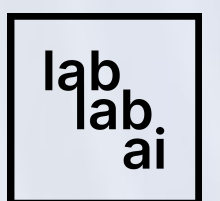


TEAM: SHAMAN TECHNOLOGY

MedCoderAI



What is Medical Coding?



Medical coding is the process of translating medical diagnoses, procedures, and services into standardized codes. These codes are used for:

- **Billing:** Insurance companies require accurate codes to process claims and reimburse providers.
- **Data analysis:** Codes provide valuable data for healthcare research and quality improvement.
- **Public health surveillance:** Codes help track the prevalence and spread of diseases.

What is ICD and CPT?



The US Centers for Medicare & Medicaid Services (CMS) maintains two primary code sets:

- **International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM):** Used to code diagnoses across all healthcare settings.
- **Current Procedural Terminology (CPT):** Used to code procedures performed by physicians and other healthcare professionals.

Accurate and consistent use of CMS codes is crucial for efficient healthcare billing, data collection, and public health monitoring.

What is ICD and CPT?



ICD-10-CM

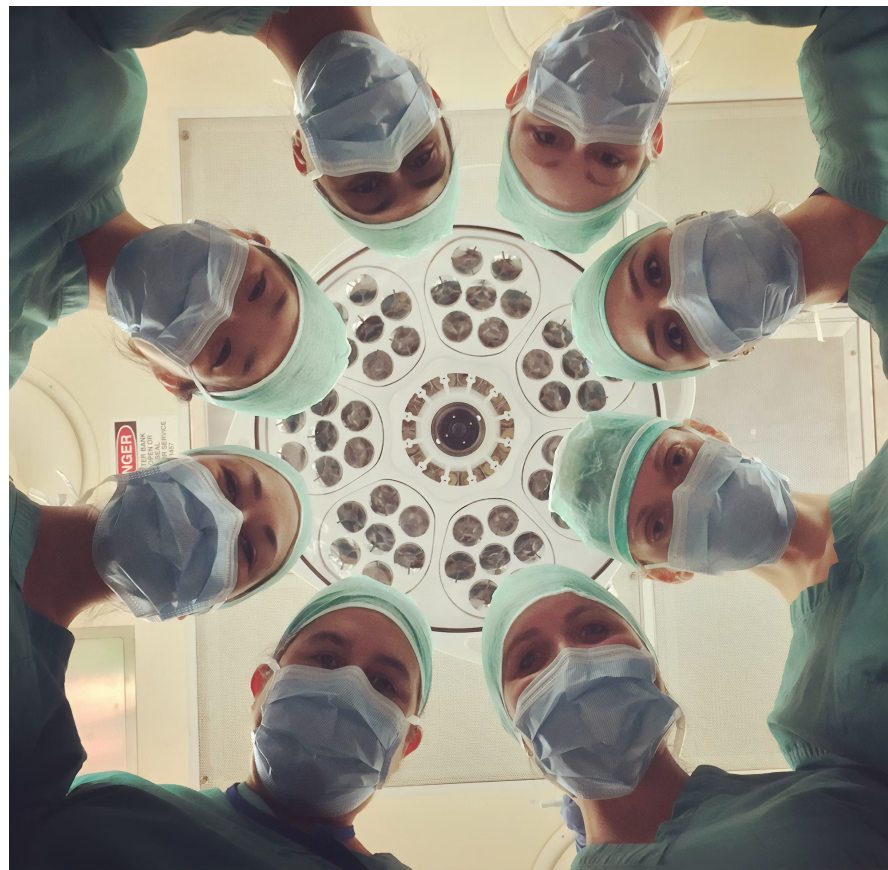
- More specific than its predecessor, ICD-9-CM.
- Allows for better tracking of trends and outcomes.
- Updated annually to reflect new medical developments.

CPT

- Updated annually to reflect new technology and procedures.
- Divided into three levels:
 - Level I: Category codes for reporting specific services.
 - Level II: National codes for reporting services not included in Level I.
 - Level III: Temporary codes for new or emerging procedures.

Medical coding is a critical yet broken system.

The Problem



Medical coding relies on complex, ever-changing codes that are difficult to understand and implement correctly. This leads to several significant problems:

- **Time-consuming and error-prone:** Manually searching for and assigning the right codes is a tedious and time-consuming process, often involving outdated resources and guesswork. This can lead to:
- **Coding delays:** Slowing down claims processing, impacting reimbursements and cash flow for healthcare providers.
- **Coding errors:** Inaccuracies in coding can result in denied claims, under- or over-billing, and even audits.
- **Lost revenue:** Healthcare providers can lose millions due to incorrect coding, impacting their bottom line and ability to deliver quality care.
- **Patient safety concerns:** Inaccurate coding can impact patient care by:
 - Misrepresenting the patient's medical history, leading to inadequate treatment or delayed diagnosis.
 - Affecting data collection and analysis, hindering research and advancements in healthcare.
- **Inefficiency and administrative burden:** The complex coding system adds unnecessary administrative burden to healthcare professionals, diverting their focus from patient care.

