy is based upon the position of the actors in the network. Networks not only provides access to resources but also to other actors who could help give value to these resources. This indicates that the actor could manage social networks to maximize their profits by getting close to the resources and opportunities that exist. Investment in social relations to access or mobilize resources to generate economic income as a so-called social capital development. The concept of social capital are often covered with abstract way. Social Network Analysis (SNA) is a tool that can be used to understand the social relationships that could affect local development.

FRAMEWORK OF THINKING

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Mindset is the concept of problem-solving framework used to explain the logic flow goes to a study. Frame of mind in this research will be described in the following figure: 1

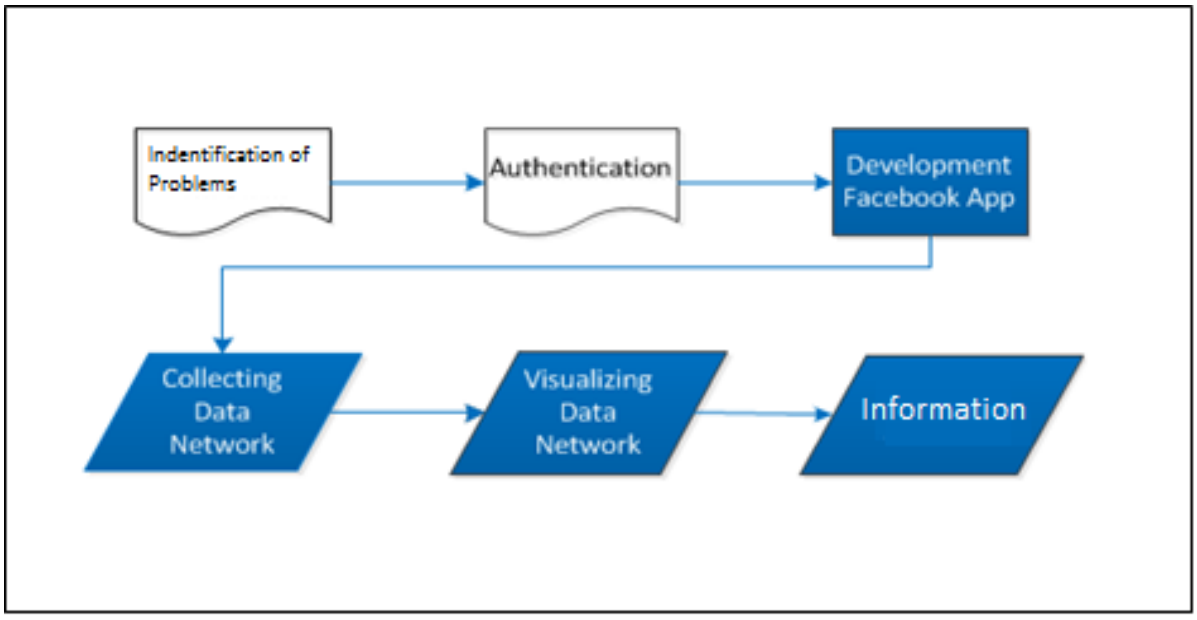

Figure 1. Framework of thinking

RESULTS AND DISCUSSION

Result

From the research that has been done to produce a method or steps to withdraw the data friendship on facebook at Graph API v2.8. In this study, the authors use facebook as a research object. To generate data on facebook friendship is necessary stages of a way to get a network of friends on facebook who can then do more research, especially for social network analysis.

As the purpose of research which has been mentioned before, the results of this study are crawling on facebook friendship of data by utilizing an Application Programming Interface (API) which has been provided by facebook. Data from the facebook friendship will be visualized and processed into an image of the relations of friendship that can be used as research material. Data that has been generated and then do a visualization of a network of friends who can make a central data, the next one can be made to perform social network analysis.

In this study, the authors do authentication on Facebook Graph API v2.8 for which data are available on a very limited v2.8, the researchers conducted a way to be connected to the Graph API v2.8 and get data on facebook friendship. In this study, the authors will show the results of visualization of network relations of friendship that will be used for the needs of social network analysis.

The results of this study are shown in Figure 2. Visualization is constructed on a social network can become an information and social networking connections between friends to another friend.

