

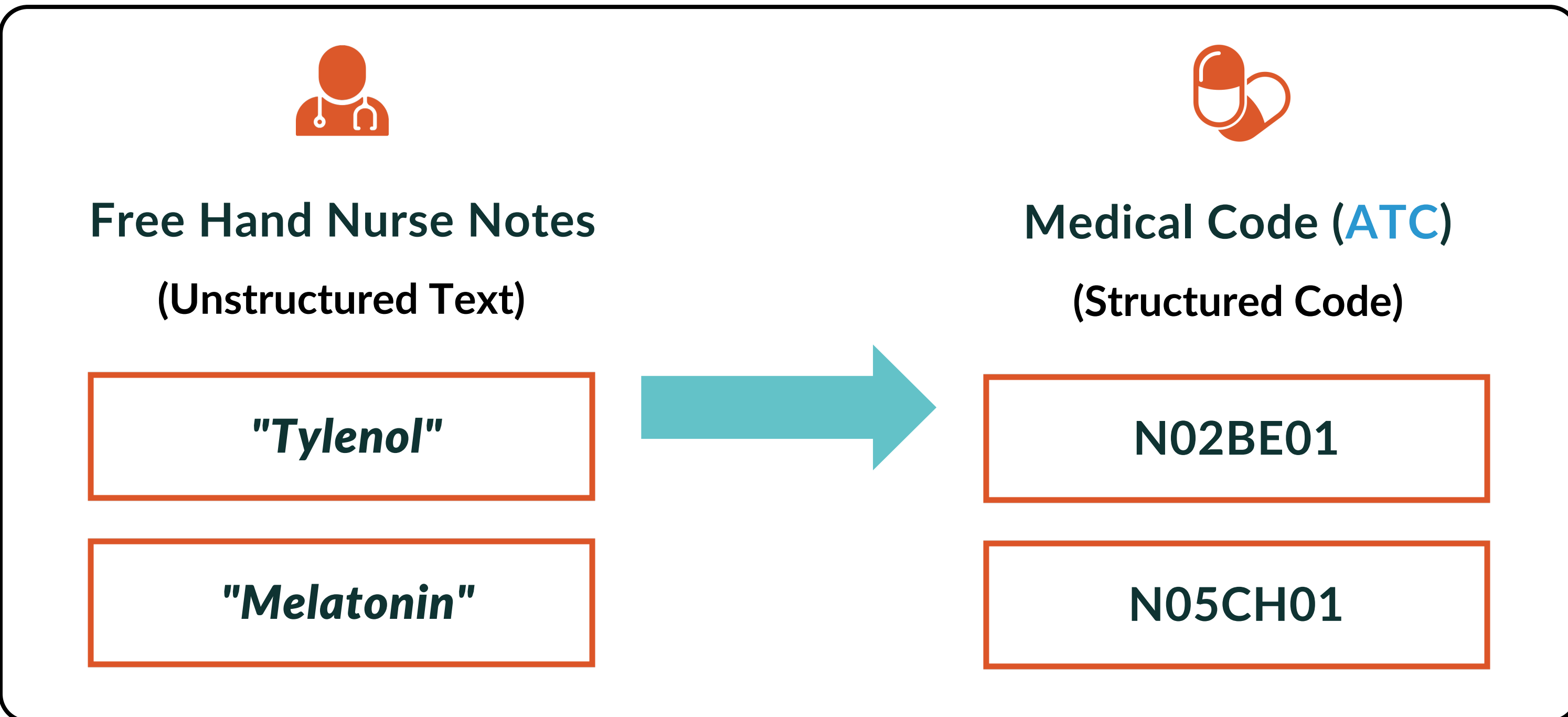


Zero-Shot ATC Coding with Large Language Models for Clinical Assessments



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What Is ATC Coding?



Useful For:

Healthcare Researchers

Large scale data analysis, drug utilization patterns studies.



Healthcare Administrations

Streamline insurance claims processing and medical billing



Pharmacy Owners

Enhance inventory management, efficient stock monitoring



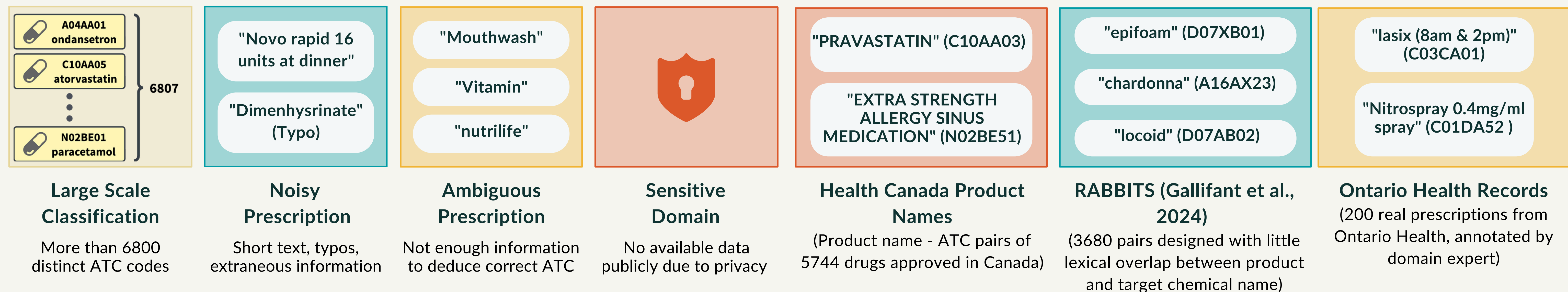
Current Solution: Mixture of Rule-Based & Manual.

