

INT D 461: Artificial Intelligence Everywhere Capstone

Elevator Pitch Presentation

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Lost in Translation: Idioms & AI

Can AI really understand idioms?



Why Idioms Matter?

- AI translators are good at literal meaning.
- They often fail with figurative/cultural expressions.
- This causes miscommunication in education, business, or daily life.



Gold Translation

Piece of cake



Piece of cake OR Something easily accomplished

Example

spill the beans

idiom

to let secret information become known:

- *We'll all be there at 6 for the surprise party – now don't spill the beans!*

The image shows a screenshot of the Google Translate mobile application. At the top, there are two dropdown menus for language selection: 'English' on the left and 'Punjabi' on the right, separated by a double-headed arrow indicating they can be swapped. Below these, the English phrase 'Spill the beans' is entered into the text input field. A small button labeled 'spill the beans' is visible below the input field. In the center, the Punjabi translation 'ਬੀਨਜ਼ ਫੈਲਾਓ' (Bīnaza phailā'ō) is displayed, along with its phonetic transcription 'Bīnaza phailā'ō'. At the bottom of the screen, there are three icons: a microphone for voice input, a speaker for audio output, and the Google logo.

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Where is the problem in real
world?

Live Translation

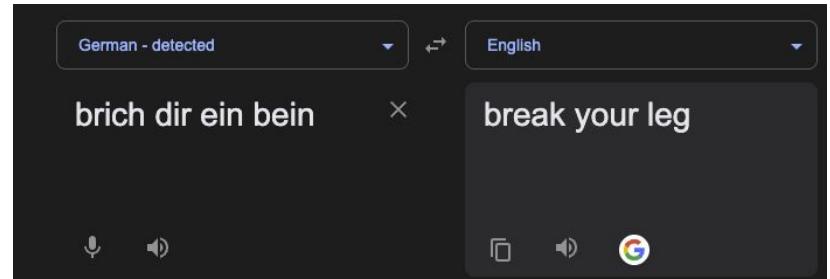


With Introduction of live translate in our phones, airpods this can be a huge problem

Movie Dubbing of subtitles



Ever watched a movie and felt the subtitles just didn't match the scene?



What do we plan to do?

Our Idea

- Collect idioms in English + other languages.
- Test with free AI translators (Gemini, GPT, Hugging Face).
- Compare outputs to correct idiomatic translations.
- Create case study + demo script.

Idioms → AI models → Outputs → Compare

How We'll Compare Outputs

Turn idioms + translations into **sentence embeddings** (vectors).

Use **cosine similarity** to measure closeness to gold meaning.

Score ranges:

- Close to **1.0** → Meaning captured
- Close to **0** → Unrelated / wrong

Equation (simple):

$$\text{cosine similarity}(A,B) = \frac{A \cdot B}{\|A\| \cdot \|B\|}$$

Idiom	Gold Meaning	Model Output	Cosine Sim.	Result
“Kick the bucket”	To die	“Morir” (Spanish)	0.95	 Correct
		“Patear el cubo”	0.43	 Wrong

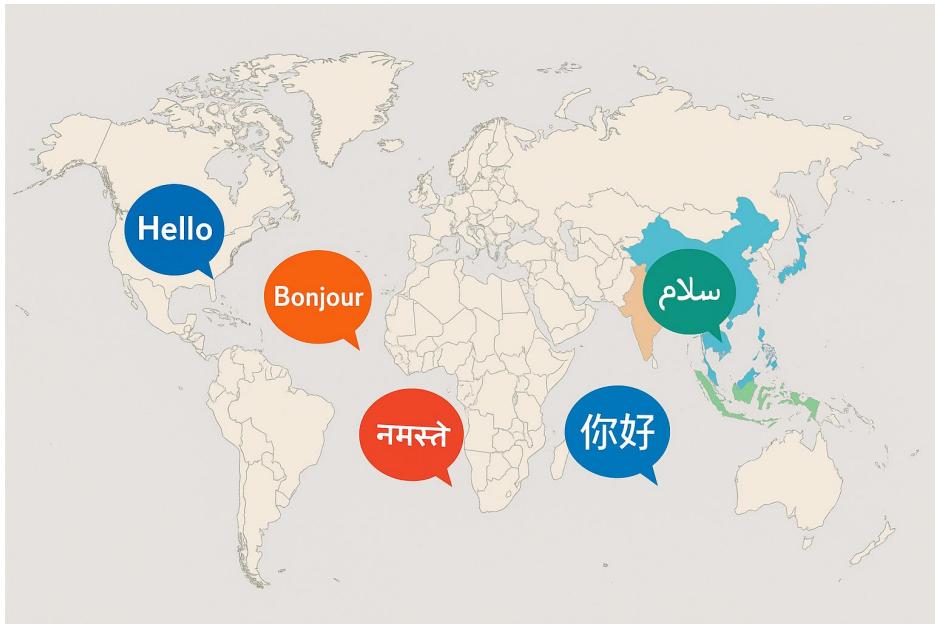
Roadblocks

- Data Collection Challenges
- Cultural context



Impact

- Shows limits of AI “understanding”
- Highlights cultural + ethical gaps
- Produces practical insights for real users



Questions/Feedback