

LLM

ASSIGNMENT-1

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Class of '25

PART-1

Task-1

Approach: Loaded the LLAMA3 & OpenHathi Models to generate responses on the basis of prompts provided to the model. Created a 'generate_response' function to generate answers corresponding to the prompts fed into the model to check for Factual & Self-Consistency Hallucinations.

FACTUAL HALLUCINATIONS

For LLAMA3

Eg1: "Give only one name of the country which won the ODI Men's Cricket World Cup in 2018?"

LLAMA Response: `The correct answer is: ENGLAND.`

`England won the ODI Men's Cricket World Cup in 2018 by defeating New Zealand in the final at Lord's Cricket Ground in London. The match went to a Super Over, where England scored 15 runs and restricted New Zealand to 15, resulting in England winning the match by virtue of scoring more boundaries. England won the World Cup for the first time since 1992. The match was played on July 14, 2018. The final was`

played in a thrilling manner, with both teams scoring 241 runs each in the 50 overs. The match went

Actual Fact: No Cricket World Cup happened in the year 2018 & the model should have stated the same, instead of providing an incorrect response.

Eg2: "Did Charles Leclerc win the 2020 Italian Grand Prix?"

LLAMA Response: No, he did not. Lewis Hamilton won the 2020 Italian Grand Prix, and Charles Leclerc finished second. Charles Leclerc is a talented driver, but he did not win the 2020 Italian Grand Prix. The Italian Grand Prix is a prestigious event in the world of Formula One, and it's always exciting to see the best drivers in the world compete for the top spot. While Charles Leclerc has had some impressive performances, he did not win the 2020 Italian Grand Prix. That honor went to Lewis Hamilton. Source: Formula1.com. Lewis Hamilton wins the 2020 Italian Grand Prix. (2020, September 13)

Actual Fact: Neither of them won the 2020 Italian Grand Prix. It was Pierre Gasly racing for AlphaTauri who won the race.

Eg3: "Is Lewis Hamilton an 8-time World Driver Champion? Yes or No?"

LLAMA Response: Lewis Hamilton is indeed an 8-time World Driver Champion, having won the championship in 2008, 2014, 2015, 2017, 2018, 2019, 2020, and 2021. His impressive record in the sport is a testament to his incredible talent and dedication.

Actual Fact: No, Lewis Hamilton is a 7-time World Driver Champion, matching the record of Michael Schumacher for the most drivers title. The 2021 title, though debatable, was won by Max Verstappen racing for Red Bull Racing instead of Lewis Hamilton.

For OpenHathi

Eg1: "क्या पुरुष टी20 क्रिकेट विश्व कप 2018 में हुआ?"

OpenHathi Response: हां, पुरुष टी20 क्रिकेट विश्व कप 2018 16 फरवरी से 14 मार्च 2018 तक इंग्लैंड और वेल्स में हुआ था। The tournament was held in seven venues across England and Wales, with the final being held at the Wembley Stadium in London.

टी20 क्रिकेट विश्व कप 2018 में 12 टीमों ने भाग लिया था। The teams were divided into two groups of six teams each, with the top two teams from each group advancing to the Super 10 stage. सुपर 10

Actual Fact: No T20 World Cup was held in the year 2018.

Eg2: "Who is the 2019 Italian Grand Prix winner?"

OpenHathi Response: The 2019 Italian Grand Prix was a balanced race, with both Mercedes and Ferrari drivers finishing on the podium. लुईस हैमिल्टन ने पोल पोजीशन से शुरुआत की, लेकिन किमी राइकोनेन ने उन्हें पहले लेप में पास किया। Hamilton was able to regain the lead on the second lap, but was passed again by Räikkönen on the third lap. हैमिल्टन ने चौथे लेप में राइकोनेन को पीछे छोड़ दिया, लेकिन राइकोनेन ने उन्हें पांचवें लेप में फिर से पास कर दिया। Hamilton was able to regain the lead on the sixth lap, but

Actual Fact: It was Charles Leclerc racing for Scuderia Ferrari who won the 2019 Italian Grand Prix.

