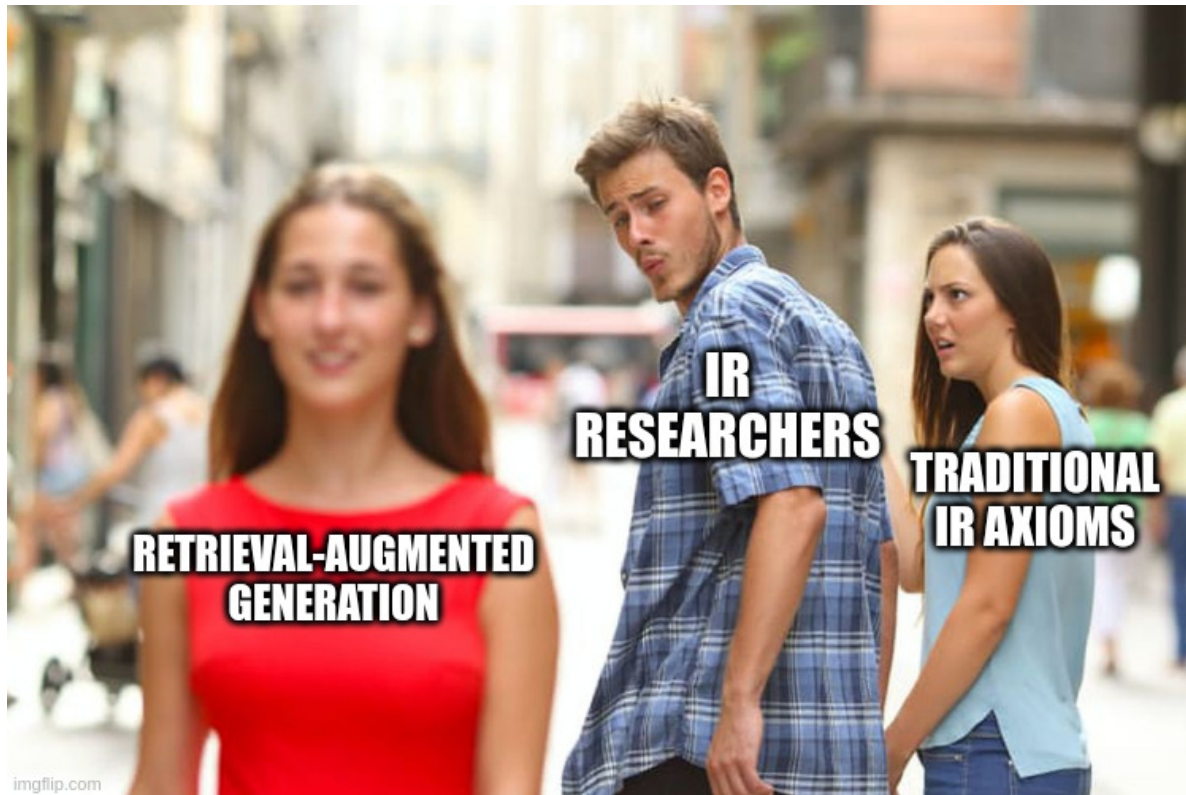


Axiomatic IR... but for Retrieval-Augmented Generation?!

Heinrich



Axiomatic IR... but for RAG?!

Traditional goal: Constraints between pairs of **retrieved documents**



Axiomatic Retrieval Experimentation with ir_axioms

Alexander Bondarenko^{1,★}Maik Fröbe^{1,★}

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AB

Axiomatic role in determining retrieval models. Behavioral experiments have been op-

PROX4

ГFC1

LNC-

retrieval theory, ax-
initial ranking, to

INTRODUCTION

STMC2

D BACKGROUND

many open-source frameworks provide a convenient way to experiment with models on standard corpora. One carrier platform [29]—open-sourced and learning-to-rank experiments



Axiomatic IR... but for RAG?!

