Exploring AI Capabilities in Indexing Swedish LGBTQ+ Fiction

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NKOS Workshop at TPDL, Tampere, 23 September 2025

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The Role of AI in Library Cataloging

Growing Importance of Automation

- Efforts to automate cataloging have increased over past decades
- AI and Large Language Models (LLMs) like ChatGPT offer new possibilities
- AI-assisted subject indexing is a growing research focus

Challenges in Fiction Indexing

- Traditional cataloging emphasizes genre, time, and place, missing specific themes
- Users seek more detailed indexing, especially for niche topics
- Automated tools could help address these challenges

LGBTQ+ Fiction & Challenges in Automated Indexing

- **Difficulties in LGBTQ+ Fiction Indexing**
  - LGBTQ+ themes are often nuanced, requiring in-depth reading
  - Existing subject headings are often too broad or outdated
  - Older works may not be explicitly labeled as LGBTQ+

- **Limitations of AI in Fiction Indexing**
  - Struggles with connotation, hidden themes, and metaphors
  - Potential for bias in training data, leading to inaccurate indexing
  - Risk of hallucinations (false but convincing information)
  - Lack of transparency in AI decision-making ("black box" issue)

Research Aim & Questions

- **Exploring AI in Automated Indexing**
  - Investigating four LLM tools' ability to generate subject index terms for LGBTQ+ fiction

- **Key Research Questions**
  1. How effectively can AI tools identify main LGBTQ+ themes in fiction?
  2. How effectively can AI tools identify minor LGBTQ+ hemes in fiction?

- **Evaluation Method**
  - Comparing AI-generated index terms with those assigned by professional catalogers in the Queerlit database

The Queerlit Database

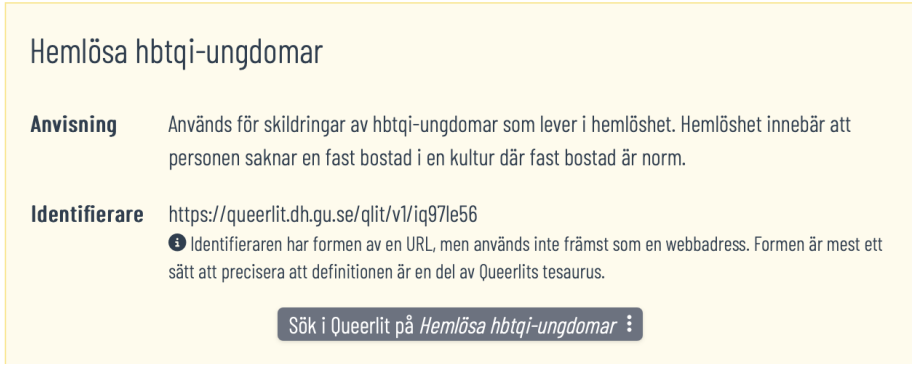
- **Scope of Queerlit**
  - LGBTQ+ fiction in Swedish and minority languages
  - 2420 catalog records (January 2025)

- **Indexing Languages**
  - QLIT thesaurus (900+ LGBTQ+ terms, adapted from Homosaurus)
  - Also employs Swedish controlled vocabularies (SAO, Barnämnesordslistan, SAOGF, Barngf)

Queerlit Indexing Policy

- **Indexing Practices**
  - Main subjects: ≥20% of the work's content
  - Minor subjects for LGBTQ+ themes
  - Uses the most specific subject term available for precise retrieval