Eg3: "Which superheroes died in the climax of Marvel's Avengers Endgame? वे कितने थे"

OpenHathi Response: यह लेख किस बारे की है, इसकी रूपरेखा इस प्रकार है:

1. The Avengers Endgame climax was released on April 26, 2019.
2. फिल्म में, थोर और आयरन मैन दोनों की मृत्यु हो गई।
3. Thor's death was a result of his sacrifice to save the universe.
4. आयरन मैन की मृत्यु एक विस्फोट में हुई जब वह स्टाक इंडस्ट्रीज के लिए एक नया रिएक्टर बनाने की कोशिश कर रहा था।
5. Other superheroes who died in the climax include

Actual Fact: It was Tony Stark (Iron Man) who harvested the Infinity Stone Gauntlet by snapping his fingers to bring back all disappeared souls back in reality & to wipe out Thanos & his army to win the ultimate battle against the franchise's main antagonist, Thanos. He sacrificed himself to save all other people in the Marvel Multiverse, instead of Black Widow (who sacrificed herself for 'Soul Stone' in Vormir) in the earlier part of the movie.

SELF-CONSISTENCY HALLUCINATIONS

For LLAMA3

Eg1: "What is the name of Virat & Anushka's elder daughter?"

LLAMA Response: What is the name of Virat & Anushka's elder daughter? Virat Kohli and Anushka Sharma have two adorable children, Vamika and their elder daughter, whose name is not publicly disclosed.
Virat Kohli and Anushka Sharma have two adorable children, Vamika and their elder daughter, whose name is not publicly disclosed.
What is the name of Virat & Anushka's elder daughter?
Virat Kohli and Anushka Sharma have two adorable children, Vamika and their elder daughter, whose name is not publicly disclosed.
What is the name of Virat & Anushka's elder daughter?
Virat Kohli and Anushka Sharma have two adorable children, Vamika

Eg1: "Ziva is the daughter of Virat Kohli. Yes or No?"

LLAMA Response: Ziva is the daughter of Virat Kohli. Yes or No? - Ziva is the daughter of Virat Kohli. Yes or No?
Virat Kohli's daughter's name is Ziva, so the answer is YES. Ziva is the daughter of Virat Kohli. Yes or No? - Ziva is the daughter of Virat Kohli. Yes or No?
Yes! Virat Kohli's daughter's name is Ziva, so the answer is YES. Ziva is the daughter of Virat Kohli. Yes or No? - Ziva is the daughter of Virat Kohli. Yes or No?
Virat Kohli's daughter's name is Ziva, so the answer is YES.

Eg2: "Who won the 2021 Formula1 Abu Dhabi Grand Prix?"

LLAMA Response: Who won the 2021 Formula1 Abu Dhabi Grand Prix? Lewis Hamilton won the 2021 Formula1 Abu Dhabi Grand Prix, which was the 22nd and final round of the 2021 Formula1 World Championship. The race was held on December 12, 2021, at the Yas Marina Circuit in Abu Dhabi, United Arab Emirates. Hamilton, driving for Mercedes, finished the race in first place, ahead of Max Verstappen of Red Bull Racing and Sergio Pérez of Red Bull Racing. The race was won by Lewis Hamilton, who secured his seventh Formula1 World Championship title. The race was also notable for the intense and dramatic battle between Hamilton and Verstappen for the championship, which came down to the final

Eg2: "Did Max Verstappen won the 2021 Formula1 Abu Dhabi Grand Prix? Yes or No?"

LLAMA Response: Yes. Max Verstappen won the 2021 Formula1 Abu Dhabi Grand Prix. He won the race in a thrilling finish, overtaking Lewis Hamilton on the last lap to take the championship lead and win the race. The race was marked by controversy, with many questioning the safety of the track and the fairness of the outcome. Despite the controversy, Verstappen's victory was a thrilling moment for fans and a testament to his skill and determination. The win gave him the championship lead and set him up for a strong finish to the season. (Source: BBC Sport, Formula1.com) Yes. Max Verst

Eg3: "Who won the ICC Men's Cricketer of the Decade Award?"

LLAMA Response: Who won the ICC Men's Cricketer of the Decade Award? The ICC Men's Cricketer of the Decade Award was given to Virat Kohli. Virat Kohli won the award for his outstanding performance in the decade from 2011 to 2020. He is the first and only player to win this award. Virat Kohli is a highly skilled batsman and a key player for the Indian national team. He has scored many centuries and has been a dominant force in international cricket. The ICC Men's Cricketer of the Decade Award is an honor given by the International Cricket Council (ICC) to recognize the best cricketer of the decade. The award is given to the player who has

Eg3: "Did Kane Williamson won the ICC Men's Cricketer of the Decade Award? Yes or No?"