🚩 Traditional goal: Constraints between pairs of **retrieved documents**



Axiomatic Retrieval Experimentation with `ir_axioms`

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AB PROX4 LNC1 INTRODUCTION D BACKGROUND
Axio role in determin retrieval models. Be axioms have been opera retrieval theory, ax- i initial ranking, to "guide" retrieval, or to explain some model's rankings. However, re- many open-source frameworks ide a convenient way to experi- dels on standard corpora. One is the Terrier platform [29]—open-sourced that supports retrieval and learning-to-rank experiments

STMC2

COMPLETED



❑ SERP → answer

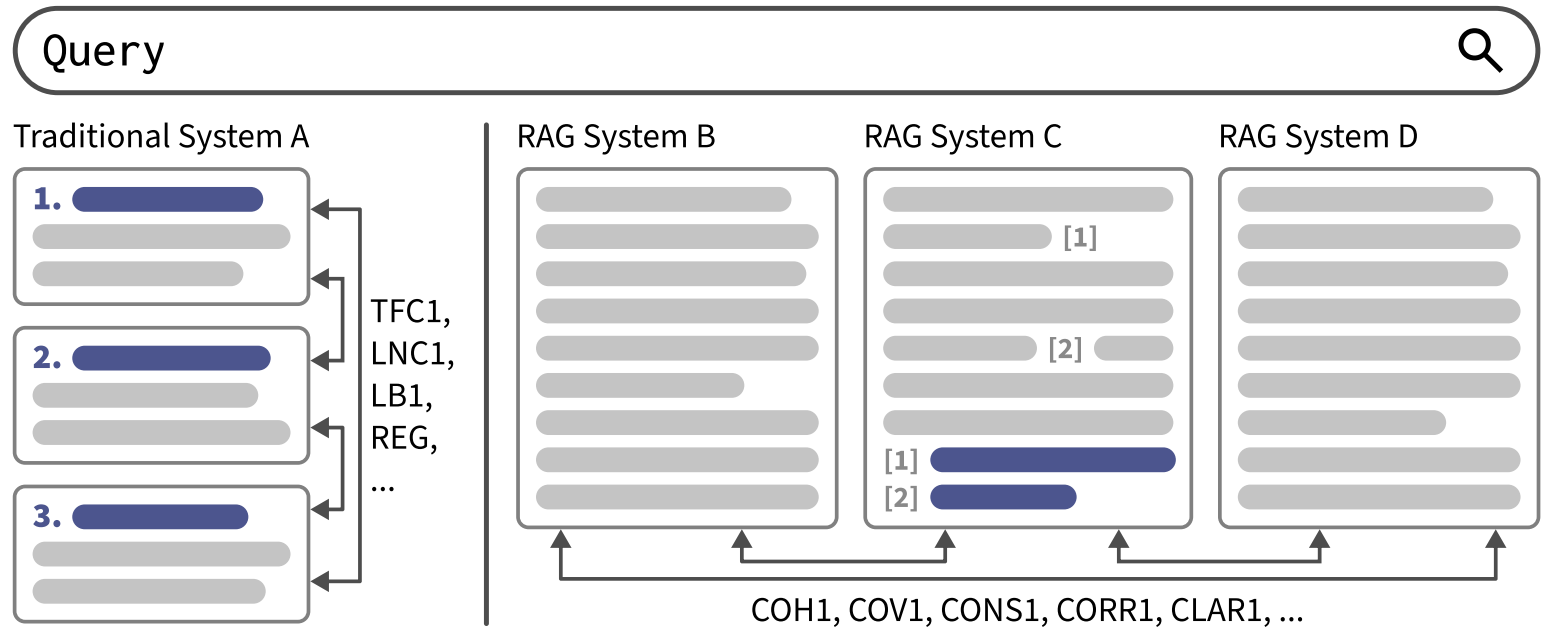
❑ result → context

❑ **search → RAG**
(Retrieval-Augmented Generation)

Axiomatic IR... but for RAG?!