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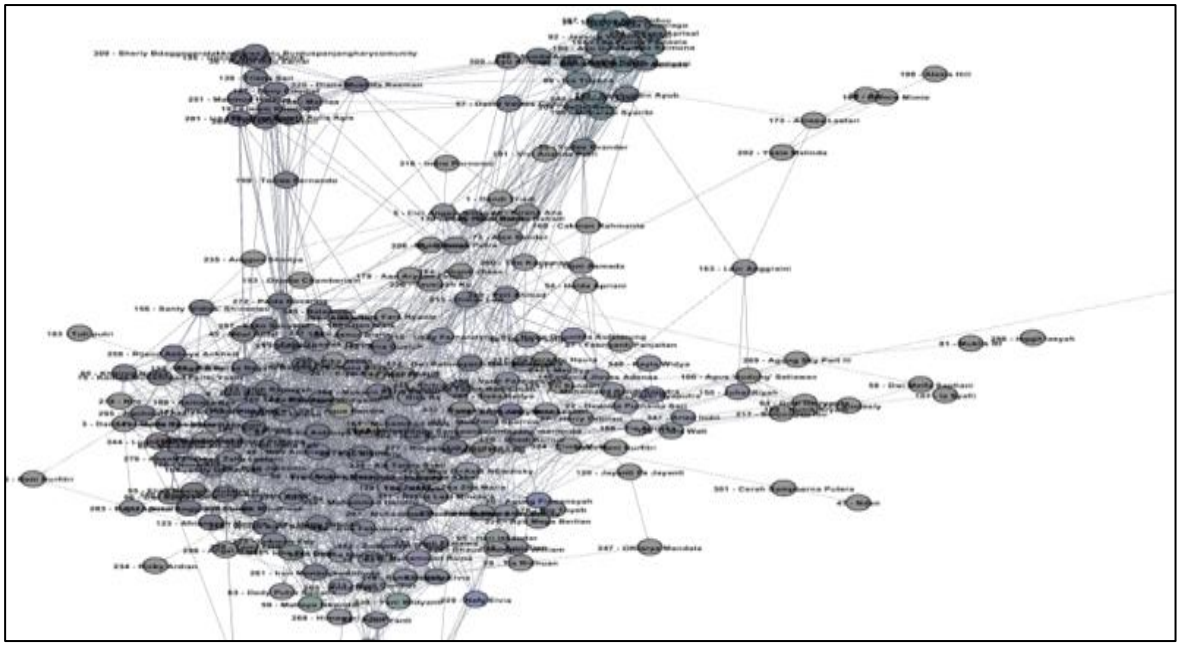
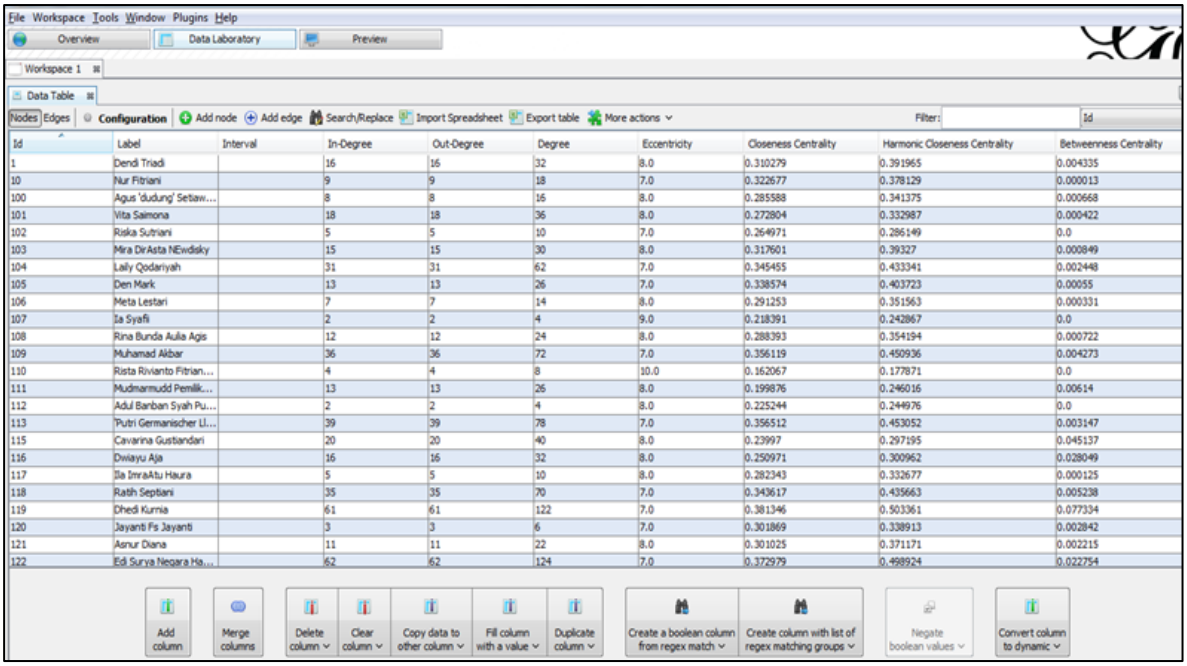


Figure 2. Visualization of Friendship Link

In addition to showing the structure of social networks, the study also produce data-Degree Laboratory In, Out-Degree, eccentricity, closeness centrality, closeness centrality Harmonic, and Betweenness centrality. The results also generate graphs of data Average Degree (degree-distribution, indegree-distribution, outdegree-distribution), shown in Figure 3. until the figure 6.



File Workspace Tools Window Plugins Help

Overview | Data Laboratory | Preview

Workspace 1

Data Table

Nodes | Edges | Configuration | Add node | Add edge | Search/Replace | Import Spreadsheet | Export table | More actions | Filter: | Id

Id	Label	Interval	In-Degree	Out-Degree	Degree	Eccentricity	Closeness Centrality	Harmonic Closeness Centrality	Betweenness Centrality
1	Dendi Triadi		16	16	32	8.0	0.310279	0.391965	0.004335
10	Nur Fitriani		9	9	18	7.0	0.322677	0.378129	0.000013
100	Agus 'dudung' Setiaw...		8	8	16	8.0	0.285588	0.341375	0.000668
101	Vita Saimona		18	18	36	8.0	0.272804	0.332987	0.000422
102	Riska Sutriani		5	5	10	7.0	0.264971	0.286149	0.0
103	Mira DirAsta NEwdisky		15	15	30	8.0	0.317601	0.39327	0.000849
104	Laily Qodariyah		31	31	62	7.0	0.345455	0.433341	0.002448
105	Den Mark		13	13	26	7.0	0.338574	0.403723	0.00055
106	Meta Lestari		7	7	14	8.0	0.291253	0.351563	0.000331
107	Ia Syafi		2	2	4	9.0	0.218391	0.242867	0.0
108	Rina Bunda Aulia Agis		12	12	24	8.0	0.288393	0.354194	0.000722
109	Muhamad Akbar		36	36	72	7.0	0.356119	0.450936	0.004273
110	Rista Rivianto Fitrian...		4	4	8	10.0	0.162067	0.177871	0.0
111	Mudmarmudd Pemilik...		13	13	26	8.0	0.199876	0.246016	0.00614
112	Adul Banban Syah Pu...		2	2	4	8.0	0.225244	0.244976	0.0
113	'Putri Germanischer Li...		39	39	78	7.0	0.356512	0.453052	0.003147
115	Cavarina Gustiandari		20	20	40	8.0	0.23997	0.297195	0.045137
116	Dwiayu Aja		16	16	32	8.0	0.250971	0.300962	0.028049
117	Ila ImraAtu Haura		5	5	10	8.0	0.282343	0.332677	0.000125
118	Rath Septiani		35	35	70	7.0	0.343617	0.435663	0.005238
119	Dhedi Kurnia		61	61	122	7.0	0.381346	0.503361	0.077334
120	Jayanti Fs Jayanti		3	3	6	7.0	0.301869	0.338913	0.002842
121	Asnur Diana		11	11	22	8.0	0.301025	0.371171	0.002215
122	Edi Surya Negara Ha...		62	62	124	7.0	0.372979	0.498924	0.022754

Add column | Merge columns | Delete column | Clear column | Copy data to other column | Fill column with a value | Duplicate column | Create a boolean column from regex match | Create column with list of regex matching groups | Negate boolean values | Convert column to dynamic

Figure 3. Data Laboratory

Directions nodes and edges that connect directly between peers are directly generated by the application Gephi with algorithms that have been designed in the application Gephi. Figure 4. Graph Degree distribution