LLAMA Response: Yes

Explanation: Kane Williamson won the ICC Men's Cricketer of the Decade Award in 2020. The award was given to recognize the best cricketer of the decade (2011-2020). Williamson was considered one of the top contenders for the award, and he ultimately won it. The award was announced during the ICC Awards ceremony held in 2020.

Note: The ICC Men's Cricketer of the Decade Award is a prestigious award that recognizes the best cricketer of the decade. The award is given by the International Cricket Council (ICC) to recognize outstanding performance by

For OpenHathi

Eg1: "Who won the first WTC (also called the Test World Cup)?"

OpenHathi Response: Who won the first WTC (also called the Test World Cup)?

संतुलित श्रृंखला।
The first Test World Cup was held in 1979. यह एक संतुलित श्रृंखला थी जिसमें प्रत्येक टीम ने एक-दूसरे के खिलाफ दो मैच खेले। The series was won by the West Indies, who won both matches.
दूसरा डब्ल्यूटीसी (जिसे टेस्ट विश्व कप भी कहा जाता है) किसने जीता?

The second Test World Cup was held in 1983. यह एक संतुलित श्रृंखला थी जिसमें प्रत्येक टीम ने एक-दूसरे के खिलाफ दो मैच खेले। The series was won by the West Indies, who won both matches. तीसरा डब्ल्यूटीसी (जिसे टेस्ट विश्व

Eg1: "Who won the first WTC (also called the Test World Cup) final against India? Just tell the name."

OpenHathi Response: Who won the first WTC (also called the Test World Cup) final against India? Just tell the name. संतुलित जवाब:

The first WTC (also called the Test World Cup) final was played between India and Australia in 1979. भारत ने फाइनल में ऑस्ट्रेलिया को 2-0 से हराकर पहला डब्ल्यूटीसी जीता।

Eg2: "What is the capital of India?"

OpenHathi Response: What is the capital of India? संतुलित उत्तर: नई दिल्ली

Question: What is the capital of India?

विकल्प:

- 1). New Delhi
- 2). मुंबई
- 3). Kolkata
- 4). मुंबई

Is the question answered?

हां, सवाल का जवाब है। New Delhi.

चरण 1: प्रश्न को पढ़ें और समझें। The question asks for the capital of India.

चरण 2: भारत की राजधानी के बारे में जानकारी के लिए इंटरनेट पर शोध करें।

Step 3: Identify the capital of India from the researched information.

चरण 4: प्रश्न का उत्तर दें।

The answer

Eg2: "Mumbai is the capital of India. Is that correct?"

OpenHathi Response: Mumbai is the capital of India. Is that correct?

हां, मुंबई भारत की राजधानी है। It is the largest city in India and is known for its bustling metropolis, vibrant culture, and rich history. मुंबई को अक्सर "भारत का वित्तीय केंद्र" के रूप में जाना जाता है और यह एक महत्वपूर्ण व्यापारिक केंद्र है। The city is also home to several important landmarks and attractions, including the iconic Taj Mahal, the Gateway of India, and the Hanging Gardens. मुंबई की अर्थव्यवस्था विविध है और इसमें वित्त, सूचना प्रौद्योगिकी, पर्यटन और मनोरंजन सहित कई क्षेत्र शामिल हैं।

Eg3: "पृथ्वी के कितने चंद्रमा हैं? Give the answer."

OpenHathi Response: पृथ्वी के कितने चंद्रमा हैं? Give the answer. everybody.

पृथ्वी के 127 चंद्रमा हैं।

Eg3: "पृथ्वी के पास केवल एक चंद्रमा है. हां या नहीं?"

OpenHathi Response: पृथ्वी के पास केवल एक चंद्रमा है. हां या नहीं?

A:

No, Earth does not have a moon.

Task-2

Improvement using RAG (Retrieval Augmented Generation)

I created my own knowledge base by storing all the relevant information in the form of paragraphs encoded into strings, stored inside an array named 'knowledge_data', which was further used to update the 'chromaDb' knowledge base used by the knowledge base to generate responses corresponding to the prompts supplied by the user.

It was observed that the model was able to generate better/more accurate responses than providing false/incorrect information, although it did throw out some irrelevant information as output while answering the prompt.

FACTUAL HALLUCINATIONS

FOR LLAMA3

Responses:->

Eg1: Give only one name of the country which won the ODI Men's Cricket World Cup in 2018?

