

# DATA EXTRACTION AND ANALYSIS OF CO-AUTHOR NETWORK ANALYSIS

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# Introduction



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# Collecte des données



```
1 import time
2 from selenium import webdriver
3 from selenium.webdriver.chrome.service import Service
4 from selenium.webdriver.common.by import By
5 from selenium.webdriver.support.ui import WebDriverWait
6 from selenium.webdriver.support import expected_conditions as EC
```

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Soufiane BahouEnvironmental Science, EngineeringInternational journal of hydrogen energy1 March 2023

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Assessment of green hydrogen production in Morocco, using hybrid renewable sources (PV and wind)


I. OuryaNouhaila NabilS. AbderafiN. BoutammachteS. Rachidi

Environmental Science, EngineeringInternational journal of hydrogen energy1 March 2023

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# Clean technology selection of hydrogen production on an industrial scale in Morocco

I. Ourya, S. Abderafi • Published in Results in Engineering 1 March 2023 • Engineering, Environmental Science


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```
69 all_element = driver.find_elements(By.XPATH,
70                                   value: "//div[@class='cl-paper-row serp-papers__paper-row paper-v2-cue paper-row-normal']")
71
72 for i in range(len(all_element)):
73     results = driver.find_elements(By.XPATH, value: "//a[@data-test-id='title-link']")
74     if i >= len(results):
75         print(f"Index {i} is out of range for results on page {page_number}")
76         continue
77     link_element = results[i]
78     driver.execute_script(script: "arguments[0].click();", *args: link_element)
79
80     WebDriverWait(driver, timeout: 10).until(
81         EC.presence_of_element_located((By.XPATH, "//span[@data-heap-id='heap_author_list_item']")))
82
83     all_authors = driver.find_elements(By.XPATH, value: "//span[@data-heap-id='heap_author_list_item']")
84     for l in range(len(all_authors)):
85         authors_link = driver.find_elements(By.XPATH,
86                                             value: ".//a[@class='author-list__link author-list__author-name']")
87         if l >= len(authors_link):
88             print(f"Index {l} is out of range for authors_link on page {page_number}")
89             continue
90         author = authors_link[l]
91         author_name_text = author.text
```



**I. Ourya**

Publications **3**

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**Nouhaila Nabil**

1 Co-Authored Paper


3 Publications • 3 h-index • 79 Citations • Engineering



**N. Boutammachte**

1 Co-Authored Paper

37 Publications • 8 h-index • 250 Citations • Engineering



**S. Rachidi**

1 Co-Authored Paper

16 Publications • 7 h-index • 183 Citations • Engineering

# éviter les doublons

```

if author_name.text not in processed_authors:
    co_authors_list = get_coauthors()
    authors_data.append({'Author': author_name.text, 'Co-authors': ', '.join(co_authors_list)})
    processed_authors.add(author_name.text)

driver.back()
driver.back()

```

# extraction des co-author

```

1 usage  👤 Abdessamad akharaz
13 def get_coauthors():
14     co_authors_link = driver.find_element(By.XPATH, value: "//a[@data-test-id='author-page-tabs__co-authors']")
15     co_authors_link.click()
16
17     WebDriverWait(driver, timeout: 20).until(
18         EC.presence_of_element_located((By.XPATH, "//div[@class='author-influence-page__author-list__item']"))
19     )
20
21     co_authors_list = []
22
23     all_co_authors = driver.find_elements(By.XPATH, value: "//h3[@class='author-row__headline__name']")
24     for co_author in all_co_authors:
25         co_authors_list.append(co_author.text)
26
27     return co_authors_list

```

# Parcourir les pages

Within the framework of the sustainable development target of the national energy strategy towards 2030

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```
def click_next_page(driver):
    try:
        next_page = driver.find_element(By.XPATH,
                                         "//*[aria-label='next page' and contains(@class, 'cl-pager__button cl-pager__next')]")
        driver.execute_script("arguments[0].scrollIntoView(true);", next_page)
        time.sleep(1) # Ensure the element is in view
        driver.execute_script("arguments[0].click();", next_page)
        return True
    except Exception as e:
        print(f"Exception during page navigation: {e}. Retrying click after closing potential overlays.")
        try:
            cookie_banner = driver.find_element(By.XPATH, "//*[class='cookie-banner']")
            if cookie_banner:
                accept_cookies_button = cookie_banner.find_element(By.XPATH, "//*[contains(text(), 'Accept')]")
                accept_cookies_button.click()
                time.sleep(2)
        except:
            pass
        try:
            driver.execute_script("arguments[0].click();", next_page)
            return True
        except Exception as e:
            print(f"Retry failed: {e}")
            return False
```