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In the graph above Degree Distribution generating node level number of friends to friends with the right distribution of the calculation algorithm

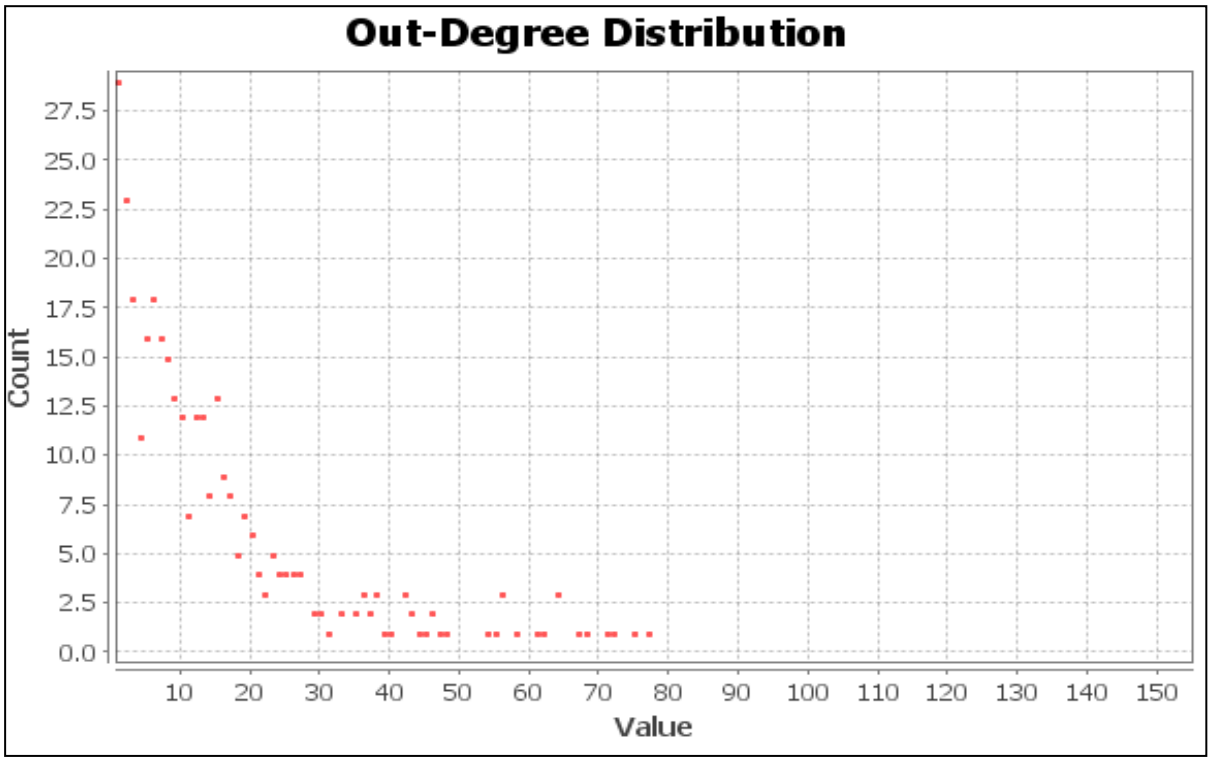

Figure 4 . Graph Degree distribution

In the graph above Degree Distribution generating node level number of friends to friends with the right distribution of the calculation algorithm.

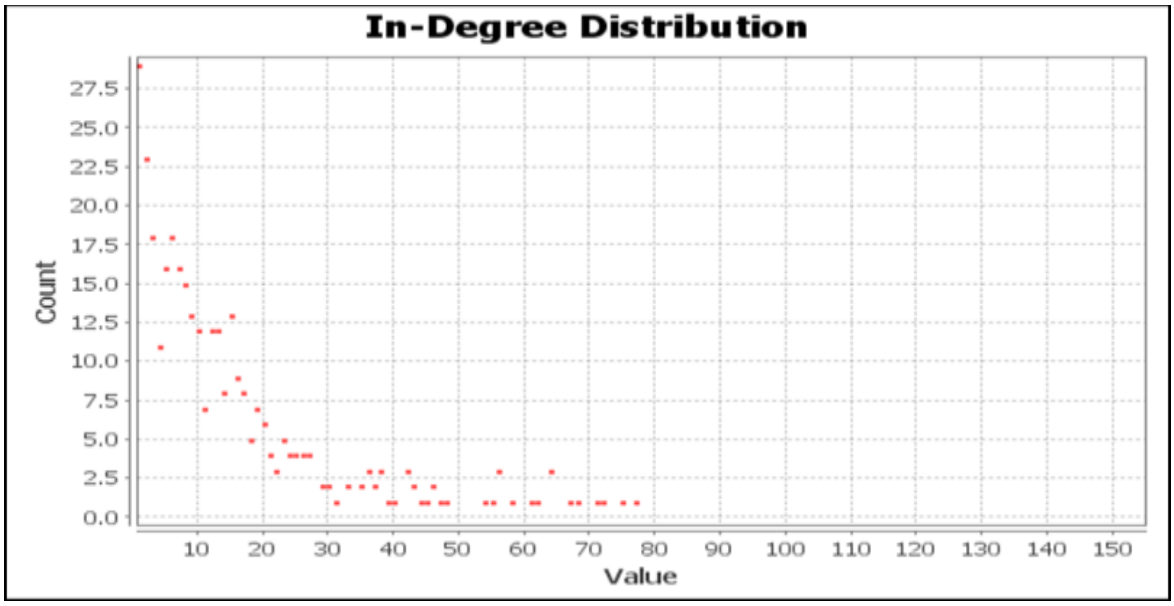

Figure 5. Graph In-Degree distribution

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In the graph above In-Degree Distribution produce data showing the number of levels of nodes with the proper distribution in the network of friends.

