A Comparison of Classical and Modern Information Retrieval Approaches on Recipes

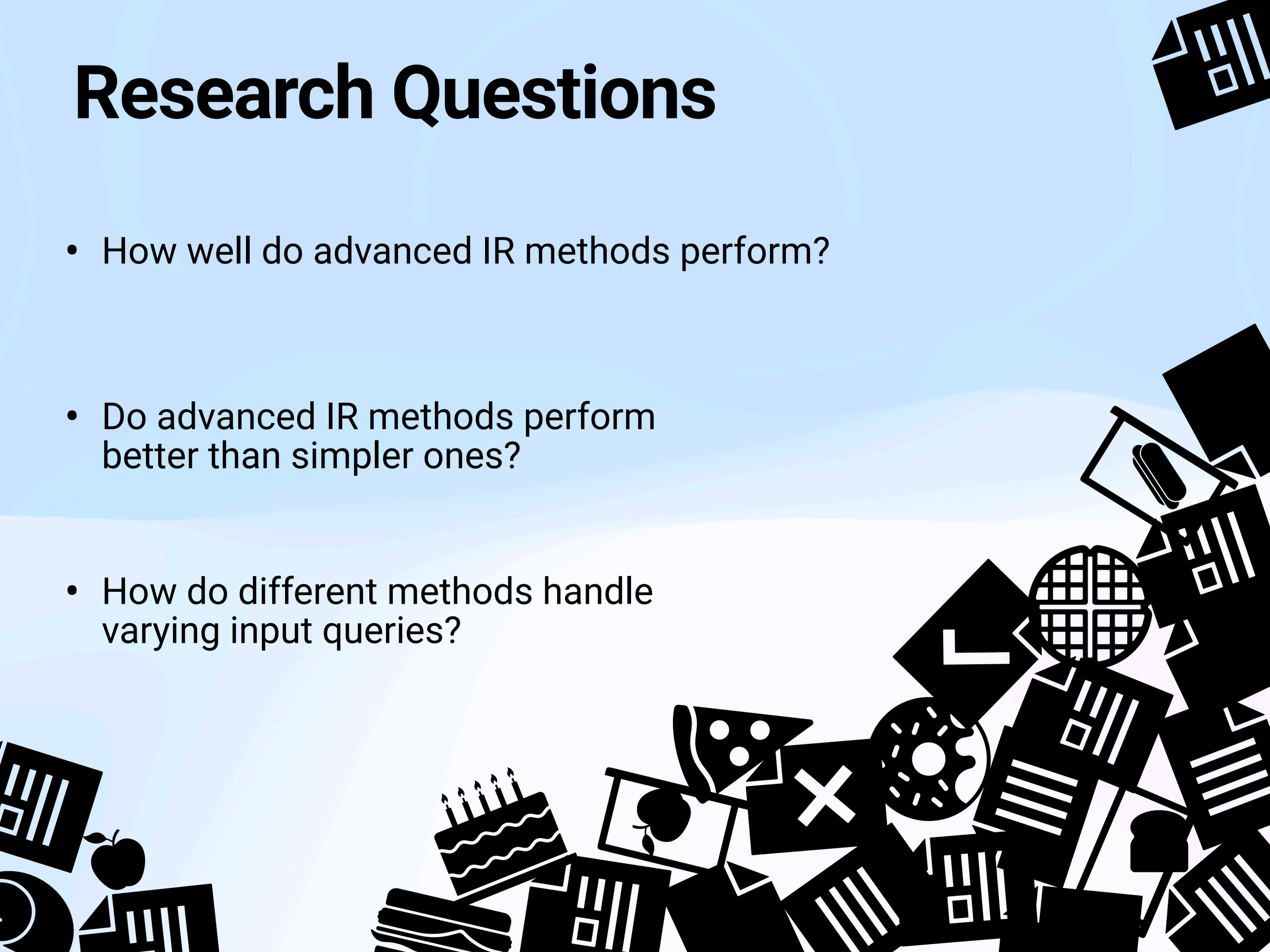
https://github.com/Dowakiin/Advanced-Information-Retrival-WS24-25-Group22

A Project by Group 22:

- Markus Auer-Jammerbund — Team-role: Query pipeline setup, Evaluation, Report
- Thomas Knoll — Team-role: Design Document, *BERT* embeddings, Evaluation, Report
- Jonas Pfisterer — Team-role: *Word2Vec* embeddings, Evaluation, Report
- Thomas Puchleitner — Team-role: Design Document, *TF-IDF* embeddings, Result processing, Evaluation, Report

Research Questions

- How well do advanced IR methods perform?
- Do advanced IR methods perform better than simpler ones?
- How do different methods handle varying input queries?