~~Traditional goal: Constraints between pairs of retrieved documents~~

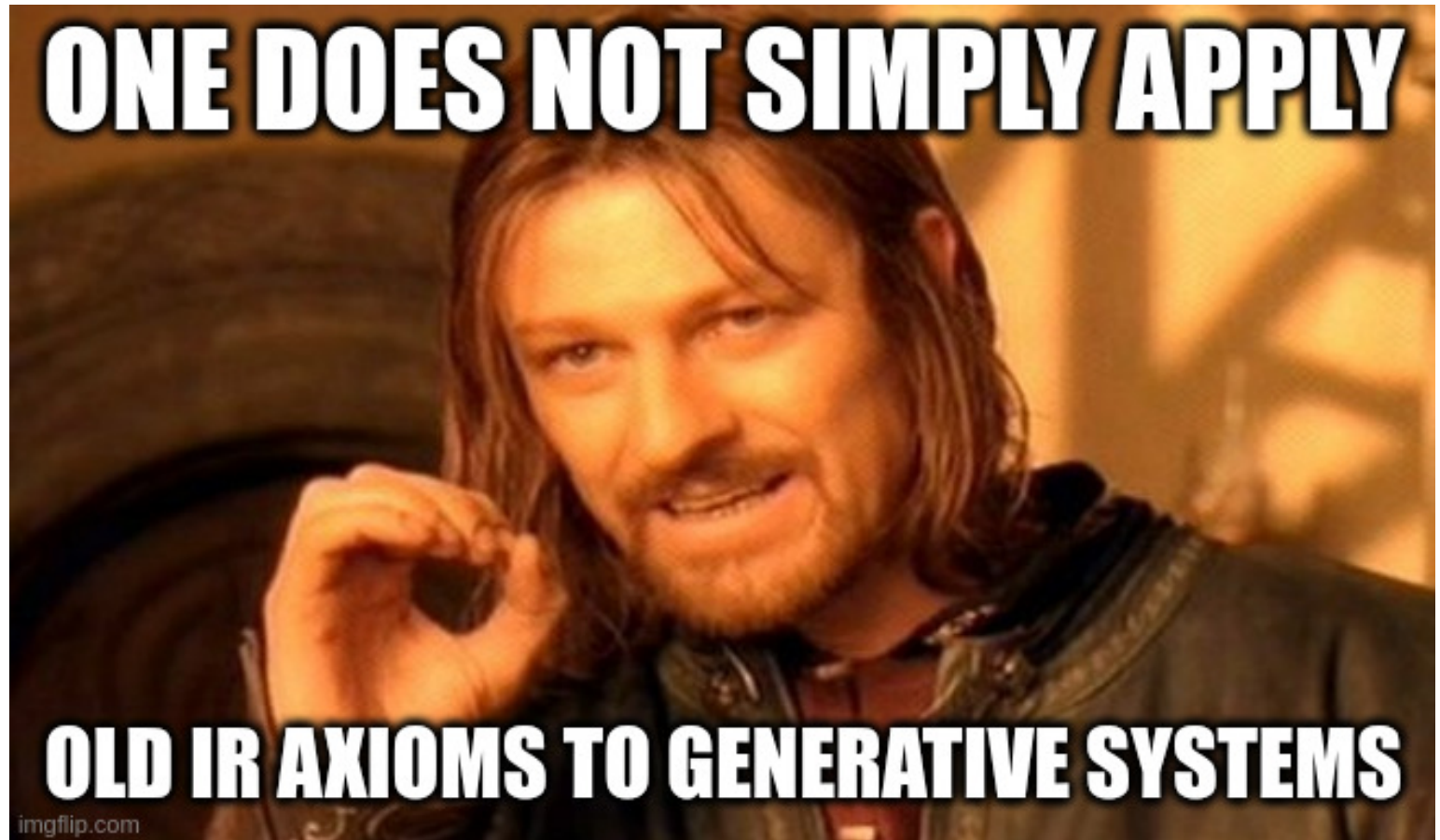
Goal: Constraints between pairs of **generated answers**



Axiomatic IR... but for RAG?!

~~Traditional goal: Constraints between pairs of retrieved documents~~

Goal: Constraints between pairs of **generated answers**



Axiomatic IR... but for RAG?!

⇒ New axioms for RAG

**USE TRADITIONAL
IR AXIOMS**

**ADAPT SOME
TRADITIONAL AXIOMS**

**CREATE NEW
AXIOMS FOR RAG**

imgflip.com



Axiomatic IR... but for RAG?!

⇒ New axioms for RAG

Criteria [Lukas @ SIGIR'24]

- ✎ Coherence
- ✂ Coverage
- 📁 Consistency
- 🛡 Correctness
- 🕸 Clarity

Axioms

- ❑ COH1, COH2
- ❑ COV1, COV2, COV3
- ❑ CONS1, CONS2, CONS3
- ❑ CORR1
- ❑ CLAR1, CLAR2

Experiments

- ❑ TREC RAG'24
- ❑ human prefs. [Lukas]
- ❑ 3 LLMs
- axiom consistency
- ax. decisiveness