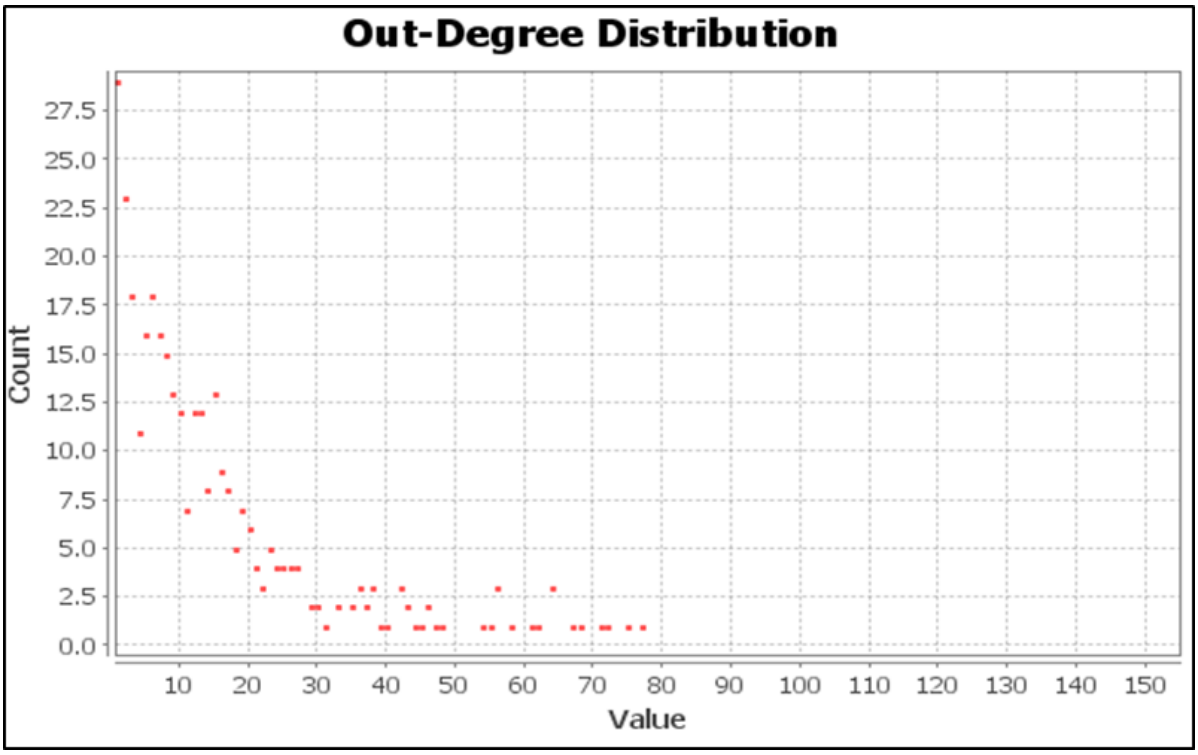

Figure 6. Graph Out-Degree distribution

At Graph Out-Degree Distribution sites generate data that is in the network of friends shows the number of node level with unfocused distribution lines.

In addition, this visualization produces Diameter Network Graphics (Betweenness centrality Distribution, Distribution eccentricity, Harmonic closeness centrality Distribution), shown in Figure 7. up to 9 images.

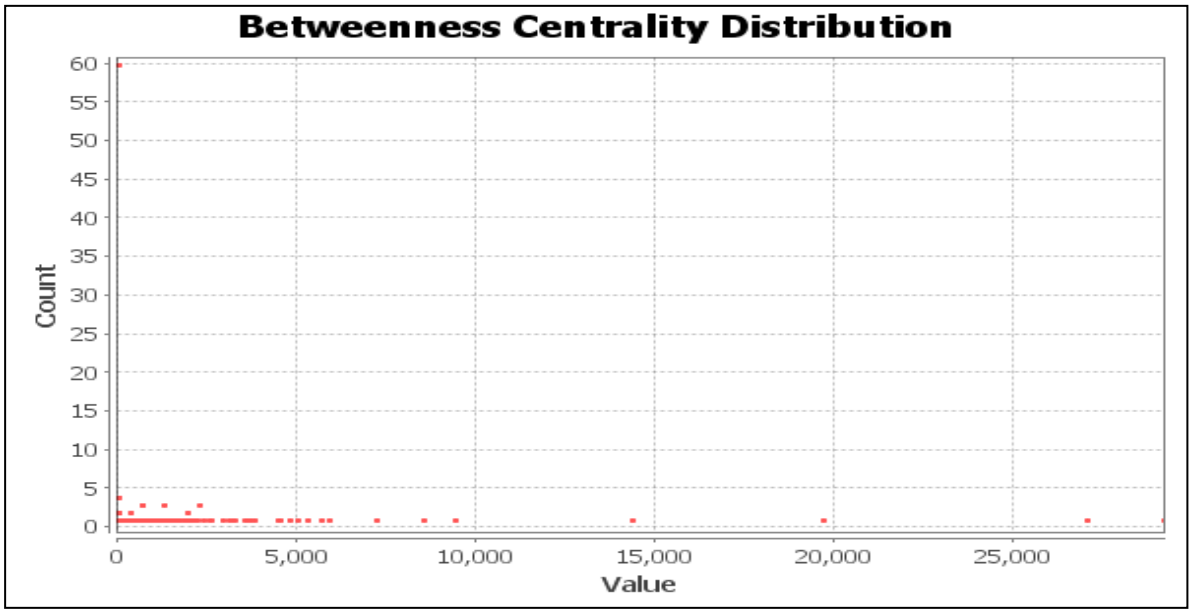

Figure 7. Diameter Network Graphics

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The largest network on the social network to show an information that will be made a central point in the network of friends

