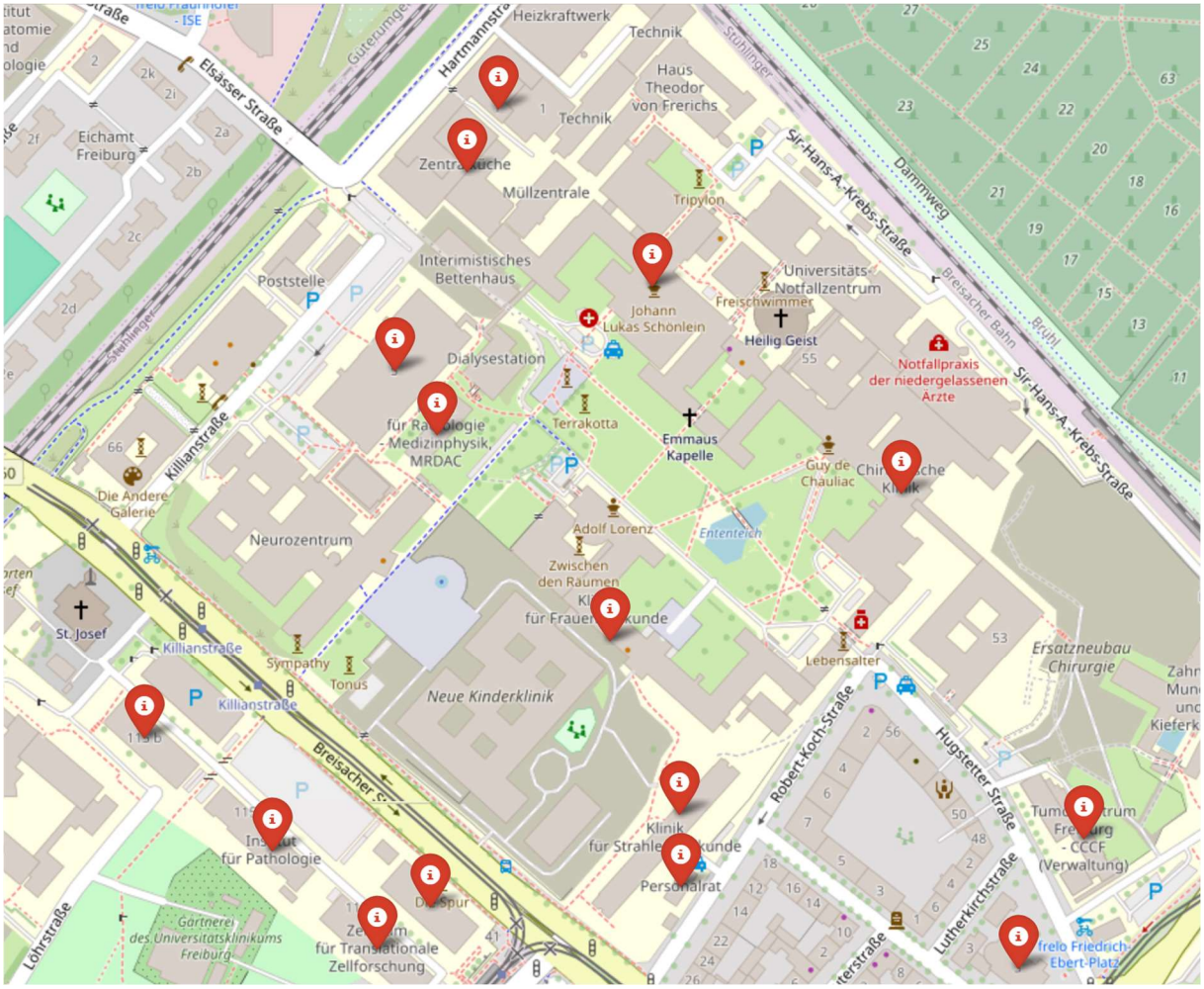
Geographic Position of selected nodes

1) Context



- table of 15 nodes with different geographic positions

1) Klinik für Frauenheilkunde
2) Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde
3) Klinik für Radiologie - Medizinphysik, MRDAC
4) Institut für Infektionsprävention und Krankenhaushygiene
5) Institut für Pathologie
6) Personalrat
7) Zentrum für Translationale Zellforschung
8) Tumorzentrum Freiburg - CCCF (Verwaltung)
9) Lutherkirche
10) Institute for Disease Modeling and Targeted Science (IMITATE)
11) Klinik für Strahlenheilkunde
12) Chirurgische Klinik
13) Medizinische Klinik
14) Zentralküche
15) Wäscherei

