

Faculty of Economics and Social Sciences  
of the University of Tuebingen

Master thesis

# **Cognitive Biases in Large Language Models: An empirical analysis of state-of-the-art models**

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# 1 Introduction

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## **2 Preliminaries**

Bias is for me this, Experiment means this, Model this, ...

### **3 Theoretical Background**

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#### **3.1 Past Studies on Human Behavioral Effects**

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#### **3.2 The Uprise of Large Language Models**

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#### **3.3 Leveraging Large Language Models to Simulate Human Behavior**

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## **4 Technical and Technological Setup**

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### **4.1 Bias Selections**

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#### *4.1.1 Characterizations of Cognitive Biases*

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#### *4.1.2 Concise and Balanced Selections*

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### **4.2 Model Selections**

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### **4.3 Technological Environment**

Database stores master data and results Ollama for models Database can be accessed from local machine and cluster Cluster for larger model inference

## **5 Methodology**

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### **5.1 Composition of Experiments**

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#### *5.1.1 Variable Parameter Values*

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#### *5.1.2 Combination of Biases and Models*

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### **5.2 Experiment Runs**

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### **5.3 Response Analysis**

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#### *5.3.1 Output Format*

What it looks like and what I do if the format is different.

#### *5.3.2 Meta Analysis*

## 6 Meta Analysis

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## 7 Discussion

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## 8 Conclusion

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## **Formal declaration**

I hereby declare that I have written this thesis independently, did not use any sources or resources other than those cited and that the thesis has not been submitted as a whole or in any significant part as part of any other examination process. All information taken from other works - either verbatim or paraphrased - has been clearly indicated. The copy submitted in electronic form is identical in content to the bound copies submitted.

Munich, MONTH DAY, 2024

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Max Mohr