The Solution

MedCoderAI



An AI RAG assistant using the latest medical coding standards

Interactive

Using the latest CMS Medical ICD-10 and CPT codes

Smart Retrieval

The Tech



TRULENS EVAL

Evaluates the Vertex AI LLM for conciseness and checks if any personal information is passed. Helps with anonymizing any data to prevent personal health information issues



VERTEX AI

LLM for chat completion via the PaLM 'chat-bison' model. VM hosting using the NVIDIA T4 GPU



LANGCHAIN

RAG chat completion interface and hooking TruLens, Weaviate and VertexAI together. Along with using Langsmith for LLM debugging

The Tech

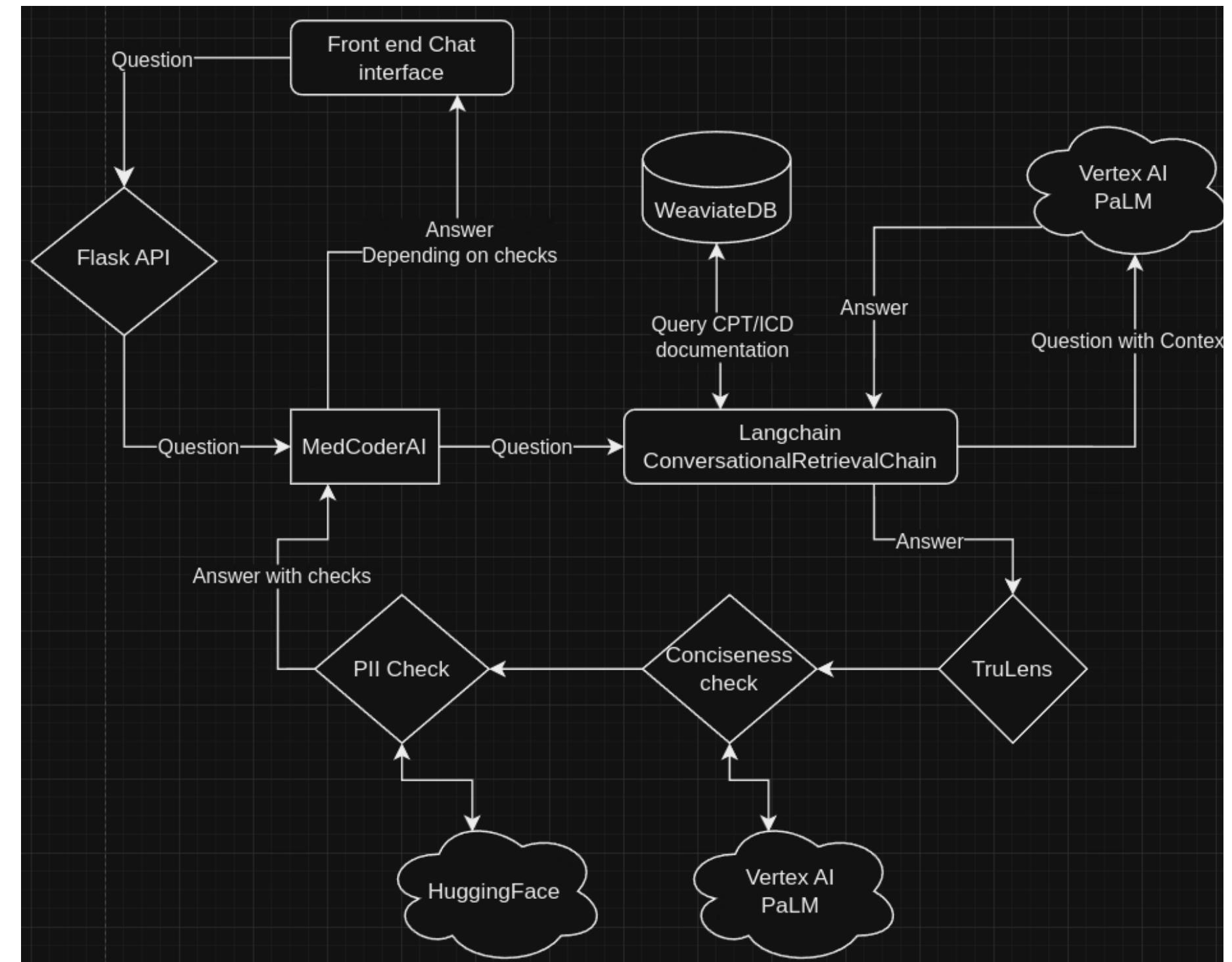


WEAVIATE

Vectorstore for document retrieval
used by langchain RAG chat

The Process

- Takes in question from the user with out Frontend chat interface
- Send question to MedCoderAI app that calls LangChain's ConversationalRetrievalChain (CRC)
- CRC calls on Weaviate database that has CPT/ICD documentation and combines to send a context to PaLM via Vertex AI for an answer
- Answer is then checked for conciseness and for personal information using the TruEra TruLens Eval along with the HuggingFace API and PaLM via Vertex AI
- Answer with check information is analyzed by the MedCoderAI app and answer is given depending on checks.
 - If checks fail, user will be notified no answer could be found.
 - If checks pass, answer is given to user



DEMO LINK

<https://colab.research.google.com/drive/1JQyP7S31-kYp6DZSYzrLtMVvIFXP-jcP?usp=sharing>

The Business

Free Version	Plus Version	Enterprise Version
Free version with custom chat interface for all to use.	Saving of sessions Ability to add custom medical codes to expand beyond CPT/ICD More refined model for better code matching	Connection to current electronic health record software Connection to current medical billing software Everything in plus version
\$0	\$20/month	\$50/month

The Team



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With a little help from 🕶️



Thank You!