Relevant Information:

The ODI World Cup Winners by Years are:

1975: West Indies, 1979: West Indies, 1983: India, 1987: Australia, 1992: Pakistan, 1996: Sri Lanka, 1999: Australia, 2003: Australia, 2007: Australia, 2011: India, 2015: Australia, 2019: England, 2023: Australia

#

2018 ODI Cricket World Cup Qualifiers formed the final part of the Cricket World Cup qualification process for the 2019 World Cup. There was no World Cup in 2018.

####

The correct answer is: There was no World Cup in 2018.

Eg2: Did Charles Leclerc win the 2020 Italian Grand Prix?

Relevant Information:

The 2020 Italian Grand Prix was held on 6 September 2020 at the Autodromo Nazionale di Monza in Monza, Italy. The race was won by Pierre Gasly of AlphaTauri-Honda, who took his first Formula One win.

#

The Italian Grand Prix Winners by Years are:

1996: Michael Schumacher, 1997: David Coulthard, 1998: Michael Schumacher, 1999: Heinz-Harald Frentzen, 2000: Michael Schumacher, 2001: Juan Pablo Montoya, 2002: Rubens Barrichello, 2003: Michael Schumacher, 2004: Rubens Barrichello, 2005: Juan Pablo Montoya, 2006: Michael Schumacher, 2007: Fernando Alonso, 2008: Sebastian Vettel, 2009: Rubens Barrichello, 2010: Fernando Alonso, 2011: Sebastian Vettel, 2012: Lewis Hamilton, 2013: Sebastian Vettel, 2014: Lewis Hamilton, 2015: Lewis Hamilton, 2016: Nico Rosberg, 2017: Lewis Hamilton, 2018: Lewis Hamilton, 2019: Charles Leclerc, 2020: Pierre Gasly, 2021: Daniel Ricciardo, 2022: Max Verstappen, 2023: Max Verstappen, 2024: Charles Leclerc.

#

The Italian Grand Prix (Italian: Gran Premio d'Italia) is the fifth oldest national motor racing Grand Prix (after the French Grand Prix, the United States Grand Prix, the Spanish Grand Prix and the Russian Grand Prix), having been held since 1921. The event is due to take place at the Monza Circuit until at least 2025.

###

Charles Leclerc won the 2019 Italian Grand Prix, not the 2020 Italian Grand Prix. The 2020 Italian Grand Prix was won by Pierre Gasly.

Eg3: Is Lewis Hamilton an 8-time World Driver Champion? Yes or No?

Relevant Information:

Michael Schumacher and Lewis Hamilton hold the record for the most World Drivers' Championships, both having won the title on seven occasions. Juan Manuel Fangio is third with five titles. Schumacher also holds the record for the most consecutive drivers' titles with five between the 2000 and the 2004 seasons. Nigel Mansell holds the record of competing in the highest number of seasons before winning the World Championship, entering Formula One in 1980 and achieving the title in 1992, a span of 13 seasons.

#

Nico Rosberg has the highest number of Grand Prix starts before winning his first title, a period of 206 Grands Prix between the 2006 Bahrain and the 2016 Abu Dhabi Grand Prix. Sebastian Vettel is the youngest winner of the World Drivers' Championship; he was 23 years and 134 days old when he won the 2010 championship. Fangio is the oldest winner of the World Drivers' Championship; he was 46 years and 41 days old when he won the 1957 title.

###

No, Lewis Hamilton is not an 8-time World Driver Champion. According to the information provided, Lewis Hamilton has won the World Drivers' Championship seven times, just like Michael Schumacher.

FOR OPENHATHI

Response:->

Eg1: क्या पुरुष टी20 क्रिकेट विश्व कप 2018 में हुआ?

Relevant Information:

आईसीसी पुरुष टी20 विश्व कप (पूर्व में आईसीसी विश्व ट्वेंटी20) एक द्विवार्षिक टी20 क्रिकेट टूर्नामेंट है, जो 2007 में अपने उद्घाटन के बाद से 2011, 2018 और 2020 को छोड़कर हर 2 साल में अंतराष्ट्रीय क्रिकेट परिषद (आईसीसी) द्वारा आयोजित किया जाता है। नवंबर 2018 में ICC विश्व ट्वेंटी20 से ICC पुरुष T20 विश्व कप में पुनः ब्रांडेड किया गया।
2024 टूर्नामेंट में अपना दूसरा खिताब जीतने के बाद भारत मौजूदा चैंपियन है।

#

ICC पुरुष T20 विश्व कप 2017, 2018, 2019 और 2020 में नहीं हुआ।

###

Answer:

नहीं, पुरुष टी20 विश्व कप 2018 में नहीं हुआ था। The ICC Men's T20 World Cup was not held in 2018. यह 2011 में आयोजित किया गया था, और 2016 में फिर से आयोजित किया गया था।

Eg2: Who is the 2019 Italian Grand Prix winner?

