

SNOFlow

An Interface for Human-Led Medical Entity Linking to SNOMED CT with Agent Assistance

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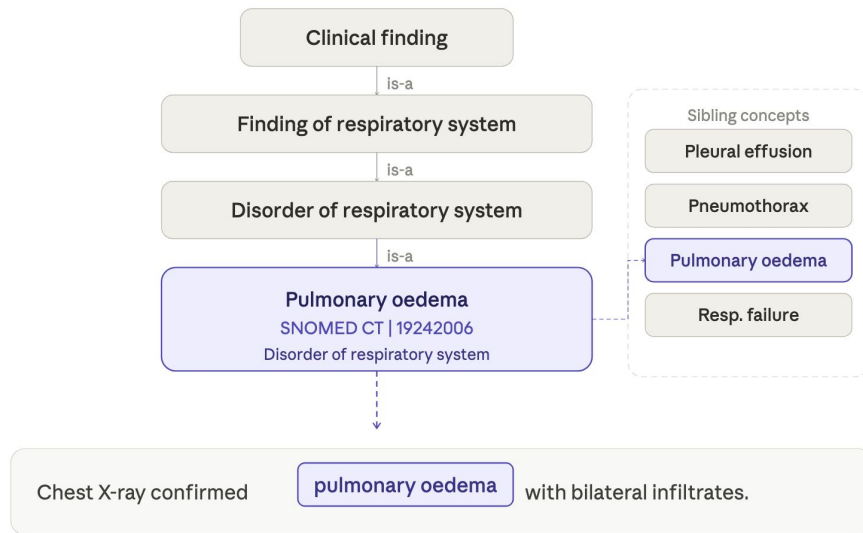
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Entity Linking Annotation with SNOMED CT

- **SNOMED CT** is world's most comprehensive clinical ontology, covering ~350,000 concepts
- Massive amounts of rich clinical information buried in free text: discharge summaries, radiology reports, nursing notes etc.
- Accurate annotation is valuable for clinical research, search systems, training data for clinical ML, ...

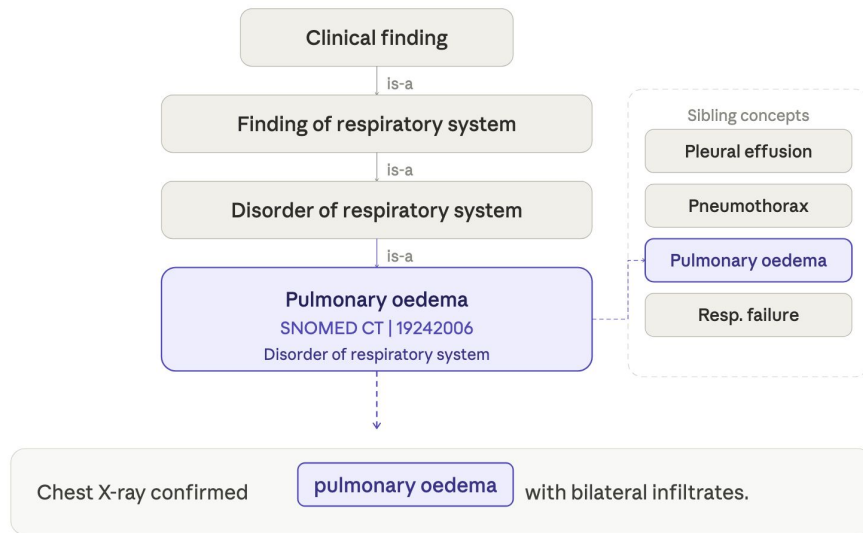


Entity Linking Annotation with SNOMED CT

- Automated entity linking systems (even with SOTA LLMs!) are not sufficient for high-accuracy annotation

- Most effective workflow:

Human annotator revises machine-generated annotations, with AI assistance and supportive, low-friction user interface



SNOFlow UI



SNOMED CT
ANNOTATOR

LLM BackendSnowstorm

AI Ready (browser)

Settings

Examples

Click highlighted entities to review and confirm their SNOMED CT mappings.

Edit text

0/33

Confident

Likely

Uncertain

No match

Pending

Confirmed

AI Analyze All

Accept All

Export

Chief Complaint:

Chest pain

Confident

History of Present Illness:

Patient is an elderly male with history of

coronary artery disease

, prior

CABG

Confident

,

hypertension

, and

hyperlipidemia

Confident

 who presented with acute onset

substernal chest pain

radiating to left arm

Confident

 associated with

diaphoresis

Confident

 and

shortness of breath

Confident

.

Past Medical History:

CAD s/p CABG

,

CHF (EF 35%)

,

Atrial fibrillation

Confident

,

HTN

Confident

,

HLD

Confident

,

DM2

,

CKD Stage III

Physical Exam on Admission:

VS: T 98.6, HR 92, BP 145/82, RR 18, O2 96% RA

CV:

Irregularly irregular

Confident

,

no murmurs

Pulm:

Bibasilar crackles

Ext:

1+ pitting edema bilaterally

Review Mention

11 of 33

No Match

←

→

×

"coronary artery disease"

disorder

...Chief Complaint: Chest pain History of Present Illness: Patient is an elderly male with history of **coronary artery disease**, prior CABG, hypertension, and hyperlipidemia who presented with acute onset substernal chest pain ...

