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Annif and automated subject cataloguing

annif

developed since 2017

- General purpose open source **tool** for automated subject indexing and classification
- Multilingual, supports many vocabularies
- Code on GitHub, website with test form and API
- Global development and user community; user forum **annif-users** on Google Groups

annif.org

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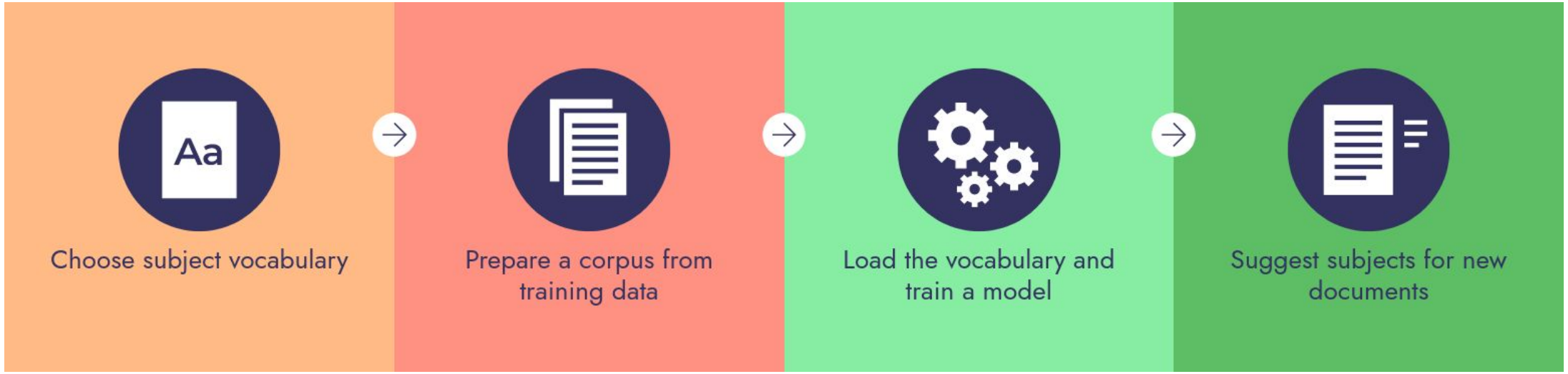
fintoai

launched in 2020

- Automated subject indexing **service** for production use, based on Annif. Web user interface and API service
- Supports indexing with the General Finnish Ontology YSO & PLC – Finnish Public Libraries Classification System (in Fin, Swe & Eng) as well as KAUNO – ontology for fiction (in Finnish)
- Intended to support subject cataloguers in Finland regardless of institution (GLAMs, public administration); sister project to the Finto vocabulary service

ai.finto.fi

What would it take to use Annif?



Corpora

- https://github.com/NatLibFi/Annif-corpora
- https://github.com/NatLibFi/Annif/wiki/Corpus-formats
- https://github.com/NatLibFi/Annif/wiki/Achieving-good-results