# Collecte et stockage des données

```

120 with open('authors_and_coauthors.csv', 'w', newline='', encoding='utf-8') as csvfile:
121     fieldnames = ['Author', 'Co-authors']
122     writer = csv.DictWriter(csvfile, fieldnames=fieldnames)
123     writer.writeheader()
124     for data in authors_data:
125         writer.writerow(data)
126

```

	A	B
1	Author	Co-authors
2	I. Ourya	S. Abderafi, Nouhaila Nabil, N. Boutammachte, S. Rachidi
3	Nouhaila Na	S. Rachidi, N. Lahboubi, A. Alaoui-Belghiti, Hassan El Bari, Sanae Habchi, I. Ourya, Seddiq Sebbahi, Oussama Bayssi, N. Boutammachte, A. Hajjaji, S. Abderafi, R. Villa, S. Laasri, Yasna Mortezaei
4	S. Rachidi	M. Asbik, Nouhaila Nabil, K. E. Alami, N. Zari, A. Amrani, B. Mitchell, C. Fausser, Dominique Pelca, H. Ait Ousaleh, Yousra Filali Baba, Abdechafik Elhararak, Yassine Nassereddine, H. Bouzekri, P. Fla
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7	O. Sadek	S. Touhtouh, A. Hajjaji, M. Rkhis, M. El Jouad, F. Belhora, L. Sadek, R. Anoua, K. Shah, M. Bejar, E. Dhahri, Mohammed S. Abdo, El Mahdi Bouabdalli, El Mahdi Bouabdalli, Aymane Dahbi, L. Sadek, M
8	T. Abdeljaw	K. Shah, F. Jarad, Aziz Khan, Manar A. Alqudah, D. Baleanu, K. Nisar, Bahaaeldin Abdalla, P. Mohammed, G. Rahman, Mohammed S Abdo, H. Khan, Kamal Shah, M. Sarwar, J. Alzabut, Q. Alâ€Mdalla
9	S. Abderafi	T. Bounahmidi, S. Vaudreuil, Mohamed Anouar Kamzon, Ahmed Tgarguifa, A. Brahim, Ahmed Bichri, Jaouad Eddouibi, Yousra Jbari, I. Ndiaye, S. Aboudaoud, M. Chaanaoui, A. Rich, J. Klein, Fayrou
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12	A. Mezrhab	M. Moussaoui, S. Amraoui, M. Charai, Benyounes Raillani, H. Naji, M. Jami, M. Karkri, Dounia Chaatouf, M. Salhi, J. Benhamou, M. Bouzidi, Y. Admi, F. Moufekkir, S. Channouf, H. Sghiouri, El Bachir
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17	K. Ouazzani	M. Benslimane, Hamza El Hafdaoui, Mehdi Tmimi, A. Khallaayoun, M. Berrada, A. Jamil, J. Bentama, Ouissal Drissi El Bouzaidi, A. Allouhi, Faissal Jelti, A. A. Mana, A. Khaldoun, A. Elgarouani, P. Sch
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20	Samir Idrissi	Mohamed Oualid Mghazli, Jamal Brigui, Niima Es-sakali, Mohammed Ahachad, J. Brigui, F. El Mansouri, Ibtihal Ait Abdelmoula, Imad Ait Laasri, Moha Cherkaoui, Jens Pfafferott, Mohamed El Mani
21	Mohamed O	Niima Es-sakali, Samir Idrissi Kaitouni, Imad Ait Laasri, Moha Cherkaoui, Samir Idrissi Kaitouni, M. Charai, Imad Ait Laasri, Abdellah Nait-Taour, Abdelkader Outzourhit, Jens Pfafferott, Mohamed E
22	J. Brigui	F. Cacciola, F. Mansouri, M. Palma, M. P. Lovillo, A. Liazid, C. Barroso, L. Mondello, H. E. Cadi, F. El Mansouri, G. F. Barbero, Asmae El Cadi, H. E. Farissi, Yassine Oulad El Majdoub, B. Ramdan, R. Rod
23	F. Z. Echogda	S. Boutaleb, M. Abioui, M. Ouchchen, K. Abdelrahman, M. Ikirri, M. Id-Belqas, T. Abu-Alam, B. Dadi, H. El Ayady, M. Fnais, E. Abia, A. Bendarma, F. Faik, K. Mickus, R. B. Kpan, S. Essoussi, K. S. Sajini