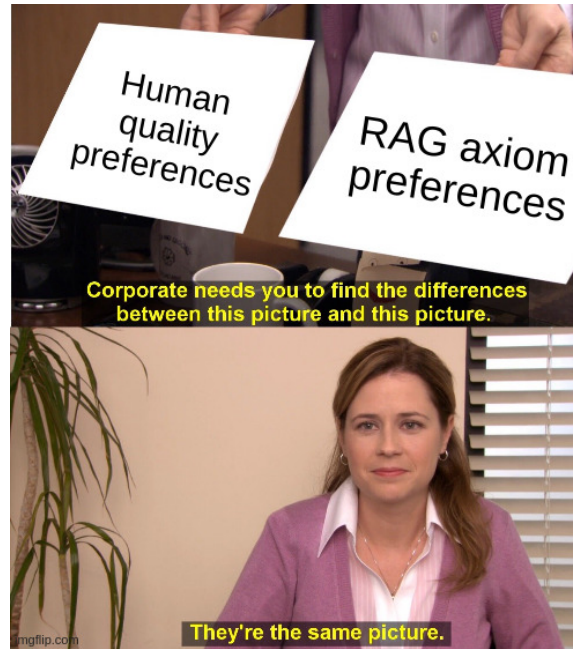
Axiomatic IR... but for RAG?!

Results



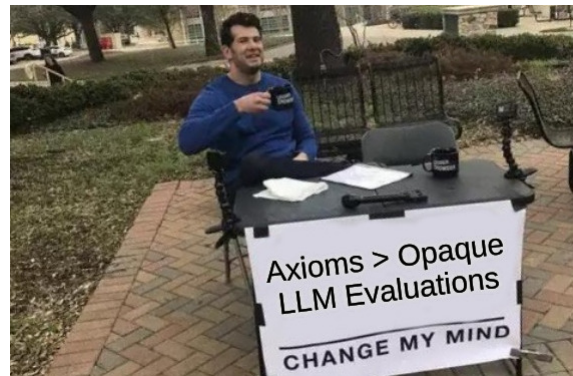
**EVALUATE
LLMS
WITH LLMS**

**SIMPLE,
INTERPRETABLE
AXIOMS**



TL;DR 🎵

“The Axiom Anthem”



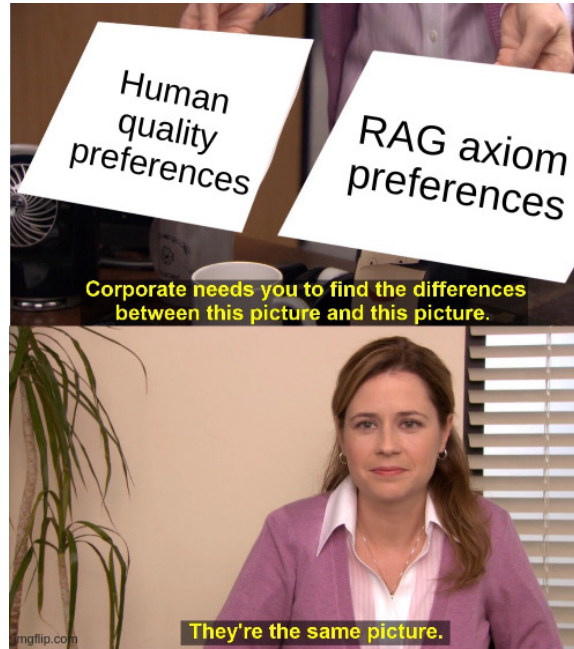
Axiomatic IR... but for RAG?!

Results



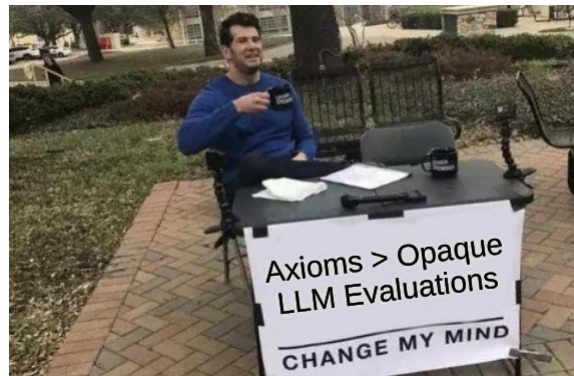
**EVALUATE
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**SIMPLE,
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TL;DR 🎵

“The Axiom Anthem”



Thank you!