Evaluation approaches (Golub et al. 2016), **emphasis** ours

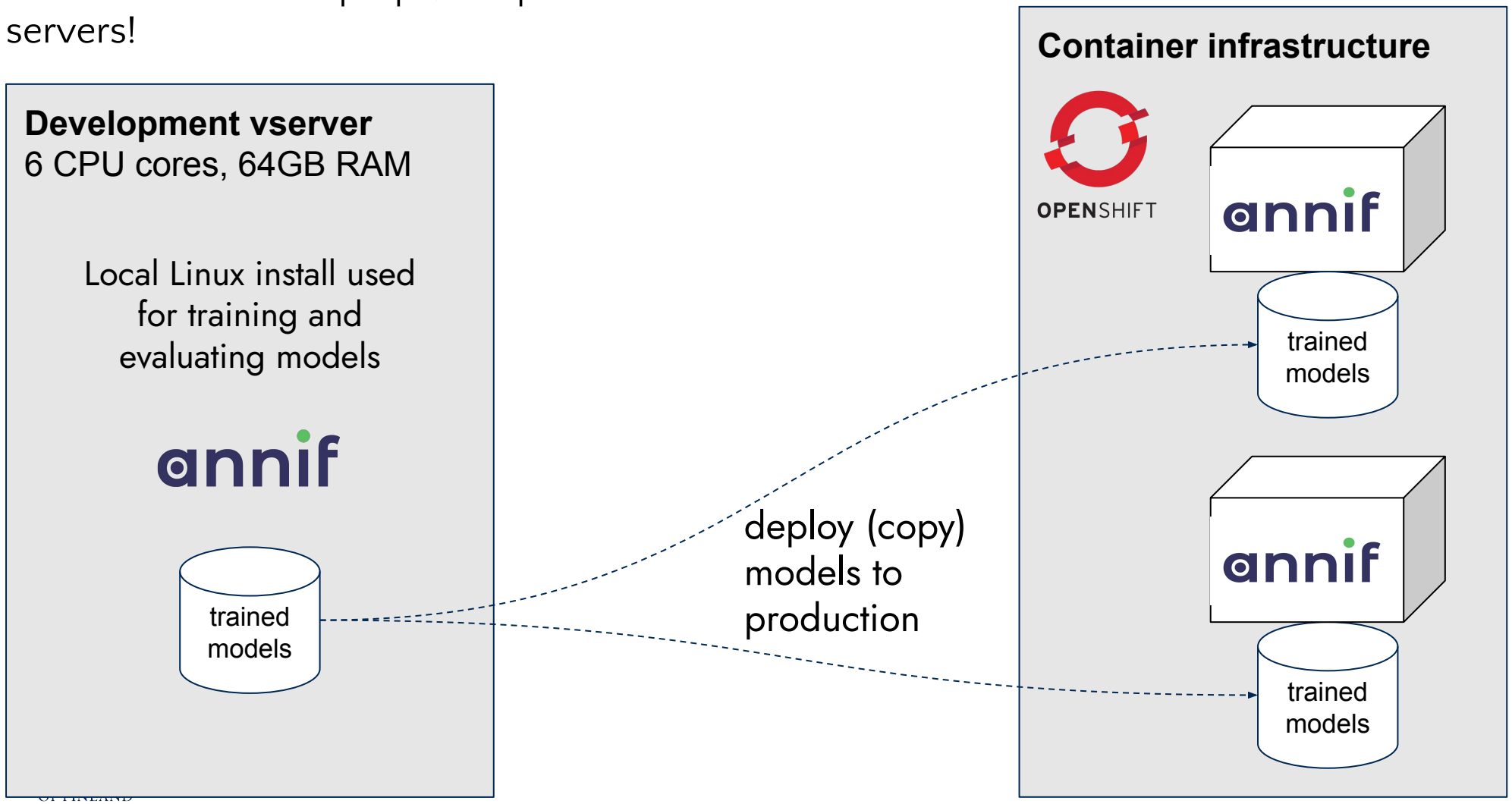
1. Evaluating indexing quality directly through **assessment by an evaluator** or by **comparison with a gold standard**.
2. Evaluating indexing quality directly **in the context of an indexing workflow**.
3. Evaluating indexing quality indirectly through retrieval performance.

The different evaluation approaches are complementary.
Not a good idea to look at just a single measure.

Golub, K., Soergel, D., Buchanan, G., Tudhope, D., Hiom, D., and Lykke, M. 2016. A framework for evaluating automatic indexing or classification in the context of retrieval. Journal of the Association for Information Science and Technology, 67(1): 3–16.

Technical infrastructure for production use

You can start with laptops, but production use needs servers!



fintoai

api.annif.org

Annif tutorial

For hands-on details of working with Annif, see the Annif tutorial

Most recent Annif tutorial / workshop: Open Repositories 2024 conference in Göteborg, Sweden, 3–6 June 2024

Materials (videos and exercises) are available for self-study on GitHub and YouTube.

Partners and users

Collecte

yle

KB nationale bibliotheek

CSC

KirjaVälitys

KANSALLISARKISTO

Dissemin

University of Jyväskylä | JYX Digital Repository

National Library of Sweden

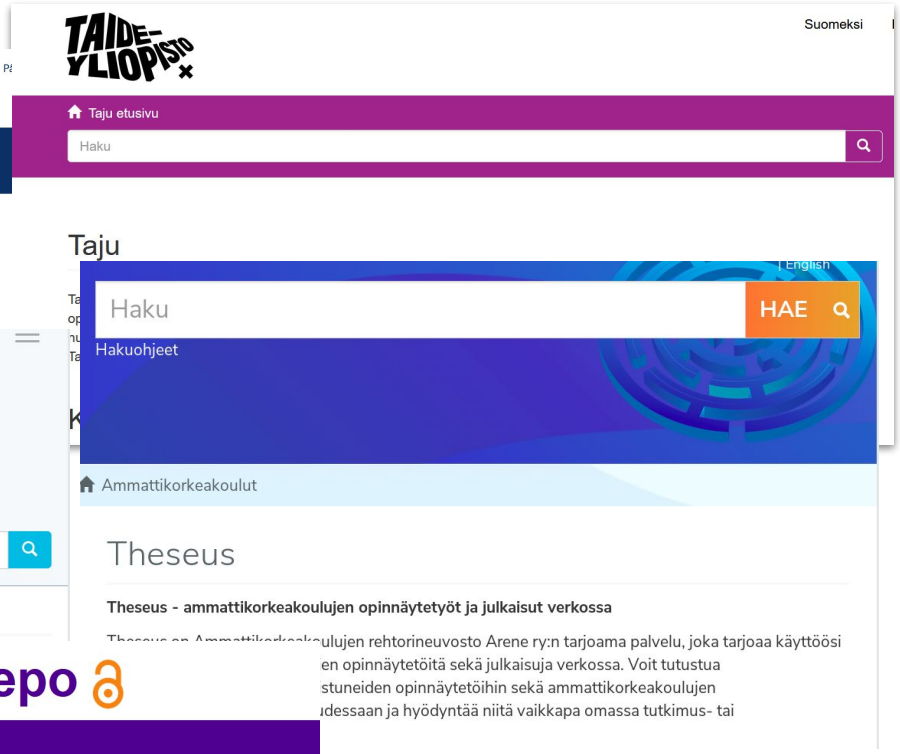
ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