Data and Models

Where did we get it from and what did we do with it?

Data:

- From Hugging Face

Pre-processing:

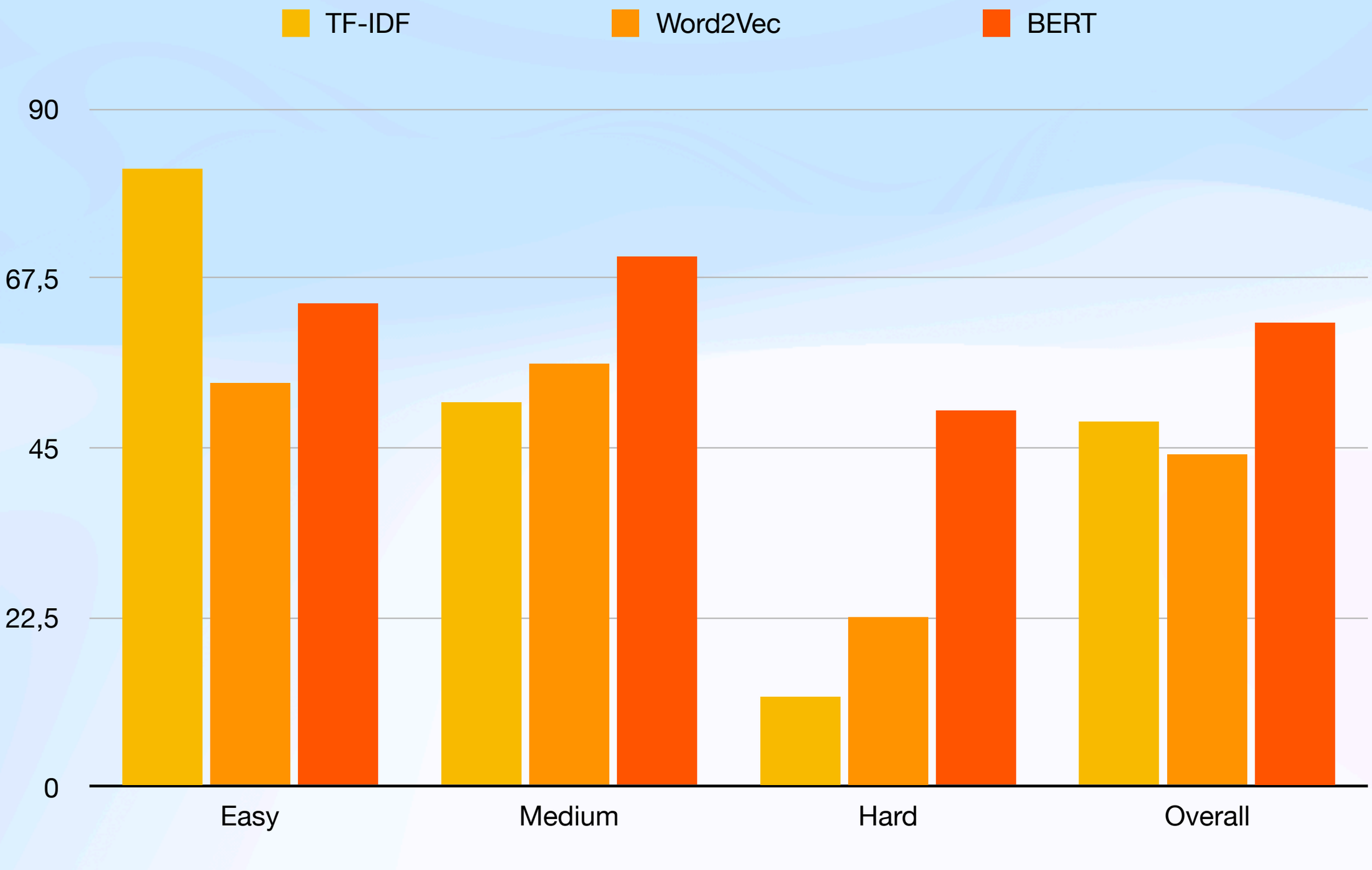
- Merged the ingredient and instruction columns
- Reduced the size to 100,000 (from 2 mil.)

Methods:

- TF-IDF: The old reliable
- Word2Vec: A newer approach
- BERT: State-of-the-art heavyweight

Results

Recipe relevance per IR method for different query types



Conclusion / Possible future work

- Test with the whole dataset

- Increase robustness by: asking more queries, utilizing additional evaluators, and expanding on the returned recipes

- Deeper analysis of the weak performance of *Word2Vec* (focusing on its parameter settings, training conditions, etc.)

- Additional training or fine-tuning of the BERT model