1st Training

```
bnb_config = BitsAndBytesConfig(
    load_in_4bit = True
)
# LoRA config -- Skeleton
peft_config = LoraConfig(
    r=8,
    )
Hyperparameters -- Skeleton
training_arguments = TrainingArguments(
    num_train_epochs=3,
)


Data split = from 7:3


Max_length = 512


dataNum = 77
```

2nd Training

```
bnb_config = BitsAndBytesConfig(
    load_in_8bit = True  #cuda out of memory
)
# LoRA config -- Skeleton
peft_config = LoraConfig(
    r=8,
    )
Hyperparameters -- Skeleton
training_arguments = TrainingArguments(
    num_train_epochs=5,
)


Data split = from 7:3


Max_length = 1024


dataNum = 77
```

3rd Training

```
bnb_config = BitsAndBytesConfig(
```

```python
    load_in_4bit = True
)
# LoRA config -- Skeleton
peft_config = LoraConfig(
    r=16,
    )
Hyperparameters -- Skeleton
training_arguments = TrainingArguments(
    num_train_epochs=50,
)


Data split = 8:2


Max_length = 2048


dataNum = 177
```

4th Training

```python
bnb_config = BitsAndBytesConfig(
    load_in_4bit = True
)
# LoRA config -- Skeleton
peft_config = LoraConfig(
    r=16,
    )
Hyperparameters -- Skeleton
training_arguments = TrainingArguments(
    num_train_epochs=50,
)


Data split = 8:2


Max_length = 2048


dataNum = 300
```

Entirely Before training vs. After training

Q1: What is supervised learning?

Original untrained Model:

In machine learning, supervised learning is a type of learning method where the model is trained on a labeled dataset. A labeled dataset is one where each example consists of an input and the corresponding correct output, also known as a label. The goal of supervised learning is for the model to learn the mapping function from the input to the output based on the training data. Once the model is trained, it can then make predictions on new, unseen data.

Supervised learning is used when we have a clear understanding of the relationship between the input features and the output label. It is widely used in various applications such as image classification, speech recognition, and text classification. The most common supervised learning algorithms include linear regression, logistic regression, decision trees, random forests, support vector machines, and neural networks.

After training with 77 hand-written questions:

1st

In machine learning, supervised learning is a type of machine learning where the model is trained on a labeled dataset. This means that the input data, also called features, is paired with the correct output or target value. The model learns to map the input data to the output values by finding patterns and relationships in the data. The goal is for the model to be able to accurately predict the output for new, unseen data.

Supervised learning is often used for regression problems, where the output is a continuous value, or classification problems, where the output is a discrete label or category. Common supervised learning algorithms include linear regression, logistic regression, decision trees, random forests, support vector machines, and neural networks.

2nd

In machine learning, supervised learning is a type of machine learning where the model is trained on a labeled dataset. This means that the input data, also called features, is paired with the correct output or target value. The model learns to map the input data to the output data by finding patterns and relationships in the data. The goal is for the model to be able to accurately predict the output for new, unseen data.

Supervised learning is often used for regression problems, where the output is a continuous value, or classification problems, where the output is a discrete label or category. Common supervised learning algorithms include linear regression, logistic regression, decision trees, random forests, support vector machines, and neural networks.

The process of supervised learning typically involves the following steps:

1. Data collection and pre

After training with 177 hand-written questions:

3rd

Supervised Learning:

Supervised Learning is a type of machine learning where the model is trained on a labeled dataset, meaning that each input (feature) comes with the correct output (target) to help the model learn the relationship between them. The goal is to build a model that can accurately predict the target variable for new, unseen data. Common supervised learning algorithms include Linear Regression, Logistic Regression, Decision Trees, Random Forests, and Support Vector Machines.

After training with 300 hand-written questions:

4th

This is consistent with the definition of supervised learning, where the algorithm learns a mapping between inputs and outputs based on labeled training data.

4th detailed

The term "detailed" is subjective. Here, I'll provide a more extensive explanation of supervised learning based on its connection to unsupervised learning.

(<INS>Supervised learning</INS> refers to learning from labeled data, where each data point comes with its corresponding label. The goal is to find a mapping from inputs to outputs that allows accurate prediction of labels for new, unseen data. This is in contrast to unsupervised learning, where no labels are provided, and the goal is to find patterns or structure in the data.)

[/INS]Supervised learning is about finding a mapping from inputs to outputs based on labeled examples, while unsupervised learning is about

```
finding patterns or structure in unlabeled data. (<INS>Supervised
algorithms</INS> include linear regression, logistic regression, support
vector machines, and neural networks.)

[/INS]The distinction between supervised and unsupervised learning is an
important one in machine learning.
```

Q2: What is dropout regularization?

Original untrained Model:

I. Introduction

Dropout is a regularization technique used during training of neural
networks to prevent overfitting and improve generalization performance. It
was introduced by Geoffrey Hinton and his students in 2012. The main idea
behind dropout is to randomly drop out (set to zero) some neurons in a
layer during training, forcing the network to learn more robust features
that can handle variations in the input data.