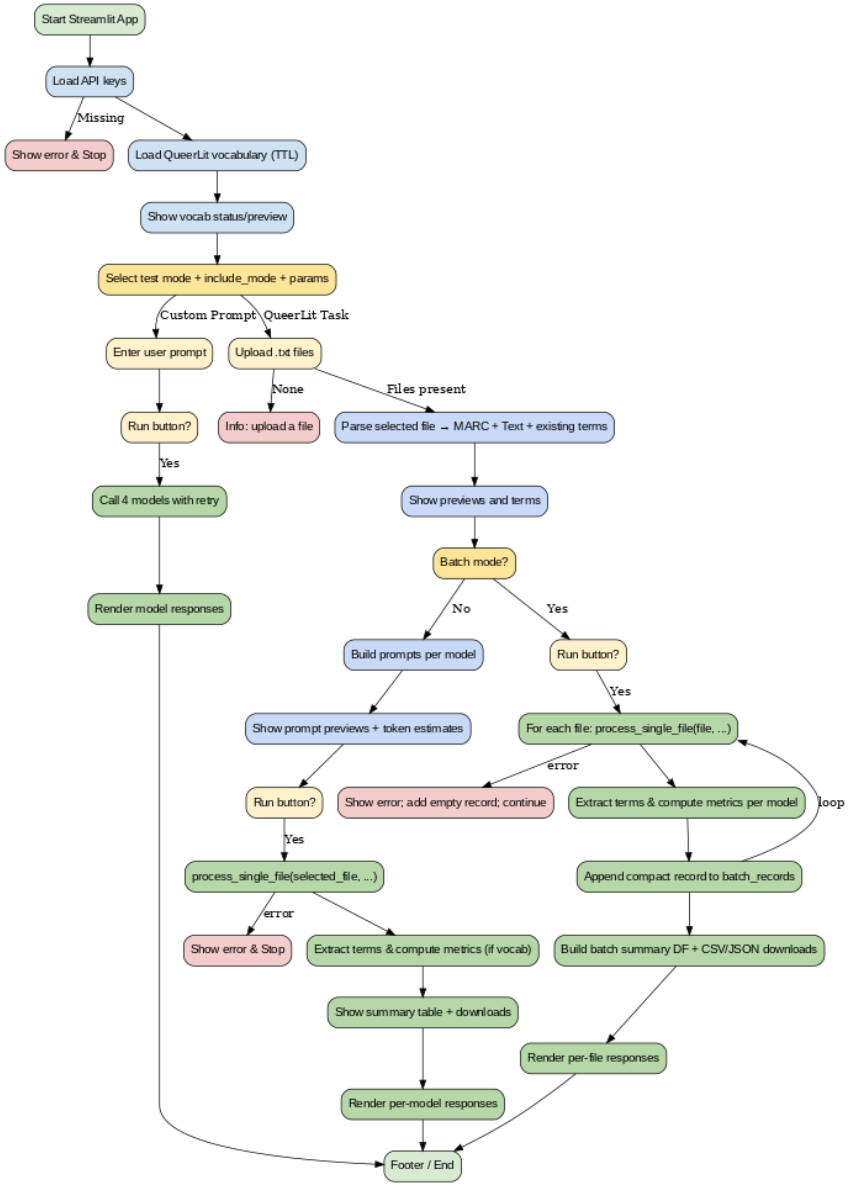
- **Quality Control**
  - Four librarians collaborate for consistency.
  - Scope notes ensure uniform term usage.



Study Sample & Selection

- **Dataset**
  - 78 metadata records & full-text works from Queerlit
  - Freely available on Litteraturbanken (full-text literary fiction database)

- **AI Tools**
  - ChatGPT (GPT-4 o)
  - Claude (Sonnet 4)
  - DeepSeek (Chat model)
  - Gemini (1.5-flash)