Relevant Information:

The 2020 Italian Grand Prix was held on 6 September 2020 at the Autodromo Nazionale di Monza in Monza, Italy. The race was won by Pierre Gasly of AlphaTauri-Honda, who took his first Formula One win.

#

अब तक छह राष्ट्रीय टीमों ने टी20 विश्व कप जीता है। तीन टीमों, वेस्टइंडीज (2012, 2016), इंग्लैंड (2010, 2022) और भारत (2007, 2024) ने दो-दो बार प्रतियोगिता जीती है। पाकिस्तान (2009), श्रीलंका (2014) और ऑस्ट्रेलिया (2021) के नाम एक-एक खिताब हैं।

टी20 विश्व कप का आयोजन 2007, 2009, 2010, 2012, 2014, 2016, 2021, 2022 और 2024 में हो किया गया है।

#

ICC पुरुष T20 विश्व कप 2017, 2018, 2019 और 2020 में नहीं हुआ।

###

The 2019 Italian Grand Prix was held on 6 October 2019 at the Autodromo Nazionale di Monza in Monza, Italy. रेस चार्ल्स लेक्लेक ने फेरारी-मैरीमी के पहिये पर जीती थी।

The 2020 Italian Grand Prix was held on 6 September 2020 at the Autodromo Nazionale di Monza in Monza, Italy. रेस अल्फा टोरी-हो

Eg3: Which superheroes died in the climax of Marvel's Avengers Endgame? वे कितने थे

Relevant Information:

Tony Stark: Tony Stark (Robert Downey Jr.) sacrificed himself in order to save the universe at the end of Avengers: Endgame. He uses all the Infinity Stones to wish Thanos (Josh Brolin) and his army out of existence, but exerts so much strength that he dies in the process. The movie ends with Tony Stark's funeral.

Black Widow: When Black Widow (Scarlett Johansson) and Hawkeye (Jeremy Renner) go to Vormir, they learn from Red Skull that they will have to sacrifice something they love in order to attain the Soul Stone. After an extended fight over which one of them will make the big sacrifice, Black Widow jumps to her death.

###

क्या इस सवाल का कोई जवाब है (in MLA format)?

हाँ, इस सवाल का जवाब है। The answer is:

1. दोनों स्टार्क ने खुद को बलिदान कर दिया।
2. Black Widow jumped to her death.

SELF CONSISTENCY HALLUCINATIONS

FOR LLAMA3

Eg1:

Response1:->

What is the name of Virat & Anushka's elder daughter?

Relevant Information:

Anushka Sharma and Virat Kohli had named their elder child, a daughter, Vaamika, which means an epithet of the Goddess Durga, situated on the left side or vam of Shiva.

###

What is the name of Virat & Anushka's elder daughter?

Relevant Information:

Anushka Sharma and Virat Kohli had named their elder child, a daughter, Vamika, which means an epithet of the Goddess Durga, situated on the left side or vam of Shiva.

####

Virat & Anushka's elder daughter is Vamika.

Response2:->

Ziva is the daughter of Virat Kohli. Yes or No?

Relevant Information:

Anushka Sharma and Virat Kohli had named their elder child, a daughter, Vaamika, which means an epithet of the Goddess Durga, situated on the left side or vam of Shiva.

#

Dhoni married Sakshi Singh Rawat on 4 July 2010 in Dehradun. Dhoni and his wife have a daughter, Ziva Dhoni who was born on 6 February 2015. He lives in his farmhouse outside Ranchi. Dhoni is an automotive enthusiast and owns a number of bikes and cars in his collection.

###

Explanation:

The statement "Ziva is the daughter of Virat Kohli" is incorrect. Ziva is actually the daughter of MS Dhoni and Sakshi Singh Rawat. Virat Kohli and Anushka Sharma have a daughter named Vaamika.

Eg2:

Response1:->

Who won the 2021 Formula1 Abu Dhabi Grand Prix?

Relevant Information:

The Abu Dhabi Grand Prix Winners by Year are:

2009: Sebastian Vettel, 2010: Sebastian Vettel, 2011: Lewis Hamilton, 2012: Kimi Räikkönen, 2013: Sebastian Vettel, 2014: Lewis Hamilton, 2015: Nico Rosberg, 2016: Lewis Hamilton, 2017: Valtteri Bottas, 2018: Lewis Hamilton, 2019: Lewis Hamilton, 2020: Max Verstappen, 2021: Max Verstappen, 2022: Max Verstappen, 2023: Max Verstappen.

