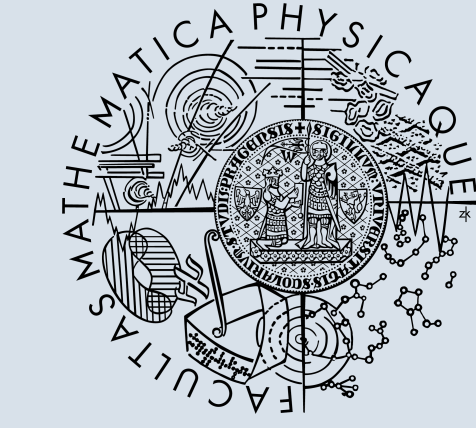


Modelling Information Spread using Generative Agents

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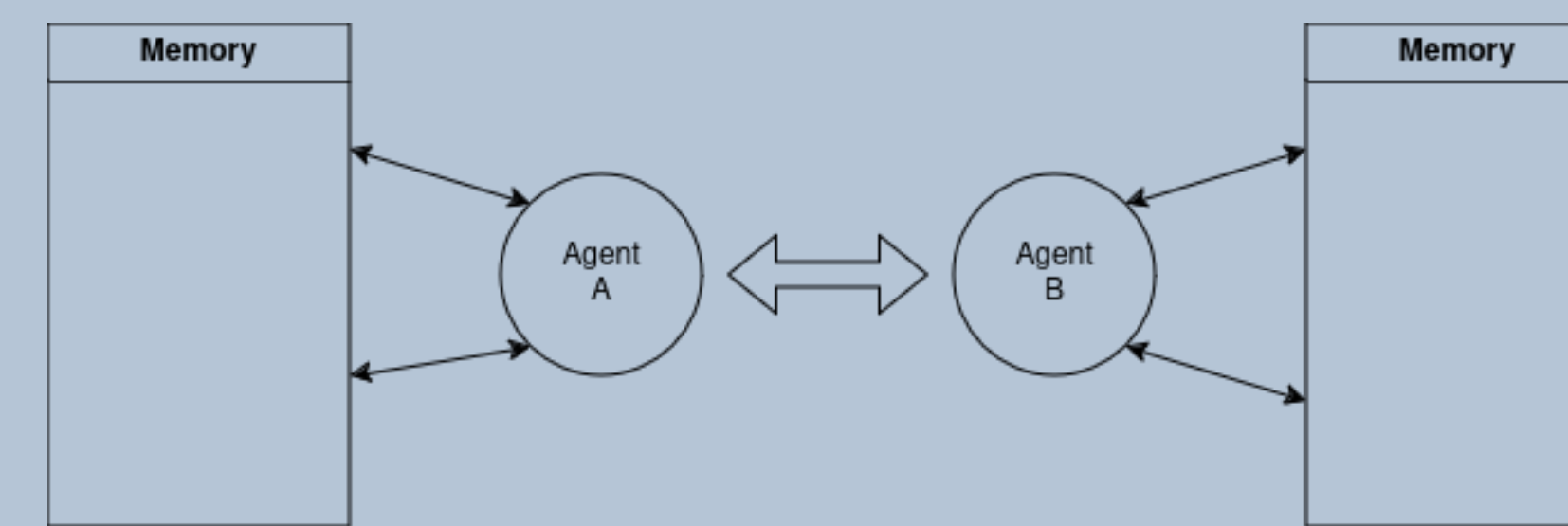
Introduction

This work represents the initial step towards modelling communication and information dissemination in small groups of agents. Leveraging large language models (LLMs), our approach enables agents to generate and interpret communications in natural language.

Model

Multi-agent network model consists of:

- network of contacts
- agents powered by a LLM
- agents' memories



Agent's memory:

- list of statements in a natural language
- memories acquired during conversation
- two types: general and connected to a particular agent

Example of conversation:

```
2024-06-20 10:55:28,068 - INFO - Julia New meets Klaus Mueller
2024-06-20 10:55:28,068 - INFO - JULIA NEW: Hi Klaus! It's great to see you again. I heard from Maria that you're working on a research paper about the effects of gentrification in low-income communities. I'm really interested in that topic, especially since I've noticed some changes in my neighborhood that could be related to gentrification.
```

References:

- [1] J. S. Park, et al. *Generative Agents: Interactive Simulacra of Human Behavior*, 2023, <https://arxiv.org/abs/2304.03442>
- [2] A. Q. Jiang, et al. *Mixtral of Experts*, 2024, <https://arxiv.org/abs/2401.04088>

Acknowledgement

This work was supported by the European Regional Development Fund project "Beyond Security: Role of Conflict in Resilience-Building" (reg. no.: CZ.02.01.01/00/22_008/0004595).