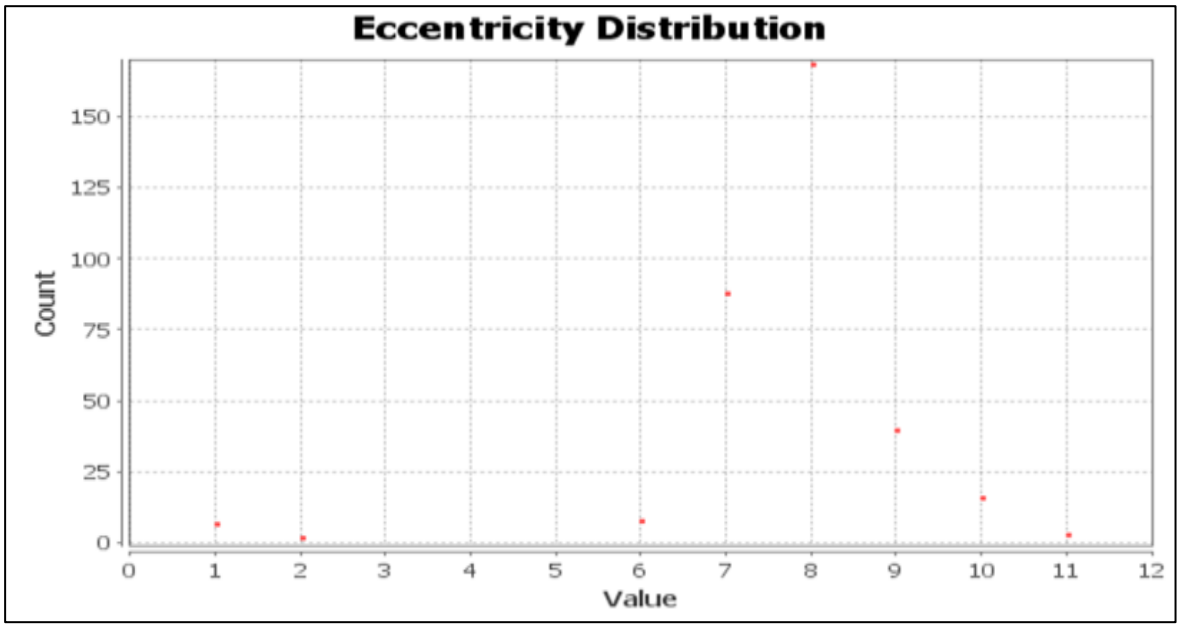

Figure 8. Eccentricity Distribution Graph

On the eccentricity Distribution Graph shows where the node has a network of distance from friend to friend with dots and dashes in the ratio is constant. Where the ratio is denoted as Edges's network

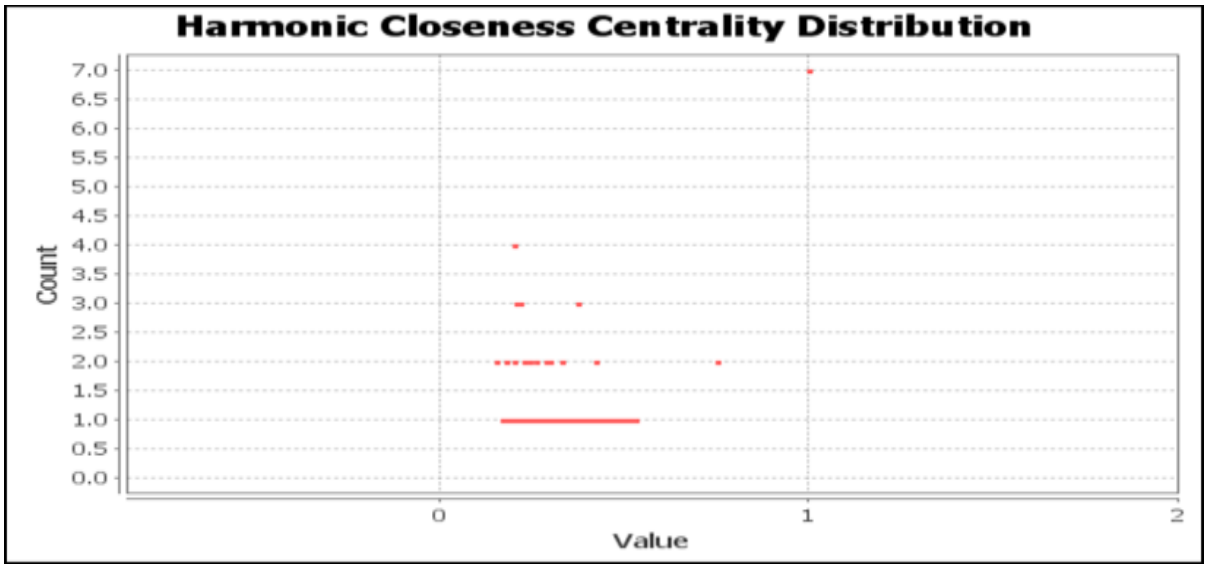

Figure 9. Harmonic graph centrality closness Distribution

Graph Harmonic closness centrality Distribution indicate where the centrality directions node has a close network of distance from friend to friend to automatically calculate the shortest path to the various forms of communication is done by node, and measure the speed of random messages in a communication network of friends.

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DISCUSSION

In this section will explain how the process of the initial research to the results obtained in this study. As mentioned earlier, network development is a way to generate data on the Graph API facebook friendship v2.8 with some special techniques such as authentication, facebook development, collecting data and visualizing. Such techniques are described in sub bab- section below.

Authentication

Facebook is a social media storing large amounts of data, sourced from every facebook user. To get the data from facebook, then we must have a Facebook account to get access to the Facebook API. In this case must be a registered user facebook account, Graph API is an open standard for authentication adopted by facebook to provide access to protect information. Authentication API Faecbook done using the log in your Facebook account, after entering and then go to facebook facebook developers, click the tools and support, and select the Graph API expole