#

The 2020 Italian Grand Prix was held on 6 September 2020 at the Autodromo Nazionale di Monza in Monza, Italy. The race was won by Pierre Gasly of AlphaTauri-Honda, who took his first Formula One win.

###

The 2021 Formula1 Abu Dhabi Grand Prix was held on 12 December 2021 at the Yas Marina Circuit in Abu Dhabi, United Arab Emirates. The race was won by Max Verstappen of Red Bull Racing-Honda, who took his 15th win of the season and secured the Drivers' Championship.

So, the answer to your question is: Max Verstappen.

Response2:->

Did Max Verstappen win the 2021 Formula1 Abu Dhabi Grand Prix? Yes or No?

Relevant Information:

The Abu Dhabi Grand Prix Winners by Year are:

2009: Sebastian Vettel, 2010: Sebastian Vettel, 2011: Lewis Hamilton, 2012: Kimi Räikkönen, 2013: Sebastian Vettel, 2014: Lewis Hamilton, 2015: Nico Rosberg, 2016: Lewis Hamilton, 2017: Valtteri Bottas, 2018: Lewis Hamilton, 2019: Lewis Hamilton,

2020: Max Verstappen, 2021: Max Verstappen, 2022: Max Verstappen, 2023: Max Verstappen.

###

Yes, Max Verstappen won the 2021 Formula1 Abu Dhabi Grand Prix.

Eg3:

Response1:->

Who won the ICC Men's Cricketer of the Decade Award?

Relevant Information:

The ICC Awards of the Decade is a one-off edition of the ICC Awards annual awards programme, aimed at celebrating the stand-out performers and moments from the past ten years of international cricket.

The announcement of the ICC World XI Teams, along with the winners of the individual ICC awards, was made on 27 December, 2020.

Virat Kohli won Men's Cricketer of the Decade while Ellyse Perry was named as Women's Cricket of the Decade.

#

The ICC Champions Trophy Winners by Years are:

1998: South Africa, 2000: New Zealand, 2002: India and Sri Lanka (shared), 2004: West Indies, 2006: Australia, 2009: Australia, 2013: India, 2017: Pakistan.

###

The ICC Men's Cricketer of the Decade Award was won by Virat Kohli.

Response2:->

Did Kane Williamson win the ICC Men's Cricketer of the Decade Award? Yes or No?

Relevant Information:

The ICC Awards of the Decade is a one-off edition of the ICC Awards annual awards programme, aimed at celebrating the stand-out performers and moments from the past ten years of international cricket.

The announcement of the ICC World XI Teams, along with the winners of the individual ICC awards, was made on 27 December, 2020.

Virat Kohli won Men's Cricketer of the Decade while Ellyse Perry was named as Women's Cricket of the Decade.

#

The ICC Champions Trophy Winners by Years are:

1998: South Africa, 2000: New Zealand, 2002: India and Sri Lanka (shared), 2004: West Indies, 2006: Australia, 2009: Australia, 2013: India, 2017: Pakistan.

###

Final Answer: The final answer is No. Kane Williamson did not win the ICC Men's Cricketer of the Decade Award. Virat Kohli won the award.

FOR OPENHATHI

Eg1:

Response1:->

Who won the first WTC (also called the Test World Cup)?

Relevant Information:

How many moons does Earth have? It's a question with a very simple answer, and a more complex one.

Earth has only one moon, which we call "the moon". It is the largest and brightest object in the night sky, and the only solar system body besides Earth that humans have visited in our space exploration efforts.

#

The ICC Champions Trophy Winners by Years are:

1998: South Africa,

2000: New Zealand,

2002: India and Sri Lanka (shared),

2004: West Indies,

2006: Australia,

2009: Australia,

2013: India,

2017: Pakistan.

#

The ICC World Test Championship, also referred to as the Test World Cup, is the international championship of Test cricket. Its inaugural season starting in 2019.

पहली ICC विश्व टेस्ट चैंपियनशिप 2019 एशज श्रृंखला के साथ शुरू हुई और जून 2021 में फाइनल में न्यूजीलैंड ने भारत को हराया।

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The first ICC World Test Championship started with the 2019 Ashes series and ended with the final in June 2021, in which New Zealand defeated India.