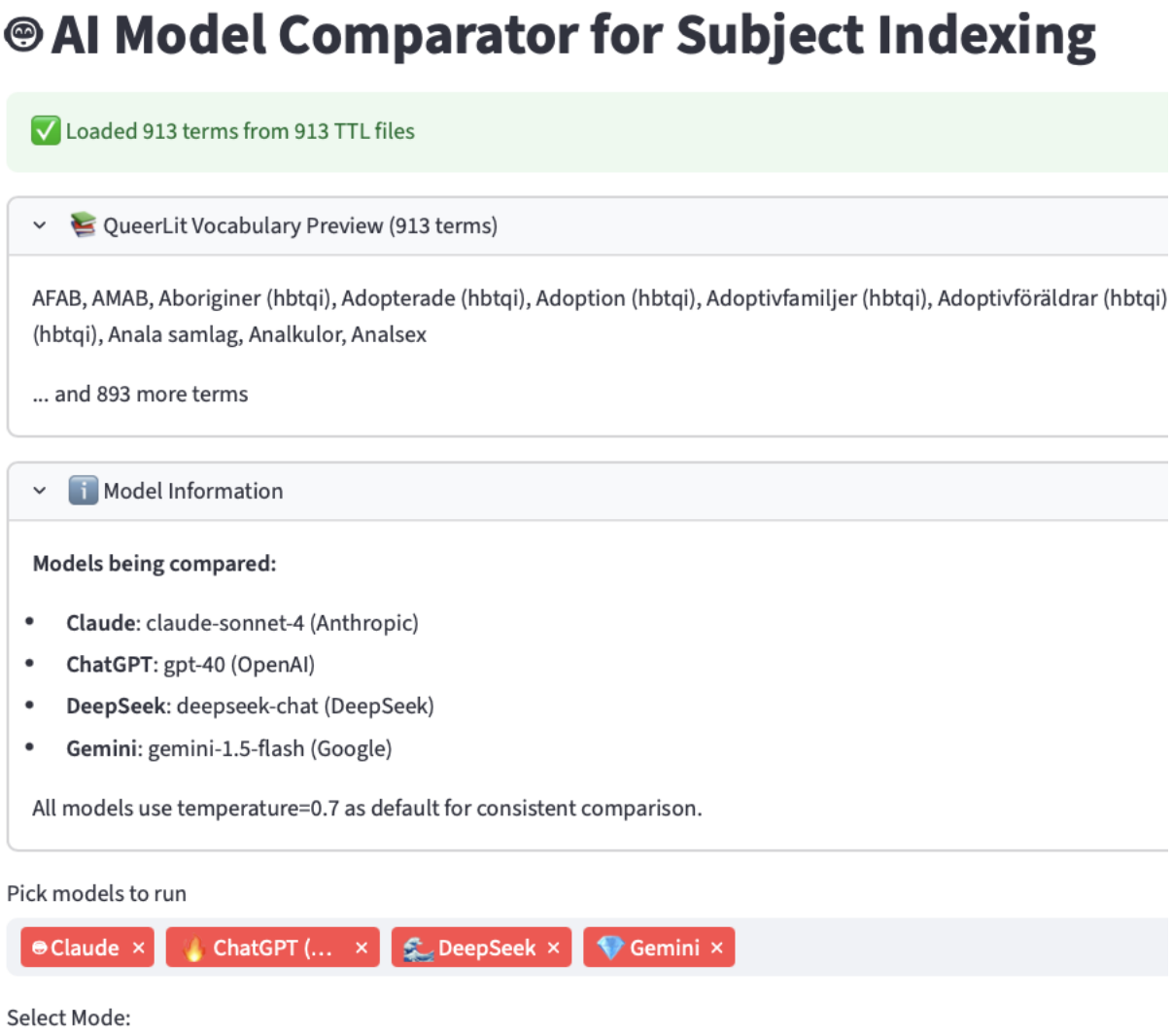


Platform: Streamlit Dashboard

- Two modes: Prompt testing and Classification task
- Prompt testing sends the prompt directly via the API
- Classification task facilitates the indexing process
- **Zero-shot classification** performed based on Queerlit vocabulary
- Indexing can be done in **batch or for single files**
- **Precision, Recall and F1** are calculated based on model responses with MARC record as ground truth

AI Indexing Process

- **Source documents**
  - Full text .txt file for each work preceded with MARC record
  - Queerlit Vocabulary with 913 terms
- **Streamlit Dashboard**
  - Different token cut off (ChatGPT cca 5000)
  - Temperature setting: 0.7



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AI Prompting

Full text

"You are a subject indexer specializing in LGBTQI+ literature analysis. Your task is to analyze the provided literary work and suggest relevant subject terms from the QueerLit controlled vocabulary.