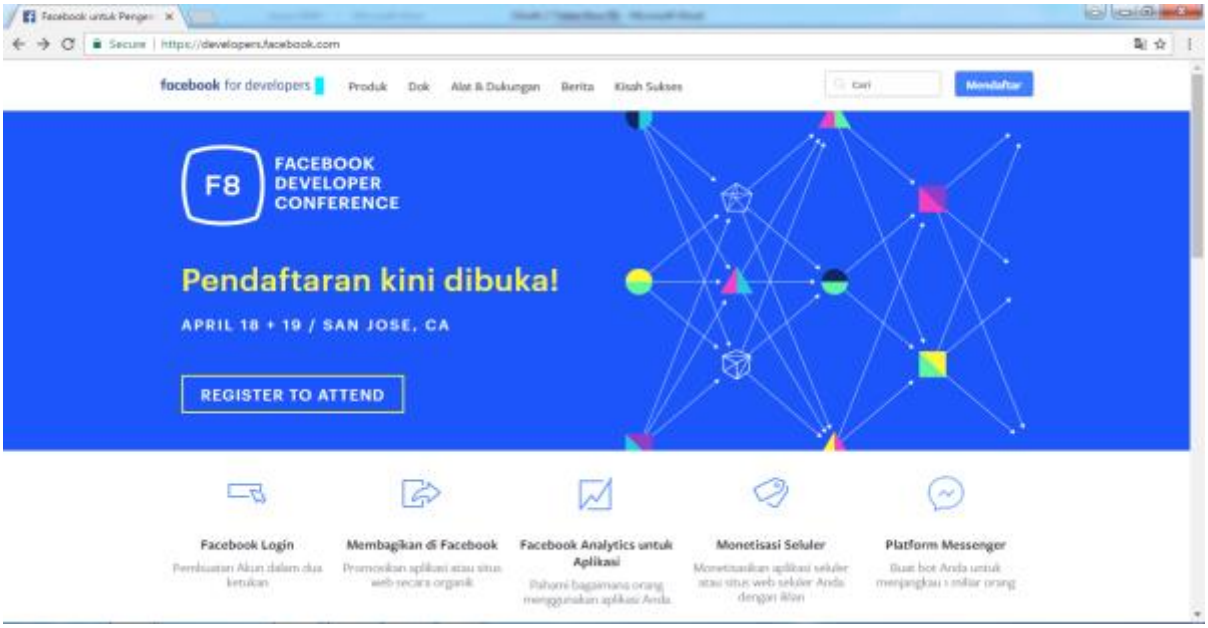

Figure 10. Weather Developers.Facebook.com

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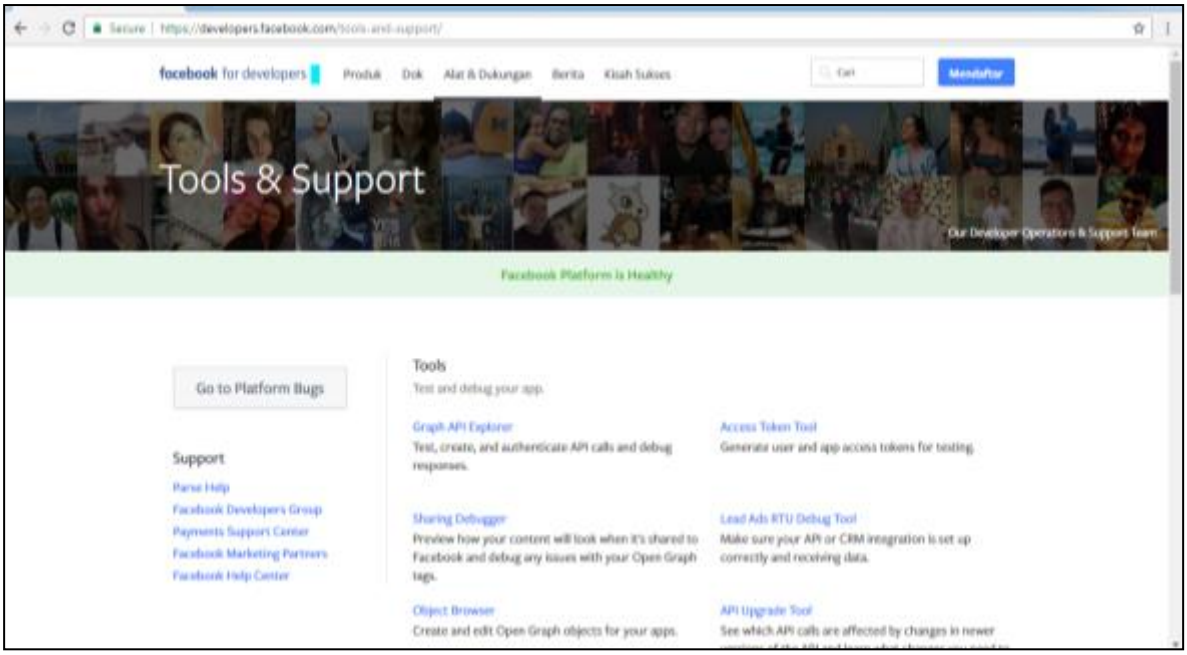

Figure 11. Tools and support page

As described in the groove Authentication over that thing it must first be done to get the Facebook API is to register as a user of facebook account. Upon entry to the facebook developers and enter the Graph API expoler users will get Access Token to get into the Facebook API .. Key API in the form of a special unique code combination of letters and numbers.

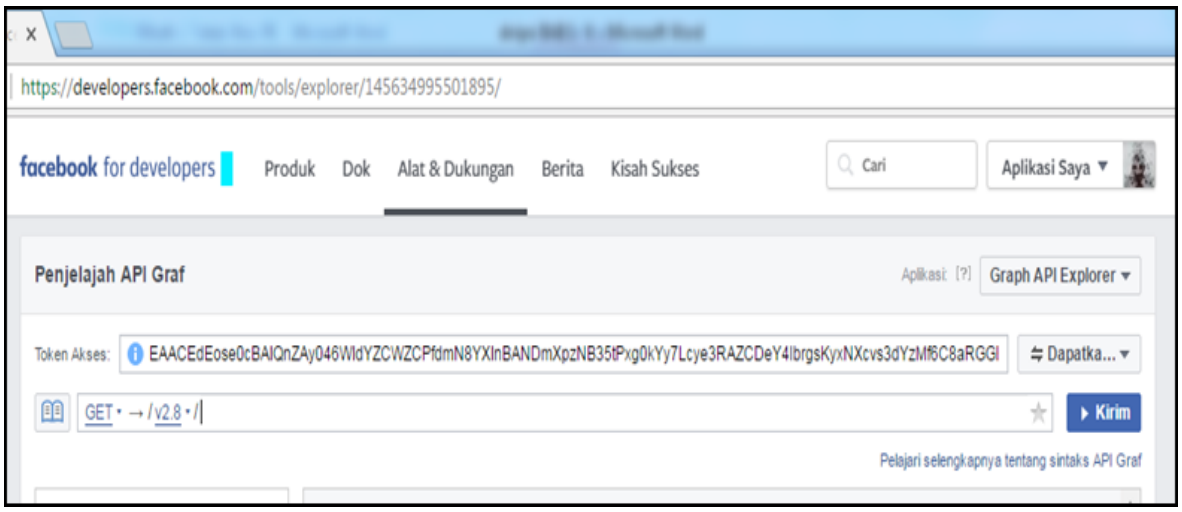

Figure 12. Access Token

Connect with the Facebook API (Connect to Facebook API) Access Token has been established inserted into the coding Python program. Coding is then in the call via the command prompt Once on the run command prompt will display the desired data (data of friendship).