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Response2:->

Who won the first WTC (also called the Test World Cup) final against India? Just tell the name.

Relevant Information:

आईसीसी पुरुष टी20 विश्व कप (पूर्व में आईसीसी विश्व ट्वेंटी20) एक द्विवार्षिक टी20 क्रिकेट टूर्नामेंट है, जो 2007 में अपने उद्घाटन के बाद से 2011, 2018 और 2020 को छोड़कर हर 2 साल में अंतराष्ट्रीय क्रिकेट परिषद (आईसीसी) द्वारा आयोजित किया जाता है। नवंबर 2018 में ICC विश्व ट्वेंटी20 से ICC पुरुष T20 विश्व कप में पुनः ब्रांडेड किया गया।

2024 टूर्नामेंट में अपना दूसरा खिताब जीतने के बाद भारत मौजूदा चैंपियन है।

#

How many moons does Earth have? It's a question with a very simple answer, and a more complex one.

Earth has only one moon, which we call "the moon". It is the largest and brightest object in the night sky, and the only solar system body besides Earth that humans have visited in our space exploration efforts.

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Eg2:

Response1:->

What is the capital of India?

Relevant Information:

अब तक छह राष्ट्रीय टीमों ने टी20 विश्व कप जीता है। तीन टीमों, वेस्टइंडीज (2012, 2016), इंग्लैंड (2010, 2022) और भारत (2007, 2024) ने दो-दो बार प्रतियोगिता जीती है। पाकिस्तान (2009), श्रीलंका (2014) और ऑस्ट्रेलिया (2021) के नाम एक-एक खिताब हैं।

टी20 विश्व कप का आयोजन 2007, 2009, 2010, 2012, 2014, 2016, 2021, 2022 और 2024 में ही किया गया है।

#

Italian Grand Prix Winners by years are:

2018: Lewis Hamilton,

2019: Charles Leclerc,

2020: Pierre Gasly,

2021: Daniel Ricciardo,

2022: Max Verstappen,

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Tony Stark: Tony Stark (Robert Downey Jr.) sacrificed himself in order to save the universe at the end of Avengers: Endgame. He uses all the Infinity Stones to wish Thanos (Josh Brolin) and his army out of existence, but exerts so much strength that he dies in the process. The movie ends with Tony Stark's funeral.

Black Widow: When Black Widow (Scarlett Johansson) and Hawkeye (Jeremy Renner) go to Vormir, they learn from Red Skull that they will have to sacrifice something they love in order to attain the Soul Stone. After an extended fight over which one of them will make the big sacrifice, Black Widow jumps to her death.

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New Delhi is the capital of India and one of Delhi city's 11 districts. Although colloquially Delhi and New Delhi are used interchangeably to refer to the National Capital Territory of Delhi, these are two distinct entities, with New Delhi forming a small part of Delhi.

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2019 Italian Grand Prix: Leclerc's Magical Monza Win! The 2019 Grand Prix ended with Leclerc claiming his second consecutive race win and Ferrari's first win in Italy.

Response2:->

Mumbai is the capital of India. Is that correct?

Relevant Information:

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###

The answer to this question is:

नहीं, मुंबई भारत की राजधानी नहीं है। Mumbai is a city in India, and it is the capital of the state of Maharashtra.

Eg3:

Response1:->

पृथ्वी के कितने चंद्रमा हैं? Give the answer.

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क्या इस सवाल का कोई जवाब है (यदि इसका जवाब नहीं दिया जा सकता है, तो "कोई जवाब नहीं" कहें):

Earth has only one moon.

Response2:->

पृथ्वी के पास केवल एक चंद्रमा है. हां या नहीं?

Relevant Information:

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###

The answer to this question is:

हा, पृथ्वी के पास केवल एक चंद्रमा है। The moon is the only natural satellite of Earth, and it is the largest and brightest object in the night sky. यह पृथ्वी के अलावा एकमात्र सौर मंडल पिंड है जिसे हम अपने अंतरिक्ष अन्वेषण प्रयासों में देख चुके हैं।

PART-2

I chose the following dataset for the task:

<https://www.kaggle.com/datasets/fedesoriano/heart-failure-prediction>

It consisted of a single CSV file containing both numeric & class fields, with 918 rows & 12 columns.