Candidates (5)

Hierarchy

95.0%

Coronary artery disease absent

#1

699196002 · situation

Coronary artery disease absent (situation)

85.0%

Premature coronary artery disease

#2

1293192009 · disorder

Premature coronary artery disease (disorder)

85.0%

Syphilitic coronary artery disease

#3

240567009 · disorder

Syphilitic coronary artery disease (disorder)

85.0%

Obliterative coronary artery disease

#4

420006002 · disorder

Obliterative coronary artery disease (disorder)

82.0%

Left main coronary artery disease

#5

371804009 · disorder

Left main coronary artery disease (disorder)

?

Correct concept not listed

✓

The right SNOMED concept exists but isn't in these candidates

SNOFlow UI

User can amend NER
and linked concepts

Discharge Medications:

1. Aspirin 81mg daily
2. + Tag entity 75mg daily
3. Metoprolol succinate 50mg daily
4. Lisinopril 5mg daily
5. Atorvastatin 80mg daily
6. Furosemide 40mg daily

Fall-back options, edge
cases

Candidates (5) Hierarchy

Correct concept not listed
The right SNOMED concept exists but isn't in these candidates

Not a SNOMED concept
Remove this entity from the annotation

Remove

Uncertain
Not confident enough to annotate — flag for review

Manual Search

Enter SNOMED CT concept ID

Apply

LLM Verdict

Verdict Confident backend Re-analyze

The mention 'radiating to left arm' in the context of chest pain clearly refers to pain that spreads to the left arm, which is a classic symptom in cardiac presentations. The top candidate, 'Pain radiating to left arm (finding)' [425677008], precisely matches the clinical finding described.

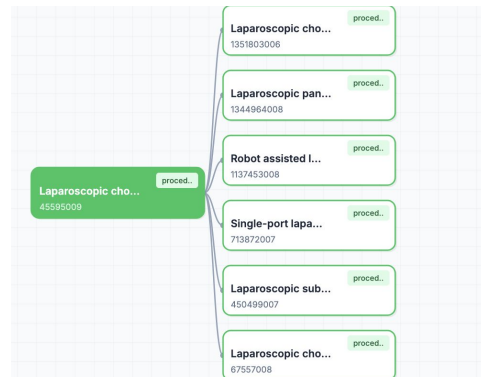
KEY FACTORS

- Direct match between mention and SNOMED concept
- Context of chest pain with radiation supports this specific finding

AI confirms top candidate: 425677008

Accept

User can view concept
within SNOMED CT
graph

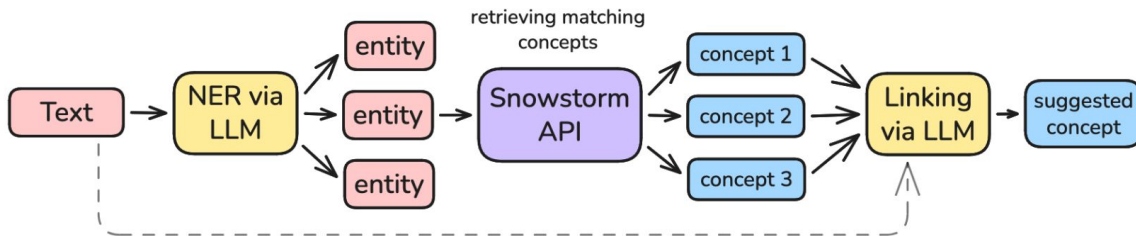


Design Principles

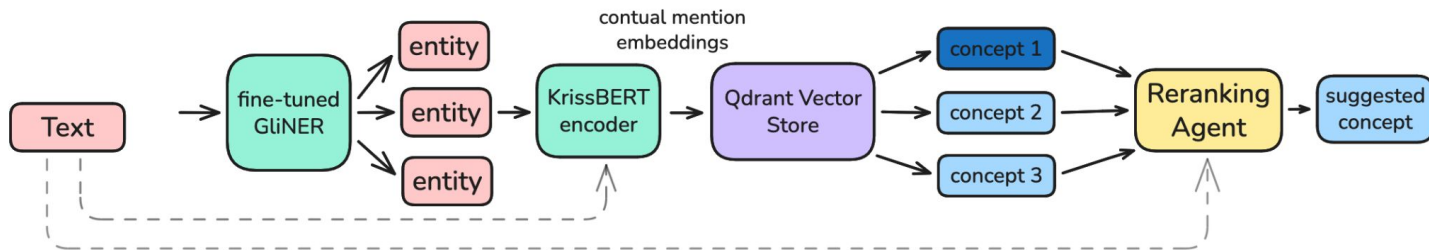
- **Human-in-the-loop** by default: annotation needs human confirmation
- **Visual helpers**: colour-codes uncertainty, graph
- **Extensive context**: concept graph, manual concept search fall-back, LLM suggestions/chat
- **Full configurability**: flexible backends and prompts

Entity Linking Pipelines for SNOFlow

Simple default
backend, using
LLM endpoints

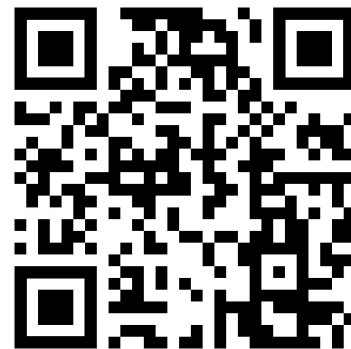


More accurate
SOTA pipeline



Summary

- Browser-based clinical entity linking annotation tool for SNOMED CT ontology
- Customisable backend extracts and links medical entities
- LLM/agent layer provides verdict and further exploration
- Human reviewer confirms or revises suggestions
- Easy to set up, easy to use



<https://github.com/complementizer/snoflow>