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```
import facebook
import requests
import json

access_token = "EAACEdEose0cBADvanz8qclniDm1507WUHKapGuJqK0RREvAkaBSWq3o58SUrTxYN3CewwZCuLD3CqEYLRHrG0mGp3AZBoqiHbAi056ETYBrKk1lqdl5cK67ZA
graph = facebook.GraphAPI(access_token)
friends = graph.get_object("me/friends")

for friend in friends['data']:
    print "{0} has id {1}".format(friend['id'].encode('utf-8'), friend['name'])
    #for friend(['paging']  in friends_list and ['next'] in friends['paging']):

#print me/friends
```

Figure 13. Coding Program

Before performing coding at the command prompt, there are some commands that must be installed beforehand, as facebook-sdk install, numpy, and matplotlib, to be able to connect to the Facebook Graph API

```
C:\Users\Saibakas>python -m pip install facebook-sdk
Collecting facebook-sdk
  Downloading facebook_sdk-2.0.0-py2-none-any.whl
Collecting requests (from facebook-sdk)
  Downloading requests-2.13.0-py2.py3-none-any.whl (584kB)
    100% |################################| 593kB 469kB/s
Installing collected packages: requests, facebook-sdk
Successfully installed facebook-sdk-2.0.0 requests-2.13.0
```

Figure 14. Install facebook-sdk