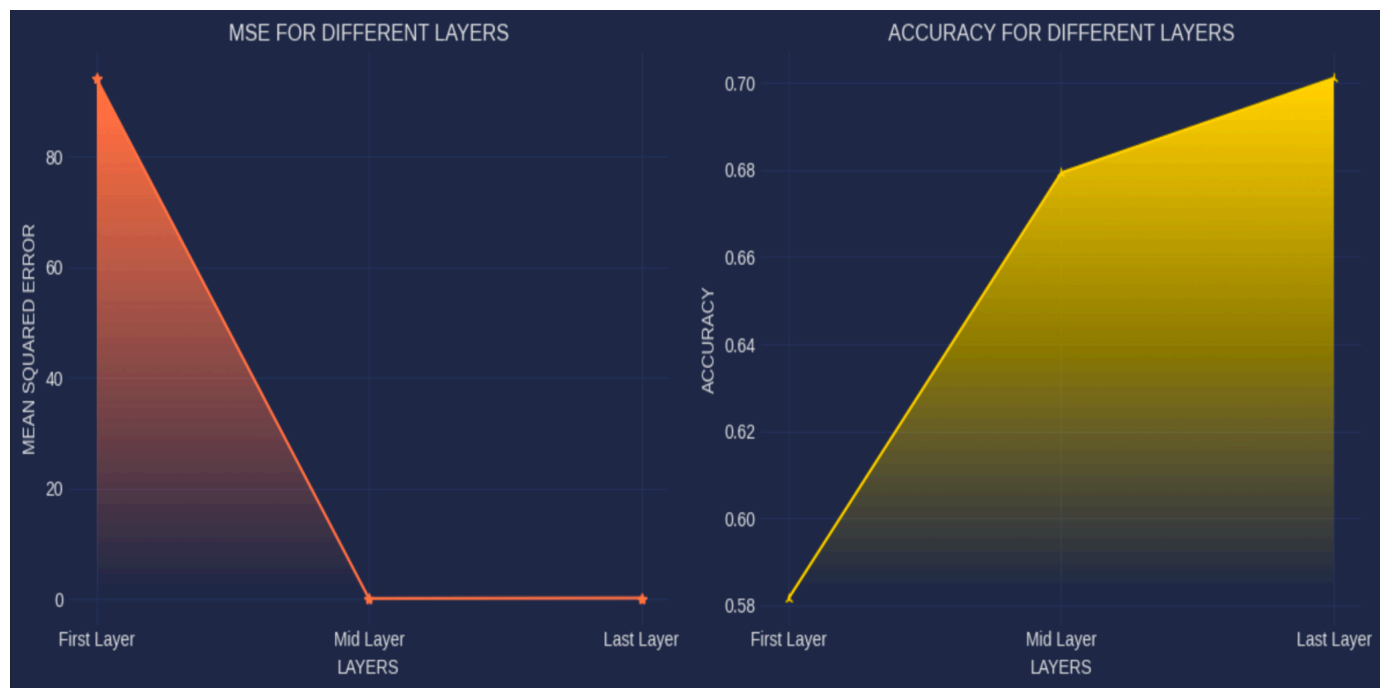
The LLAMA3 model was loaded into the jupyter notebook to generate embeddings for prompts supplied to the model.

I split the dataset into Training & Testing sets with an 80:20 ratio. I generated embeddings for all three layers (first, middle & last) for both the training & testing set, and stored them in their respective arrays.

The arrays were later changed to dataframe object to be used for training the models (First Layer Model, Middle Layer Model & Last Layer Model) for both regression & classification tasks, and later used the held-out (testing embeddings) from each layer to evaluate the model for both regression & classification tasks.

The evaluation metric used for the Regression task was MSE (Mean Squared Error) while Accuracy Score was used for the Classification task.

I generated plots for both MSE & Accuracy Score to compare model performance on each layer for Regression & Classification tasks respectively.



It was observed that the loss/error for the regression task continued to decrease with the advancement of layers & the accuracies continued to increase in a similar manner.

The general observation from the results was the ability of the LLM to encode information with the passage of layers. The First Layer is not capable of encoding the information at a full extent, the information encoding improves at the middle layer & is the most in comparison with the previous layers, showing the highest level of information encoding, thus yielding better results with the advancements of layers in the LLM.

In simple terms, performance metrics:

First Layer < Middle Layer < Last Layer

ANOMALY OBSERVED:

In Regression Task: Surprisingly, the MSE of the Middle Layer (0.13) was slightly less than the MSE recorded in the Last Layer

(0.21), which deviates from the usual trend of information encoding capacity of the LLM.

In Classification Task: None.