# Visualisation de réseau



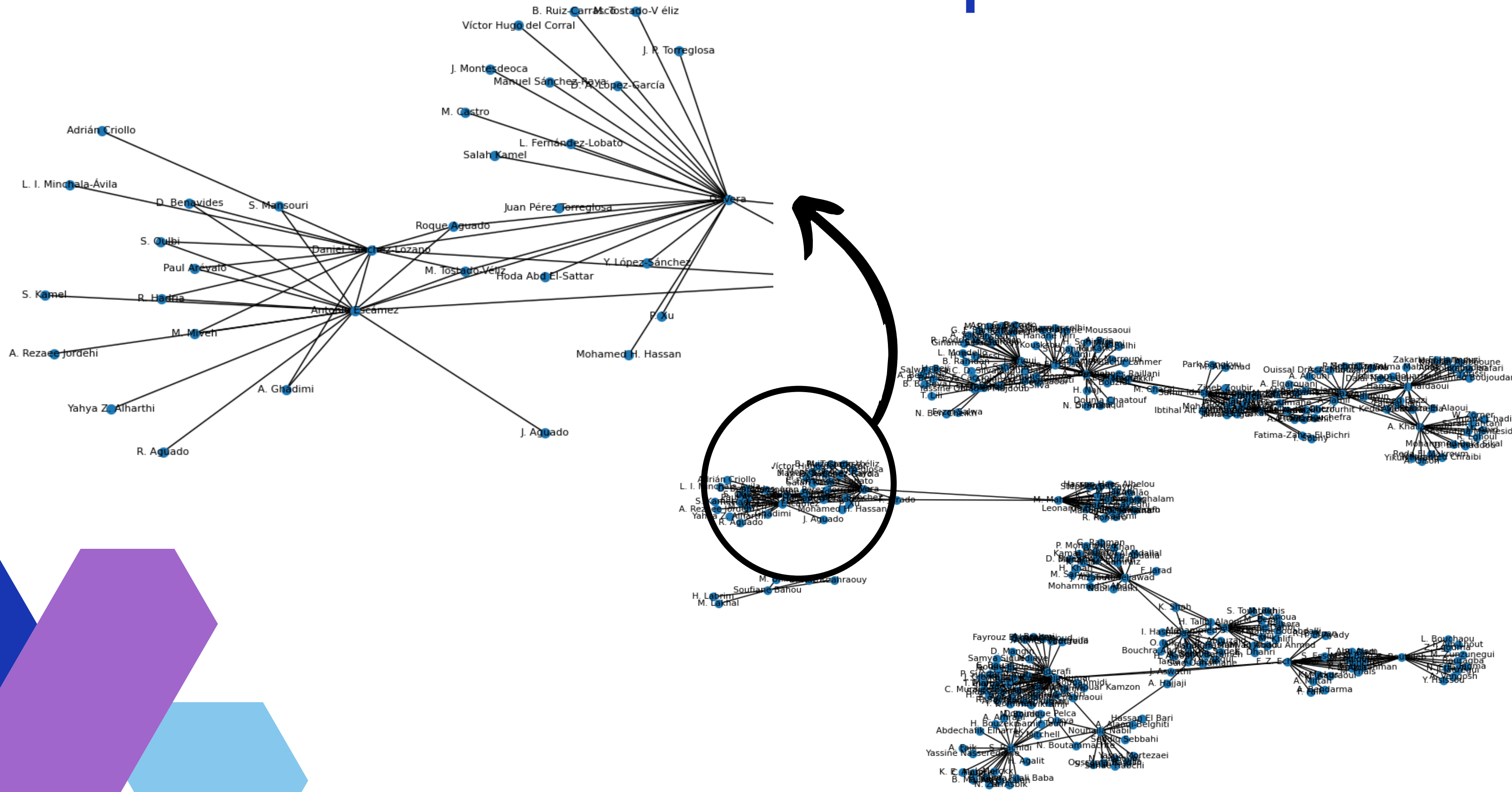
```
1 import networkx as nx
2 import csv
3 from pyvis.network import Network
4 import community as community_louvain
5
6 file = "authors_and_coauthors.csv"
7
```



