An Agentic Approach to Explaining AI-based Decisions

AI synergy!

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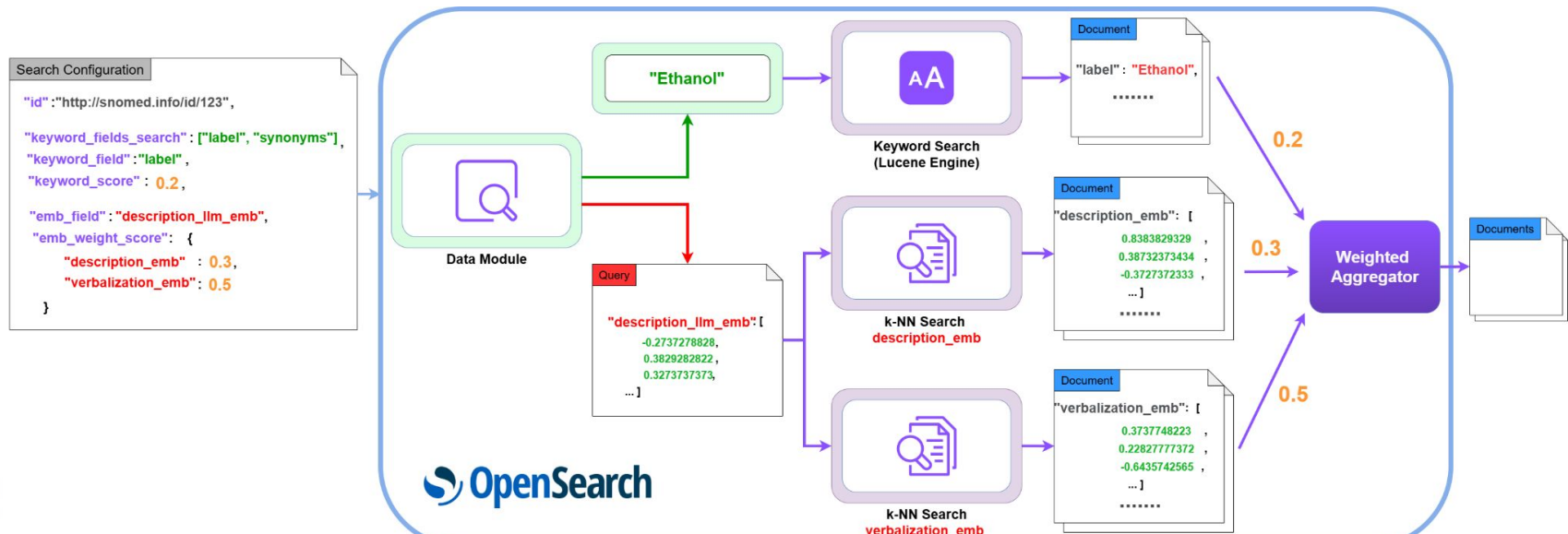
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ai forum UTCN

- Domain-agnostic solution for: ontology matching / cleaning and extension of existing vocabularies (KG)
- Explicit structured knowledge captured in the ontology (KG) is combined with text-based description generated by LLM.
- Dense vector databases & hybrid search

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Results

OAEI 2024 - BIO-ML Unsupervised Track: equivalence matching between two medical ontologies

HybridOM: 3 first places, 2 second places

	Equivalence Matching Results for NCIT-DOID (Disease)						
	Unsupervised (No Train Maps)						
⇕System	⇕Precision	⇕Recall	⇕F-score	⇕MRR	⇕Hits@1	⇕Use Train Maps	
HybridOM*	0.924	0.913	0.918	0.952	0.928	✗	
LogMapBio†	0.860	0.962	0.908			✗	
BERTMap‡	0.888	0.878	0.883	0.959	0.937	✓	

TRL-7

Project TUCN & msg Germany "Vocabulary mapping and duplicates identification" 2023-2024

Context: msg.ProfileMap - a human capital management product that uses an ontology containing competences, job roles, and certificates

- Finetuning SmolLM2 with taxonomy-based prompting for:
- Explaining the dominant narrative in propaganda text
- Entity Framing - assign for each given mention one or more roles using a predefined taxonomy

ClujTeam at SemEval 2025 Task 10 "Multilingual Characterization and Extraction of Narratives from Online News"

Rank	Team	Precision	Recall	F1 macro
1	KyuHyunChoi	0.76686	0.73517	**0.75040**
2	WordWiz	0.75464	0.73705	**0.74551**
3	GPLSICORTEX	0.75375	0.73274	**0.74280**
4	TechSSN	0.73886	0.74568	**0.74203**
5	NarrativeNexus	0.71991	0.74267	**0.73085**
6	NarrativeMiners	0.71139	0.74827	**0.72910**
7	clujteam	0.72350	0.72647	**0.72464**

The EU is divided
The West is weak
The West is overreacting
The West does not care about Ukraine, only about its interests
Diplomacy does/will not work
West is tired of Ukraine

Discrediting the West, Diplomacy

Sanctions imposed by Western countries will backfire
The conflict will increase the Ukrainian refugee flows to Europe