KANSALLINEN AUDIOVISUAALINEN INSTITUUTTI
NATIONELLA AUDIOVISUELLA INSTITUTET
NATIONAL AUDIOVISUAL INSTITUTE

DEUTSCHE NATIONAL BIBLIOTHEK

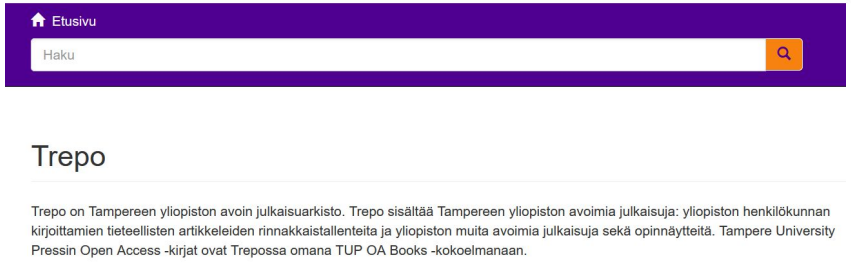
KIRJASTOT.fi

Usage at NatLibFi



Legal deposits

Trepo



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DSpace-based institutional repositories: Osuva, Trepo, Theseus, Taju, Lauda, Kaisu (Demo of use)

Current & future developments

- Automated language detection for Finto AI service
- New vocabularies
- The role of AI in subject indexing and in the library field
- User survey:
  - all in all good grades
- Automatic extraction of bibliograph. metadata
  https://github.com/NatLibFi/FinGreyLit/tree/main/experiments

Extracting biblographic metadata

PDFs

system

```
title: Novel methods for earth fault passage indication in non-effectively grounded electricity distribution networks

contributor/faculty: fi=School of Technology and nnovations|en=School of Technology and Innovations|

contributor/author: Farughian, Amir

contributor/organization: fi=Vaasan yliopisto|en=University of Vaasa|

publisher: Vaasan yliopisto

date/issued: 2022

relation/issn: 2323-9123

relation/issn: 0355-2667

relation/isbn: 978-952-395-054-2

relation/ispartofseries: Acta Wasaensia

relation/numberinseries: 500
```

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Meteor+LLM results?

field	Meteor	Qwen2-0.5B	Mistral-7B
language	97%	98%	99%
title	40%	73%	87%
alt_title	76%	73%	78%
creator	65%	72%	88%
publisher	8%	69%	83%
year	72%	87%	89%
e-isbn	83%	90%	96%
e-issn	86%	95%	95%
p-isbn	72%	89%	93%
p-issn	83%	92%	94%
doi	91%	97%	98%
type_coar	0%	85%	90%
	64%	**85%**	**90%**

Material used: FinGreyLit Corpus

- 800 PDFs + metadata
- 9 DSpace repositories
- 3 langs (fin, swe, eng + sme)
- theses, e-books, articles, reports etc.

Meteor: original Meteor tool

Qwen2-0.5B: smaller LLM, 500 perams CPU

Mistral-7B: larger LLM, 7 billion params. GPU

See also:
https://forum.swib.org/t/automating-metadata-extraction-and-cataloguing-experiences-from-the-national-libraries-of-norway-and-finland/121

Further reading (& use cases)

- An article about Annif and Finto AI has been published in 2022 in the peer-reviewed Open Access journal JLIS.it.

Further reading: preprocessing text

Annif supports many language-specific Analyzers.

- **simple** – simple but stupid, no stemming or lemmatization
- **simplemma** – simple lemmatization library, supports Estonian

These and other approaches need to be evaluated.

See Code4Lib Journal article about different lemmatizers:
Annif Analyzer Shootout: Comparing text lemmatization methods for automated subject indexing

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Thank you!

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