```
C:\Users\Saibakas>python -m pip install numpy
Collecting numpy
  Downloading numpy-1.12.0-cp27-none-win32.whl (6.6MB)
    100% |################################| 6.6MB 89kB/s
Installing collected packages: numpy
Successfully installed numpy-1.12.0
```

Figure 15. Install numpy

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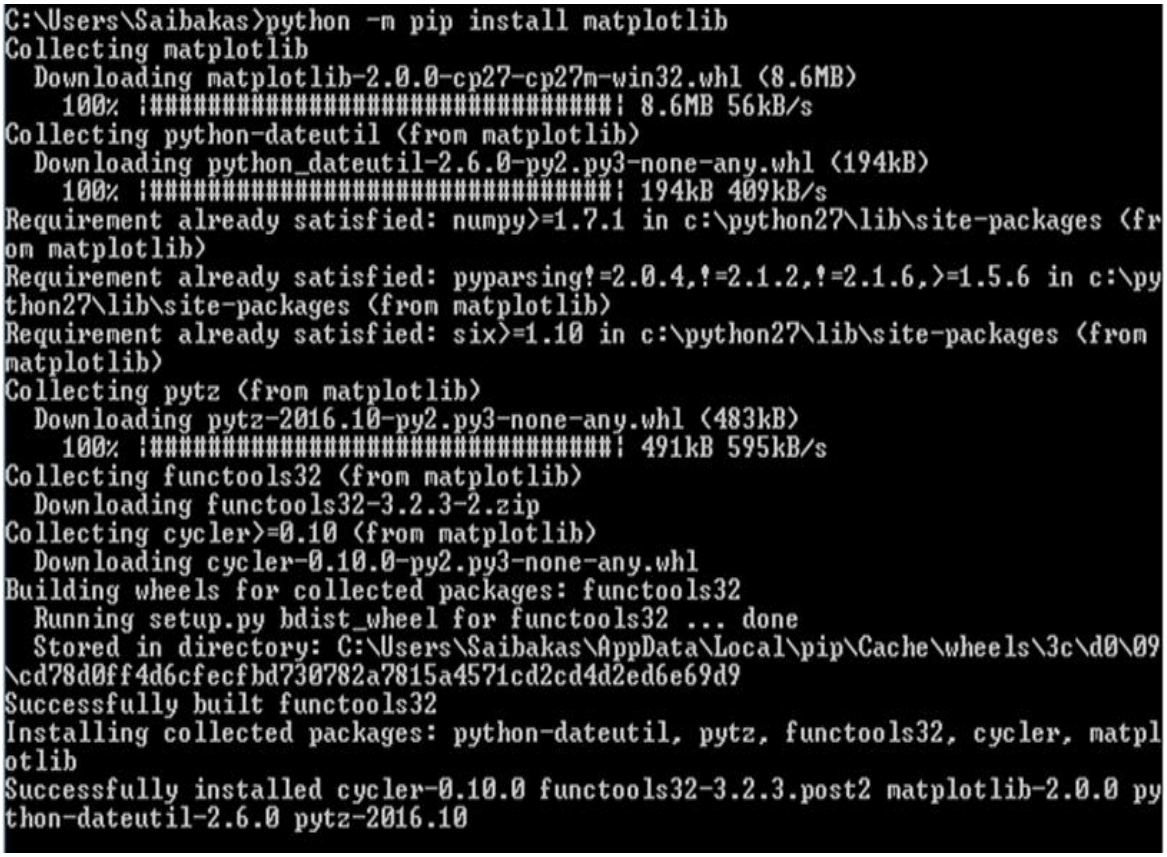

Figure 16. Install Matplotlib

Withdrawal Data (Collecting Data)

After Install new finish we could do a run through the command prompt accordance with the format in the store, the next step is to withdraw the data on facebook friendship with coding using the Python programming language.

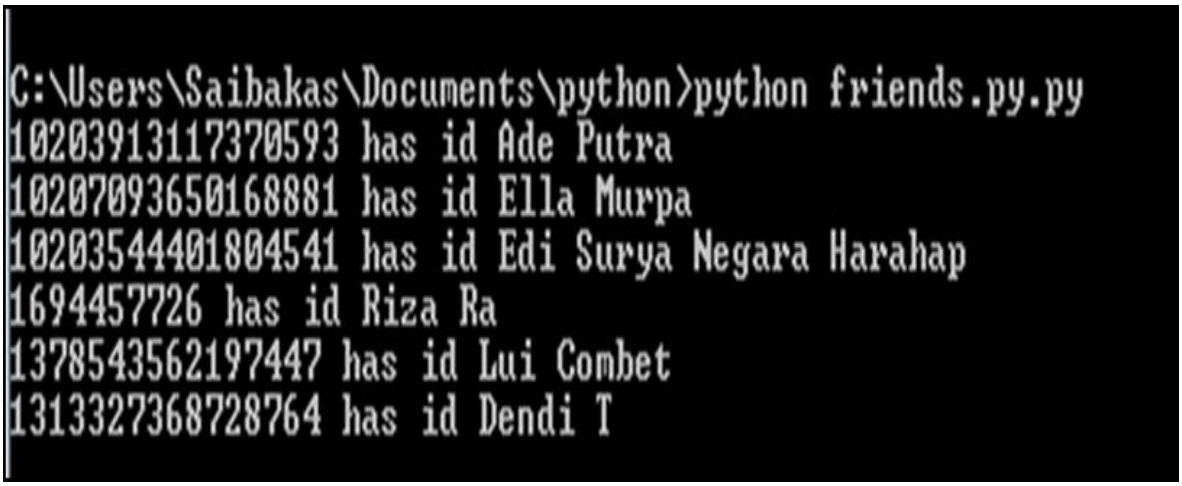

Figure 17. Results Collecting Data

Data Visualization

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After collecting the data friendship has been completed and the data is already in the can from the command prompt, and then data is transferred into GML format to do visualization and display the structure Friendship Network with Gephi application. From the results of the social network visualization display can be known for directions, and network nodes / edges that interconnectedness with each other in the structure of a network of friends on facebook. Visualization of social networks are shown in Figure 18.

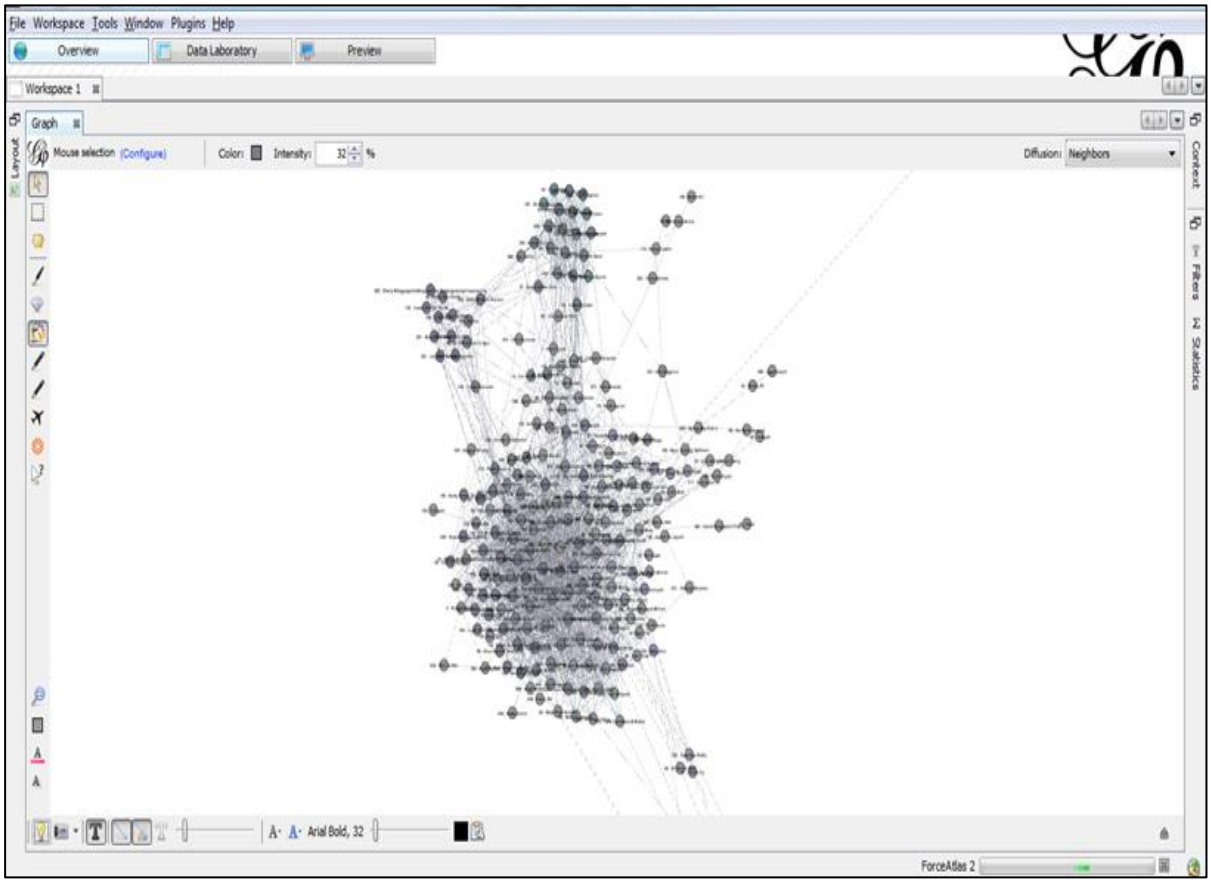

Figure 18. Friendship network visualization

CONCLUSION AND SUGGESTION

Conclusion

From the study of social networks, in this case the facebook can be concluded that:

1. The process of crawling to the data by utilizing facebook Application Programming Interface has been successfully carried out and produce data that is informative, it is in accordance with the opinion of Gross & Acquisti, 2005 which states very easy to join a social networking site. But without accurate knowledge of the security measures, one can be an easy trap for third parties such as hackers (Gross & Acquisti, 2005).

2. From these data is visualized through Gephi applications, and can be seen as well as the user id name and a network of friends on facebook, it is similar to the environment are studied by Hampton and Wellman (Hampton, 2002; Hampton & Wellman, 2003), which shows that the information technology is currently increasing community-based place and facilitate the young generation, social studies previously showed that Facebook users engage in " find " for the people with whom they have a connection offline over them " content " to meet the person on this foreign (Lampe, Ellison, and Steinfeld, 2006).

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3. This study can be used to see how big the network of friends who are on social media facebook, and can be done social network analysis, this shows the growing dependence on these sites it is in accordance with the opinion (Kabay, 2010). It is quite strange to note that the process of communication is increasingly influenced by the progress of the Internet (Kabay, 2010). With a controversial change made by popular social networking site Facebook in 2009

SUGGESTION

Based on the conclusions that have been presented above, then there is a suggestion that needs to be conveyed that in future studies to do research social network through a medial social as a forum to continue to conduct further research to data analysis of social networks, especially the need for the data community detection is done on the network friendship on social media facebook.

DECLARATIONS

Ethics Approval and Consent To Participate

I hope and get approval from the editor so that this manuscript can be published

Consent For Publication

It is hereby declared with the fact that the manuscript of the article entitled **NETWORK OF FRIENDS TO THE OTHER FRIENDS BY SOCIAL MEDIA ON FACEBOOK** Has been published and further publication rights I submit to this journal. Thus this letter of statement to be used properly.

Availability Of Data And Material

The availability of relevant data in this study, I have kept well, and if the editor requires I will attach in the publication of this manuscript.

Competing Interests

There is no other interest in this research, except for the development of science alone.

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