Negative Consequences for the West

Western media is an instrument of propaganda
Ukrainian media cannot be trusted

Distrust towards Media

By continuing the war we risk WWIII
Russia will also attack other countries
There is a real possibility that nuclear weapons will be employed
NATO should/will directly intervene

Amplifying war-related fears

Hidden plots by secret schemes of powerful groups

URW

3. Agentic approach for medical images

One entity
One perspective

One entity
Several perspectives

Several entities
Several perspectives

Task specific*:
- Models that classify an OCT in AMD/healthy/Diabetic retinopathy
- OCT Layers segmentation
- #required injections

Large Language models/Vision language models:
- LLM – initially only text
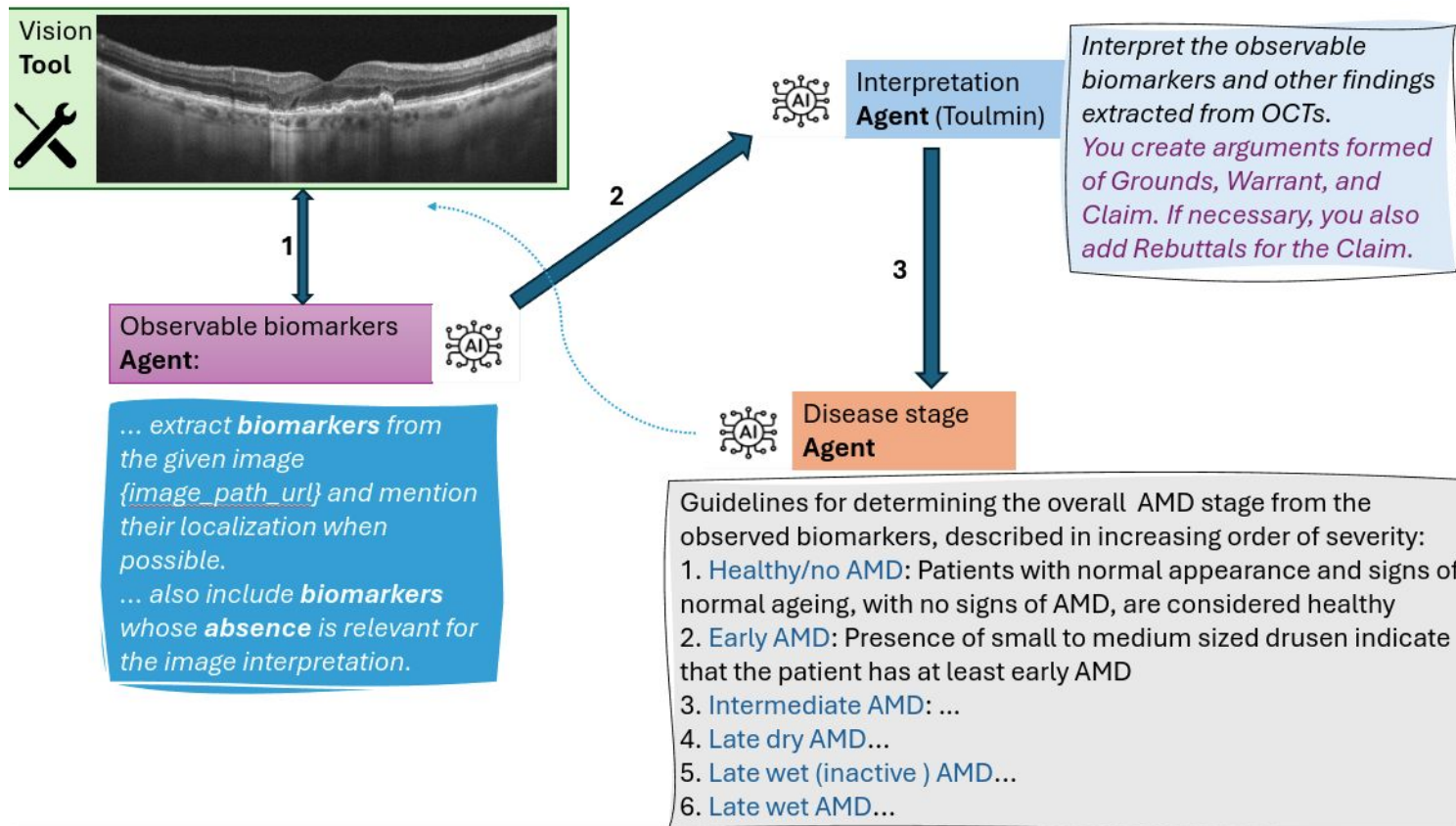- VLM – vision-language
- Foundation Models (OCT, fundus, …, text)

Agentic AI*:
Several LLM/VLM work together
- LLM-based agentic systems in medicine and healthcare (Nature, Dec 2024)
- STORM (Stanford, 2023)

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Collaboration inquiry/offer

Open for

research collaborations, **joint research proposals, knowledge transfer**

on

1. <u>Mixing LLM with Structured Knowledge</u>

2. <u>Multimodal (text, vision, graphs) foundation models</u>

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