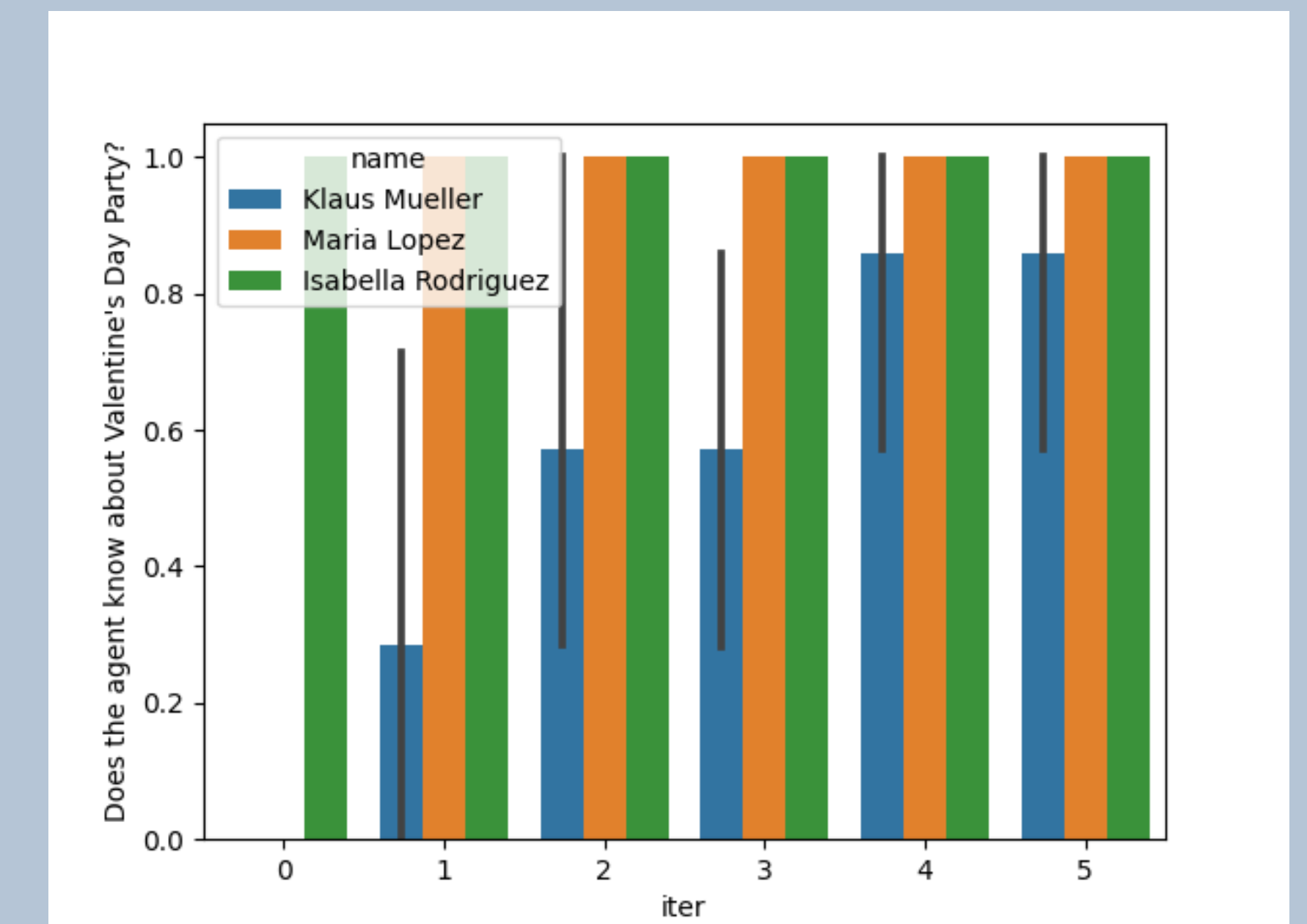
Co-funded by
the European Union



Experiments

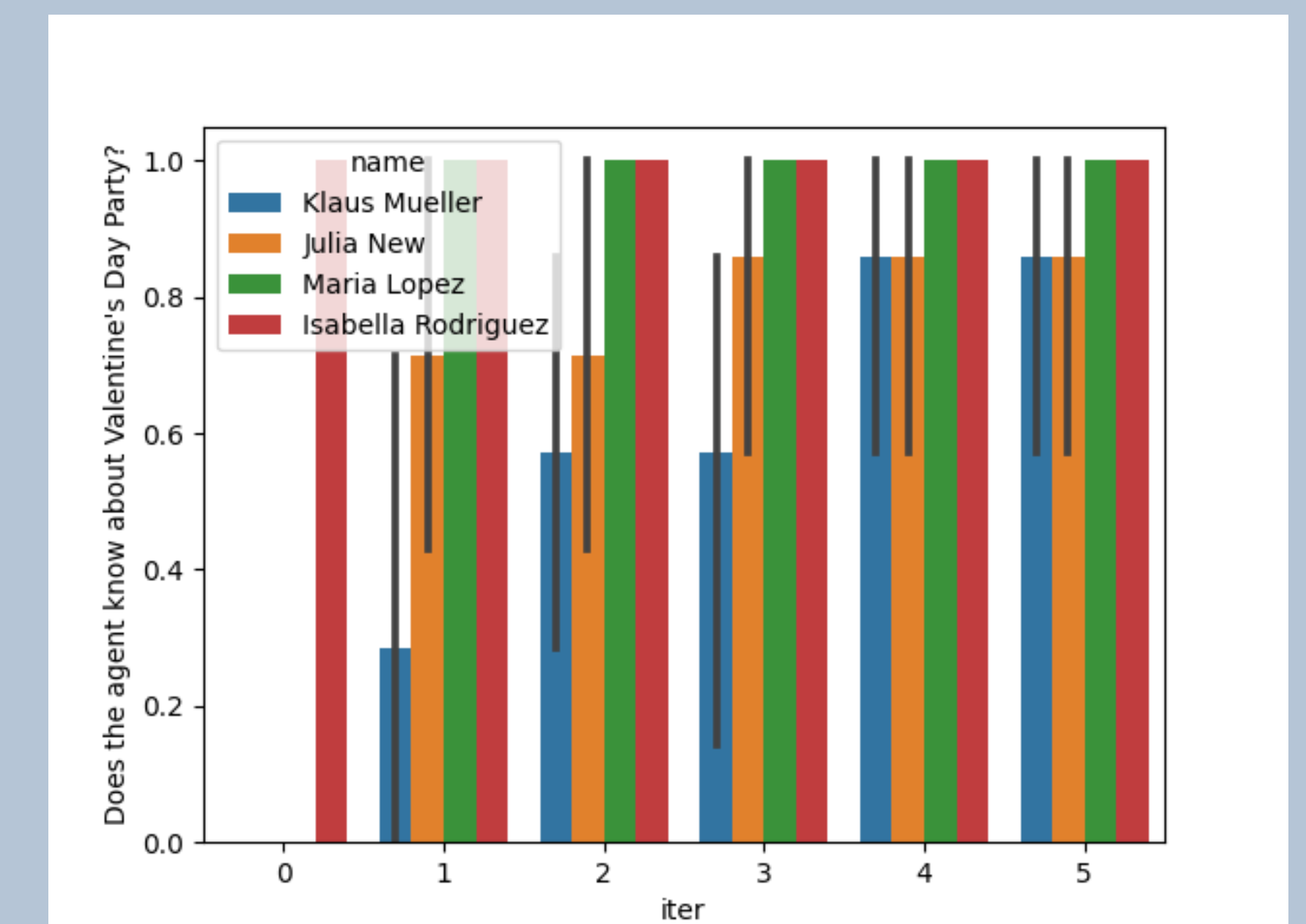
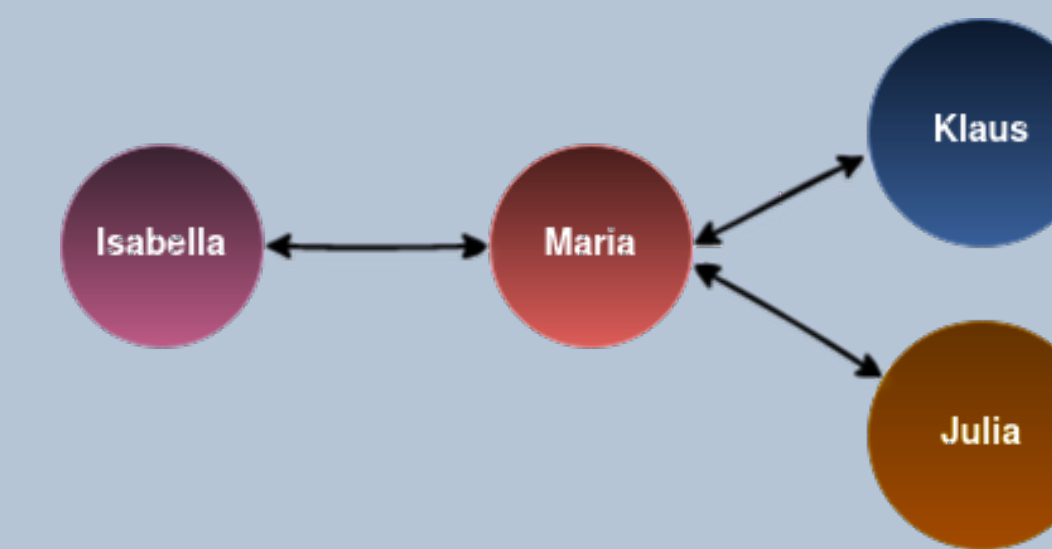
Experiment I

- 3 agents, personalities taken from [1]
- the target piece of information: "Isabella organises a party"
- at the start other agents do not know it



Experiment II

- an additional agent Julia, who loves partying



Mixtral-8x7B-Instruct-v0.1[2] used in all experiments.

Future Challenges

- Experiments with real world scenarios.
- Extending agents control mechanisms with planning module, incorporating BDI architecture.
- Analysing the sensitivity to the choice of LLM.