2) Prompt

```
prompt = ChatPromptTemplate.from_messages([
    ("system", '''
    You are a helpful assistant. You are asked to provide information about
the impact on traffic of a given action on a network of nodes.
    Think about some possible impacts of the action like people crowds,
traffic jams, blocked roads, etc., that influence the traffic flow.
    Please respond to given example only based on the given context that
includes the name of the 15 nodes and its coordinates.
    You have to really think about the geographic position and the local
environment of the impact position and how the action affects nodes in the
environment.
    All nodes in the context determine the complete map. Keep that in mind
when evaluating the distance between nodes based on their geographic
position.
    IMPORTANT: Do not only consider the names of the nodes!
    The final answer should only include the list of directly affected
nodes which have to have the names of the nodes in the context and for
every node an explanation.
     '''),
    ("user", "Action: {example}\nContext: {context}"),
])
```

3) Examples

- List with 10 different action that can occur
- We consider the first 5:

1) There is a fire alarm going off at Zentralküche.

2) There is a power outage at Klinik für Radiologie - Medizinphysik, MRDAC.

3) There is a radiation leak at Klinik für Strahlenheilkunde.

4) An infectious disease outbreak was identified at Institut für Infektionsprävention und Krankenhaushygiene.

5) There is a big medical conference being held at Institute for Disease Modeling and Targeted Science (IMITATE).

4) Results with Temperature = 0

- Example 1:

Result	Explainable with position
Zentralküche	Zentralküche
Klinik für Strahlenheilkunde	Wäscherei
Chirurgische Klinik	Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde
Medizinische Klinik	Medizinische Klinik

  - F_RE = 4/4 = 1
  - C = 2

- Example 2:

Result	Explainable with position
Klinik für Frauenheilkunde	Klinik für Radiologie - Medizinphysik, MRDAC
Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde	Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde
Institut für Infektionsprävention und Krankenhaushygiene	
Institut für Pathologie	
Personalrat	
Zentrum für Translationale Zellforschung	
Institute for Disease Modeling and Targeted Science (IMITATE)	
Klinik für Strahlenheilkunde	
Chirurgische Klinik	
Medizinische Klinik	

  - F_RE = 10/2 = 5
  - C = 1

- Example 3:

Result	Explainable with position
Klinik für Frauenheilkunde	Klinik für Frauenheilkunde
Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde	Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde
Klinik für Radiologie - Medizinphysik, MRDAC	Klinik für Radiologie - Medizinphysik, MRDAC
Institut für Infektionsprävention und Krankenhaushygiene	Institut für Infektionsprävention und Krankenhaushygiene
Personalrat	Personalrat

Zentrum für Translationale Zellforschung	Zentrum für Translationale Zellforschung
Institute for Disease Modeling and Targeted Science (IMITATE)	Institute for Disease Modeling and Targeted Science (IMITATE)
Chirurgische Klinik	Chirurgische Klinik
Medizinische Klinik	Medizinische Klinik
	Institut für Pathologie
	Tumorzentrum Freiburg - CCCF (Verwaltung)
	Lutherkirche
	Klinik für Strahlenheilkunde
	Zentralküche
	Wäscherei

  - F_RE = 9/15 = 0.6
  - C = 9

- Example 4:

Result	Explainable with position
Klinik für Frauenheilkunde	Institut für Infektionsprävention und Krankenhaushygiene
Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde	Institut für Pathologie
Institut für Pathologie	Zentrum für Translationale Zellforschung
Personalrat	Institute for Disease Modeling and Targeted Science (IMITATE)
Institute for Disease Modeling and Targeted Science (IMITATE)	
Klinik für Strahlenheilkunde	
Chirurgische Klinik	
Medizinische Klinik	
Zentralküche	

  - F_RE = 9/4 = 2.25
  - C = 2

- Example 5:

Result	Explainable with position
Klinik für Frauenheilkunde	Institute for Disease Modeling and Targeted Science (IMITATE)
Klinik für Augenheilkunde, Klinik für Hals-, Nasen- und Ohrenheilkunde, Klinik für Lungenheilkunde	Zentrum für Translationale Zellforschung

Institut für Infektionsprävention und Krankenhaushygiene	Institut für Pathologie
Personalrat	
Zentrum für Translationale Zellforschung	
Chirurgische Klinik	
Medizinische Klinik	
Institut für Pathologie	
Tumorzentrum Freiburg - CCCF (Verwaltung)	
Lutherkirche	
Klinik für Strahlenheilkunde	
Zentralküche	
Wäscherei	

  - F_RE = 13/3 = 4.33
  - C = 2

Fazit:

- # results: 45
- # explainable: 28
- Only 16 coincidences
- Often overestimation
- Geographic positions were not correctly taken into account
  - Next approach: Rename nodes to node_1, node_2, ...