Please analyze ONLY the literary text provided and:
1. Identify specific LGBTQI+ themes, characters, relationships, or content in the text
2. Suggest appropriate QueerLit vocabulary terms that would apply (use exact terms from the vocabulary when possible)
3. Provide brief justification for each suggested term based on textual evidence
4. If no exact vocabulary match exists, suggest the closest appropriate terms or describe what terms might be needed

Base your analysis solely on the provided text, not on external knowledge about the author or work.
"

+ Queerlit terms
+ Full text

Metadata

"You are a subject indexer specializing in LGBTQI+ literature analysis. Your task is to analyze the provided literary work and suggest relevant subject terms from the QueerLit controlled vocabulary.

Please analyze ONLY the MARC metadata provided and:
1. Identify specific LGBTQI+ themes, characters, relationships, or content in the text
2. Suggest appropriate QueerLit vocabulary terms that would apply (use exact terms from the vocabulary when possible)
3. Provide brief justification for each suggested term based on textual evidence
4. If no exact vocabulary match exists, suggest the closest appropriate terms or describe what terms might be needed

Base your analysis solely on the provided text, not on external knowledge about the author or work."

+ Queerlit terms
+ Metadata

Findings: Major Terms (16 works)

Metadata

Model	Precision	Recall	F1	Terms_Found	Correct
claude	0.25	**0.94**	0.39	156	39
chatgpt	**0.39**	0.80	0.49	97	36
deepseek	0.22	0.89	0.35	156	36
gemini	0.37	**0.94**	**0.50**	110	39
all models average	0.31	0.89	0.43	129.75	37.5

Full text

Model	Precision	Recall	F1	Terms_Found	Correct
claude	**0.09**	**0.45**	**0.14**	178	18
chatgpt	0.06	0.27	0.09	125	8
deepseek	**0.09**	0.42	**0.14**	178	15
gemini	0.07	0.30	0.11	113	9
all models average	0.08	0.36	0.12	148.5	12.5

Findings: Minor Terms (50 works)

Metadata

Model	Precision	Recall	F1	Terms_Found	Correct
claude	0.23	0.95	0.36	443	93
chatgpt	**0.33**	**0.97**	**0.46**	307	94
deepseek	0.20	**0.97**	0.32	488	94
gemini	**0.33**	**0.97**	**0.46**	328	93
all models average	0.27	0.97	0.40	391.5	93.5

Full text

Model	Precision	Recall	F1	Terms_Found	Correct
claude	**0.02**	**0.13**	**0.03**	590	15
chatgpt	**0.02**	0.09	**0.03**	334	7
deepseek	**0.02**	**0.13**	**0.03**	558	13
gemini	0.00	0.02	0.01	218	2
all models average	0.02	0.09	0.03	425	9.25

Findings: Major and Minor Terms (12 works)

Metadata

Model	Precision	Recall	F1	Terms_Found	Correct
claude	0.34	0.72	0.45	142	50
chatgpt	**0.46**	0.72	**0.54**	107	48
deepseek	0.29	0.70	0.40	166	48
gemini	0.41	**0.73**	0.51	118	47
all models average	0.37	0.72	0.48	133.25	48.25

Full text

Model	Precision	Recall	F1	Terms_Found	Correct
claude	**0.08**	**0.21**	**0.11**	185	14
chatgpt	0.03	0.07	0.04	99	4
deepseek	0.04	0.10	0.06	178	8
gemini	0.04	0.06	0.04	80	4
all models average	0.05	0.11	0.06	135.5	7.5

Overall Findings

- AI-generated index terms are largely **unhelpful**
  - F1 up to 54% when given solutions
  - F1 up to 14% when full text
- No winner as all four tools underperforming, although variations across the data sets
- Lacks contextual awareness of LGBTQ+ nuances
- Generates incorrect, irrelevant or overly broad index terms

Future Research & Recommendations

- **Challenges in AI Training**
  - Older LGBTQ+ themes may be too implicit for AI to detect
  - Copyright restrictions limit AI training on newer LGBTQ+ fiction

- **Expert Evaluation**
  - Entire metadata set
  - Involve subject librarians to assess AI-generated terms
  - Evaluate for general subject headings, too

- **Need for Critical AI Adoption:**
  - AI is often overhyped—users should critically assess its limitations & biases

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