# Visualisation avec Matplotlib

```
6 authors_data = []
7 with open('authors_and_coauthors.csv', 'r', encoding='utf-8') as csvfile:
8     reader = csv.DictReader(csvfile)
9     for row in reader:
10         authors_data.append(row)
11
12 # Créer le graphe de co-auteurs
13 G = nx.Graph()
14
15 for data in authors_data:
16     author = data['Author']
17     co_authors = data['Co-authors'].split(',')
18     for co_author in co_authors:
19         G.add_edge(author, co_author)
20
21 # Visualiser le graphe
22 plt.figure(figsize=(12, 12))
23 pos = nx.spring_layout(G, k=0.1) # Positionnement des nœuds
24 nx.draw(G, pos, with_labels=True, node_size=50, font_size=8)
25 plt.title('Réseau de co-auteurs')
26 plt.show()
```

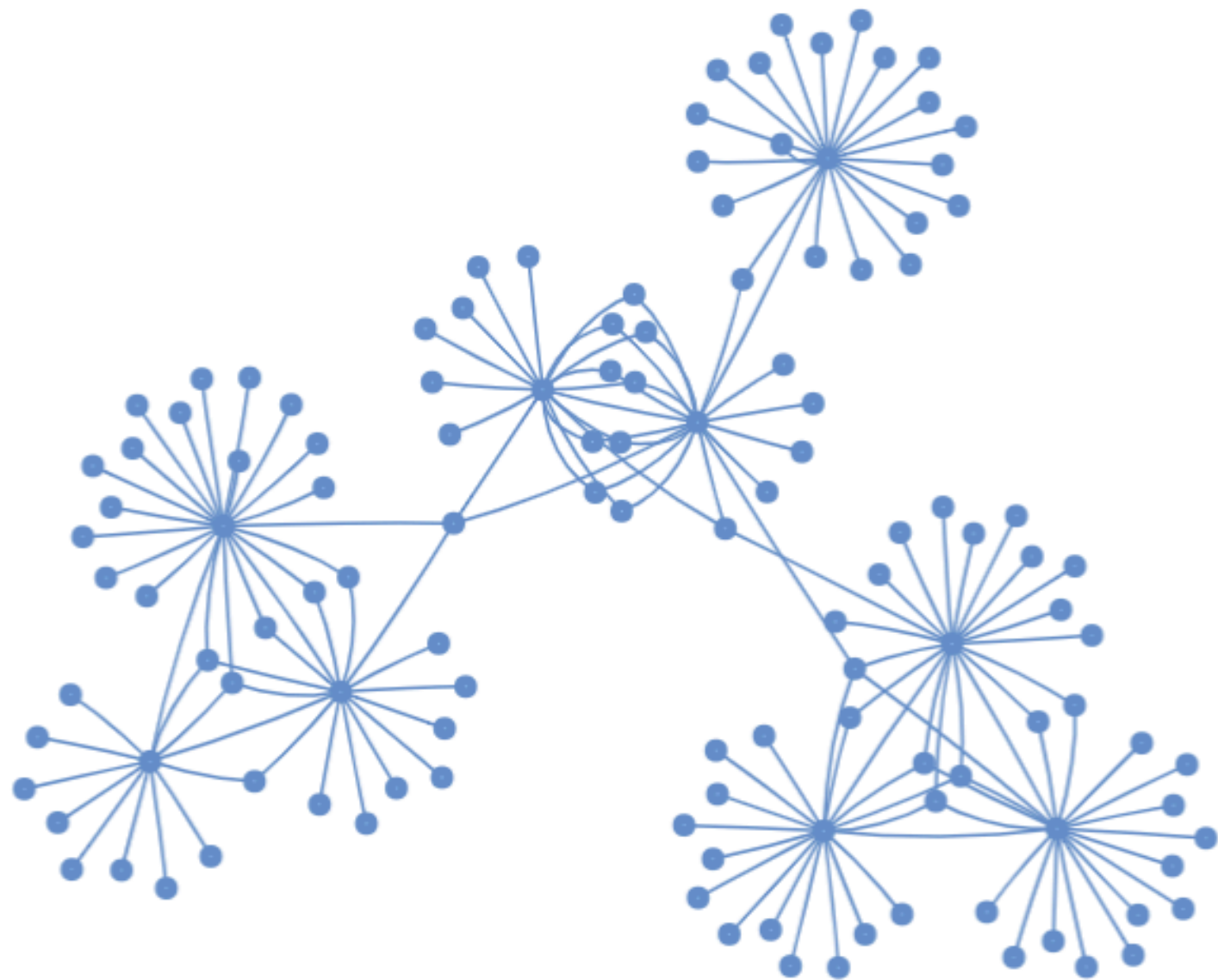
# Visualisation avec Matplotlib



# Visualisation avec Pyvis

```
9 G = nx.Graph()
10
11
12 with open(file, newline='', encoding='utf-8') as csvfile:
13     reader = csv.reader(csvfile)
14     next(reader)
15     for row in reader:
16         author = row[0]
17         co_authors = row[1].split(", ")
18         for co_author in co_authors:
19             G.add_edge(author, co_author)
20
21 communities = community_louvain.best_partition(G)
22 nx.set_node_attributes(G, communities, name='group')
23 # Create the network with Pyvis