5) Results with renamed nodes and Temperature = 0

```
prompt = ChatPromptTemplate.from_messages([

    ("system", '''

    You are a helpful assistant. You are asked to provide information about the impact on traffic of a given action on a network of nodes.

    Think about some possible impacts of the action like people crowds, traffic jams, blocked roads, etc., that influence the traffic flow.

    Please respond to given example only based on the given context that includes the 15 nodes and its coordinates.

    You have to really think about the geographic position and the local environment of the impact position and how the action affects nodes in the environment.

    All nodes in the context determine the complete map. Keep that in mind when evaluating the distance between nodes based on their geographic position.

    IMPORTANT: Only consider the positions of the nodes!

    The final answer should only include the list of directly affected nodes which have to have the names of the nodes in the context and for every node an explanation.

     '''),

    ("user", "Action: {example}\nContext: {context}"),

])
```

- Example 1:

Result	Explainable with position
node_13	node_14
node_15	node_15
	node_2
	node_13

  - F_RE = 2/4 < 1
  - C = 2

- Example 2:

Result	Explainable with position
node_2	node_3
node_4	node_2
node_10	

  - F_RE = 3/2 > 1

- C = 1

- Example 3:

Result	Explainable with position
node_6	node_1
node_8	node_2
node_10	node_3
	node_4
	node_5
	node_6
	node_7
	node_8
	node_9
	node_10
	node_11
	node_12
	node_13
	node_14
	node_15

  - F_RE = 3/15 = 0.2
  - C = 3

- Example 4:

Result	Explainable with position
node_3	node_4
node_5	node_5
node_10	node_7
	node_10

  - F_RE = 3/4 < 1
  - C = 2

- Example 5:

Result	Explainable with position
node_1	node_10
node_3	node_7
node_4	node_5
node_5	
node_7	
node_11	

  - F_RE = 6/3 = 2

    - C = 2

Fazit:

- # results: 17
- # explainable: 28
- Only 10 coincidences
- Example 3 totally underestimated
- Still bad results
    - Not useful!

6) Results Hallucination Test

- Idea: parameter Temperature back to default value 0.7
- Run every example 5 times and check consistency

- Example 1:

Run 1	Run 2	Run 3	Run 4	Run 5
node_13	node_13	node_13	node_13	node_13
node_15	node_15	node_15	node_15	node_15

Consistency:

1	2	3	4	5
0	0	0	0	2

⇨ Perfect consistency
⇨ Both are explainable

- Example 2:

Run 1	Run 2	Run 3	Run 4	Run 5
node_2	node_2	node_2	node_2	node_2
node_4	node_4	node_4	node_4	node_4
node_10	node_10	node_5	node_5	node_5
node_5		node_10	node_10	node_10
		node_13	node_13	
		node_14		

Consistency:

1	2	3	4	5
1	1	0	1	3

⇨ Consistent in three nodes
⇨ Only node_2 is explainable

- Example 3:

Run 1	Run 2	Run 3	Run 4	Run 5
node_6	node_6	node_6	node_6	node_6
node_8	node_8	node_10	node_8	node_8
node_10	node_10	node_12	node_10	node_10
node_12		node_5		

Consistency:

1	2	3	4	5
1	1	0	1	2

⇨ Consistent in two nodes
⇨ Both explainable

- Example 4:

Run 1	Run 2	Run 3	Run 4	Run 5
node_1	node_3	node_3	node_3	node_3
node_5	node_5	node_5	node_5	node_5
	node_2	node_2	node_10	node_2
	node_6	node_10	node_11	node_6
	node_10		node_7	node_10

Consistency:

1	2	3	4	5
2	1	1	2	1

⇨ Consistent in one node
⇨ Explainable

- Example 5:

Run 1	Run 2	Run 3	Run 4	Run 5
node_1	node_9	node_1	node_1	node_1
node_2	node_11	node_3	node_3	node_2
node_3	node_5	node_5	node_4	node_3
node_4	node_6	node_7	node_5	node_4
node_5		node_11	node_6	node_11

			node_7	node_14
			node_11	
			node_12	
			node_13	
			node_14	
			node_15	

Consistency:

1	2	3	4	5
4	4	1	4	0

Overall Consistency:

1	2	3	4	5
8	7	2	8	8