De-DSI: Decentralization of generative AI

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Motivation

- Use state-of-the-art generative AI to boost decentralised information retrieval
- Urgent need for decentralised alternatives for Big Tech
- Enrich common good with AI, without central control

Definition

- Differentiable Search Index (DSI) is an LLM-based search engine to produce document-ID (docid) from queries
- However, the more data it has to learn, the higher probability it will generate the wrong docid or hallucinations

| query	docid
20 facts about pandas	D1099135
a panda's habitat	D1099135
about panda	D1099135
about pandas	D1099135
all about pandas	D1099135
are pandas bears	D1099135
endangered panda facts	D1099135
everything about panda bears	D1099135

Query → T5-LLM → Docid

Decentralized Ensemble Idea

- Implement the DSI algorithm in a decentralized network
- Assign to each peer a different copy of the google T5 model and a subset of the data to train it on
- Ask all peers your query, compare all results and select the best one
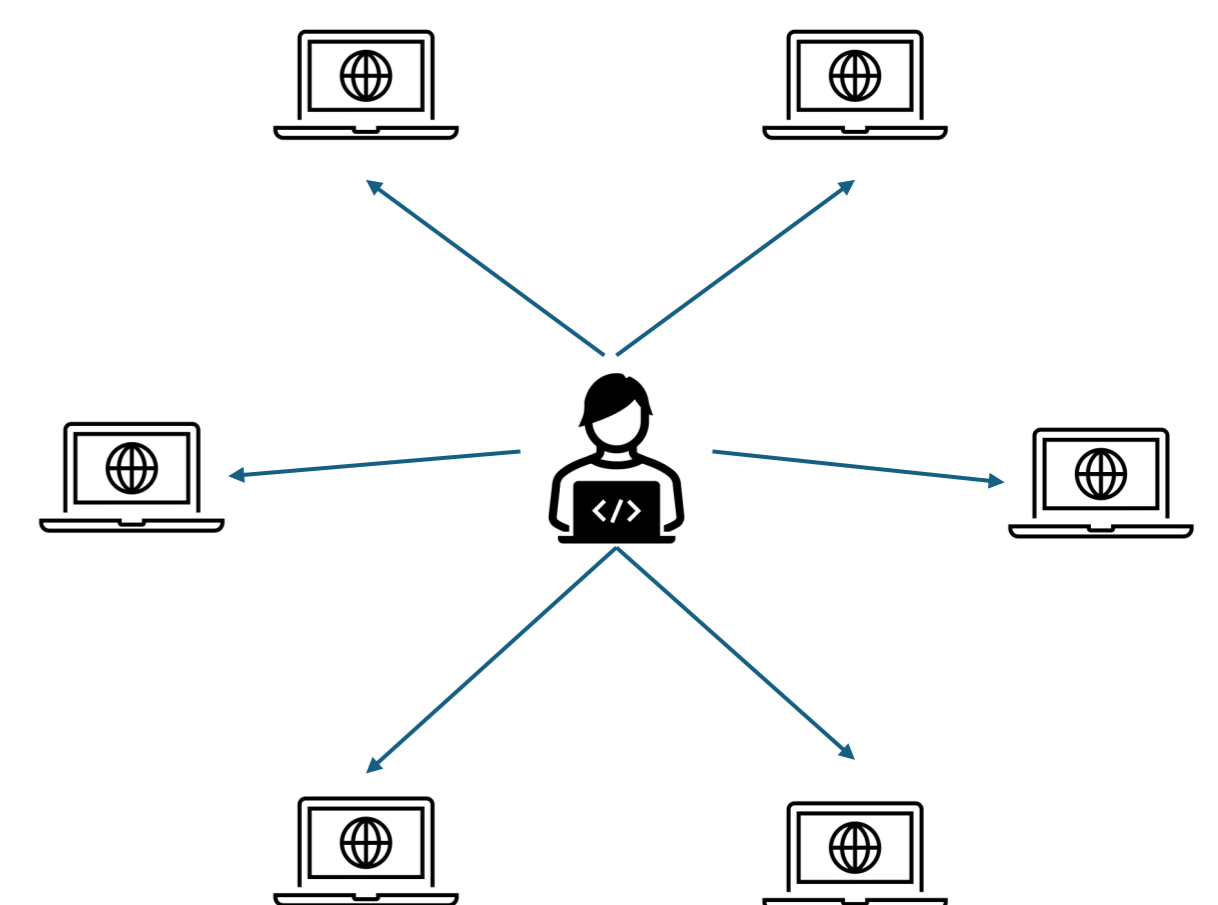
Ongoing Research:
- Replace docids with generic URLs, Youtube links, and magnet links.
- Allow for later work on scalability (mixture of experts, larger LLM's based on more powerful processors etc.)
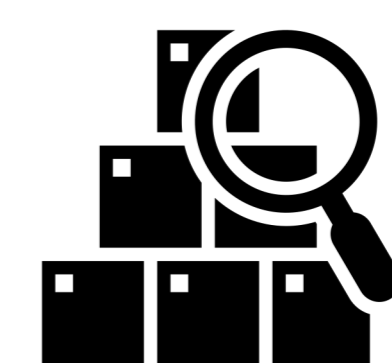
Potentially powerful search engine for fully decentralized systems

TUDelft