24 #node_degree = dict(G.degree)
25 #nx.set_node_attributes(G, node_degree, 'size')
26 #nx.set_node_attributes(G, node_degree, 'degree centrality')
27 G1 = Network()
28 G1.from_nx(G)
29 G1.show(name='mygraph.html', notebook=False)
30
```

# Visualisation avec Pyvis



```
9 G = nx.Graph()
10
11
12 with open(file, newline='', encoding='utf-8') as csvfile:
13     reader = csv.reader(csvfile)
14     next(reader)
15     for row in reader:
16         author = row[0]
17         co_authors = row[1].split(", ")
18         for co_author in co_authors:
19             G.add_edge(author, co_author)
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21 communities = community_louvain.best_partition(G)
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26 #nx.set_node_attributes(G, node_degree, 'size')
27 #nx.set_node_attributes(G, node_degree, 'degree centrality')
28 G1 = Network()
29 G1.from_nx(G)
30 G1.show( name: 'mygraph.html', notebook=False)
```

# Visualisation avec Pyvis

```
21 communities = community_louvain.best_partition(G)
22 nx.set_node_attributes(G, communities, name: 'group')
23 # Create the network with Pyvis
24 node_degree = dict(G.degree)
25 nx.set_node_attributes(G, node_degree, name: 'size')
26 nx.set_node_attributes(G, node_degree, name: 'degree_centrality')
```





# Conclusion