Extremely Time and Labour Intensive, Bottleneck.

Proposed Solution: Automatic with LLMs

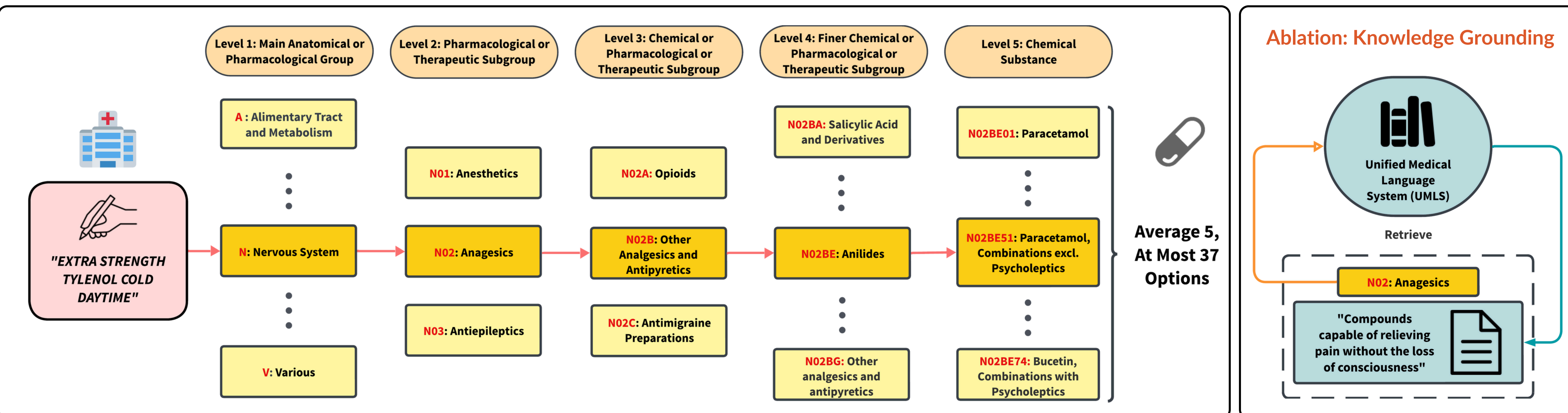
First in this task!

Challenges



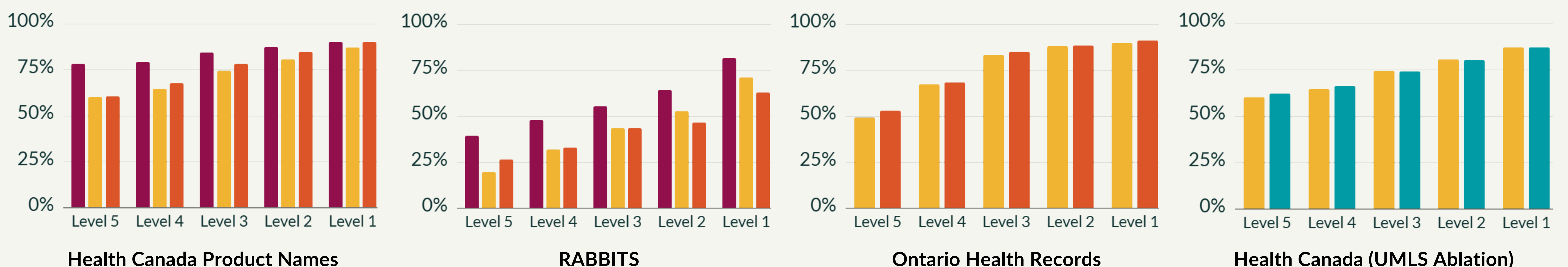
Datasets: Product Names As Proxy

Method



Results and Discussion

● GPT-4o ● Llama 3.1 70B ● Fine-tuned Llama 3.1 8B ● Llama 3.1 70B with UMLS



- Automatic ATC coding is feasible with LLMs. Strong Zero-Shot accuracy of 78.4% exact-matches on Health Canada.
- Product name is good proxy for the scarce medical record data, where LLMs demonstrate meaningful effectiveness.
- When supervision is available, a fine-tuned model can match a much larger model.
- While UMLS augmentation demonstrated modest improvements at the deeper levels, more effective knowledge grounding solutions should be investigated.
- Current LLMs' ATC coding capabilities rely heavily on string similarity between prescriptions and their chemical counterparts, suggesting an area for future improvement.