

M³CHECK

A Demonstration System for Multilingual Multi-clue Multi-Hop Fact-Checking

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Introduction

🙄 Misinformation in **underrepresented**, multilingual communities, e.g., ASEAN, who have with limited educational access, is especially difficult. Existing fact-checking tools **rely on English** and **expensive** AI models, making them inaccessible to large populations.

😊 M³CHECK simplifies complex claims by breaking them into **small, understandable facts**.

😊 Supports **low-resource** and **underrepresented languages**, making fact-checking accessible to diverse communities.

😊 **Lightweight & cost-effective**: runs locally on a laptop, reducing reliance on expensive APIs for affordable fact-checking in low-resource regions.

😊 **Timeliness**: supports fact-checking for recent news.

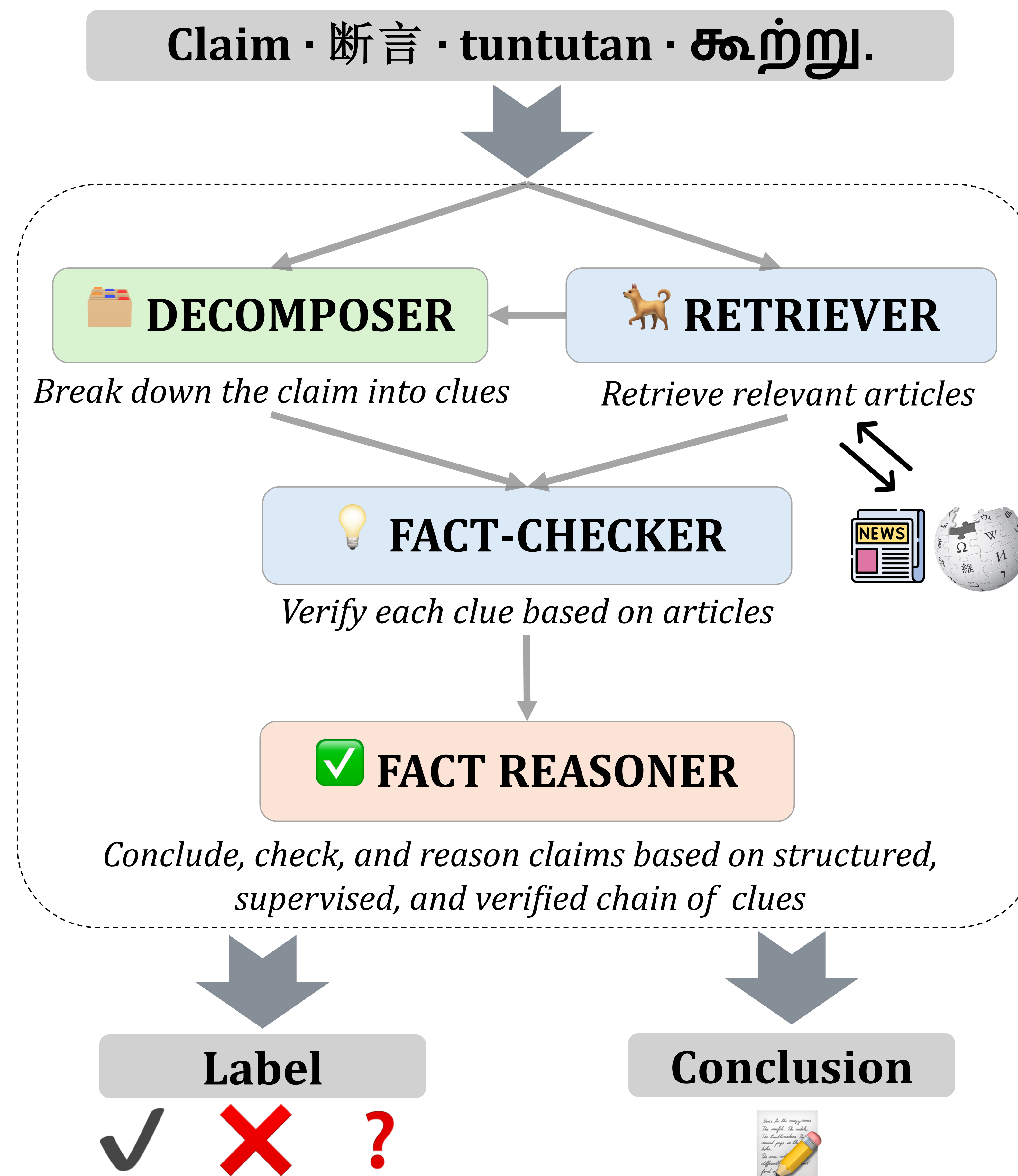
Key Design

🔍 **Multi-clue Generation**: break down complex claims into multiple simpler clues to improve interpretability and fact-checking accuracy.

🔍 **Evidence-based Checking**: verify each clue to facilitate verification from trusted documents, supporting evidence-based verification.

🔍 **Multi-Hop Reasoning**: zip verified clues into a structured and supervised chain of clues for inference with multi-hop deductive reasoning.

System Architecture



Multilingual Use Cases

🤔 Sunlight can reach the bottom of the Black Sea.

I've got the following clues:

- 1 Sunlight can penetrate up to 200 meters in clear ocean water.
- 2 The Black Sea is over 2,000 meters deep.
- 3 In general, sunlight cannot penetrate water beyond a depth of 1,500 meters (4,921 feet).

I am going to verify the above clues one by one:

- 1 Sunlight can penetrate up to 200 meters in clear ocean water. ➡ TRUE
- 2 The Black Sea is over 2,000 meters deep. ➡ TRUE
- 3 In general, sunlight cannot penetrate water beyond a depth of 1,500 meters (4,921 feet). ➡ TRUE

Your claim is **False** ❌. The bottom lies far beyond the depth where sunlight can penetrate (>2000 meters).

🤔 太阳光线可以到达黑海底部

I've generated the following clue:

- 1 阳光可以穿透水的深度大约为200米。
- 2 黑海的最大深度超过2,000米。
- 3 一般来说，阳光无法穿透深度超过 1,500 米的水。

I am going to verify above clues one by one

- 1 阳光可以穿透水的深度大约为200米。 ➡ TRUE
- 2 黑海的最大深度超过2,000米。 ➡ TRUE
- 3 一般来说，阳光无法穿透深度超过 1,500米深的水。 ➡ TRUE

Your claim is **False** ❌. 海底的深度远远超出了阳光可以穿透的深度 (>2000米)。