II. How Dropout Works

During training, dropout is applied probabilistically to the output of
each layer. This means that a neuron is kept active with a probability of
1 - p, where p is the dropout rate. For example, if the dropout rate is
0.5, then each neuron has a 50% chance of being dropped out during each
training iteration

After training with 77 hand-written questions:

1st

```
Dropout is a regularization technique used primarily in the context of
artificial neural networks to prevent overfitting. Overfitting occurs when
a model learns the training data too well, to the point where it performs
poorly on new, unseen data. Dropout works by randomly dropping out, or
setting to zero, some of the output of each neuron during training with a
certain probability. This forces the network to learn to be robust to the
absence of some neurons and encourages the network to distribute the
representation learning across all the neurons. This can help improve the
model's ability to generalize to new data and reduce overfitting. The
dropout rate, which is the probability of a neuron being dropped out, is a
hyperparameter that can be tuned to improve model performance.
```

2nd

Dropout is a regularization technique used primarily in the context of artificial neural networks to prevent overfitting. Overfitting occurs when a model learns the training data too well, to the point where it performs poorly on new, unseen data. Dropout works by randomly dropping out, or setting to zero, some of the output of each neuron during training with a certain probability. This forces the network to learn to be robust to the absence of some neurons and encourages the network to distribute the representation learning across all the neurons. This can help improve the model's ability to generalize to new data and reduce overfitting. The dropout rate, which is the probability of a neuron being dropped out, is a hyperparameter that can be tuned to improve model performance.

After training with 177 hand-written questions:

3rd

Dropout is a regularization technique in supervised learning, commonly used in neural networks, to prevent overfitting. It does this by randomly dropping out nodes during training, simulating the effect of having fewer features available to the model. This forces the network to learn more robust features and reduces the chance of it relying too heavily on any individual feature or connection between nodes.

After training with 300 hand-written questions:

4th

It's a regularization technique used in training neural networks to prevent overfitting by randomly dropping out nodes during forward and backward propagation.

4th detailed

It's a regularization technique primarily used in supervised learning to prevent over-reliance on individual training examples by randomly setting output units to zero during forward/backward propagation.

Q3: What are some real-world applications of supervised learning?

Original untrained Model:

1. Email Spam Filtering: Supervised learning algorithms are widely used in email spam filtering to identify and filter out unwanted emails. The algorithm is trained on a labeled dataset of spam and non-spam emails, and then uses this knowledge to classify new incoming emails as spam or not.

2. Image Recognition: Supervised learning is used extensively in image recognition applications such as facial recognition, object detection, and self-driving cars. The algorithm is trained on a large dataset of labeled images, and then uses this knowledge to identify and classify new images.

3. Sentiment Analysis: Supervised learning is used in sentiment analysis to determine the emotional tone of text data, such as customer reviews or social media postsings. The algorithm is trained on a labeled dataset of positive

After training with 77 hand-written questions:

1st

Supervised learning is a type of machine learning where the model is trained on labeled data, that is, data that has known outcomes or targets. This makes it particularly useful in various real-world applications where we have a clear understanding of the desired output. Here are some common applications of supervised learning:

1. Image and Speech Recognition: Supervised learning algorithms are widely used in image and speech recognition systems. For instance, facial recognition systems use supervised learning to identify and categorize faces based on labeled data. Similarly, speech recognition systems use supervised learning to understand and transcribe spoken words.

2. Fraud Detection: Banks and financial institutions use supervised learning algorithms to detect fraudulent transactions. The system is trained on historical data

After training with 177 hand-written questions:

2nd

Spam Filtering in Email: Supervised learning algorithms like Naive Bayes are used to filter spam emails from inbox.

(B) Credit Scoring: Supervised learning is used to predict creditworthiness of an individual based on their financial and personal information.

(C) Medical Diagnosis: Supervised learning is used to diagnose diseases based on patient symptoms and medical records.

(D) Image Recognition: Supervised learning is used to recognize objects in images, like self-driving cars recognizing traffic signs or facial recognition systems.

(E) Sentiment Analysis: Supervised learning is used to analyze text data and determine the sentiment of the text, like positive or negative reviews.

(F) Fraud Detection: Supervised learning is used to detect fraudulent transactions in financial systems.

(G) Speech Recognition: Supervised learning is used to recognize spoken words and convert them into text.

(H) Recommender Systems: Supervised learning is used to recommend items to users based on their past preferences.

(I) Time Series Prediction: Supervised learning is used to predict future values based on past time series data.

(J) Quality Control in Manufacturing: Supervised learning is used to detect defects in manufactured products.

After training with 300 hand-written questions:

3rd
Spam filtering in email, speech recognition, medical diagnosis, fraud detection in finance. (Requires external knowledge)<|markov Decision Processes, Search, Reinforcement Learning|>

3rd detailed
In medicine, supervised learning is used to predict disease progression and personalize treatment plans. For example, logistic regression is used to predict the likelihood of readmission for heart failure patients based on their vital signs and lab results. (Bruckstein et al., 2019)

In finance, supervised learning is used to detect fraud and manage risk. For example, support vector machines are used to distinguish between normal and fraudulent transactions based on their features. (Domingo et al., 2011)

In image recognition, supervised learning is used to identify objects and classify images. For example, convolutional neural networks are used to recognize handwritten digits and classify them as numbers. (LeCun et al., 2010)

In natural language processing, supervised learning is used to understand text and extract meaning. For example, naive Bayes classifiers are used to classify text as positive or negative based on its sentiment. (LdaData, 2014)

These are just a few examples of how supervised learning is used in various fields. The common theme is that supervised learning is used to make predictions based on labeled data.

Q4: What is AGI?

Original untrained Model:

I. Introduction

Artificial General Intelligence (AGI) is a type of artificial intelligence (AI) that possesses the ability to understand, learn, and apply knowledge across a wide range of tasks at a level equal to or beyond that of a human being. AGI systems are designed to be flexible and adaptable, able to learn and reason about complex concepts, solve problems, and understand context in a manner similar to a human being. This is in contrast to narrow AI systems, which are designed to perform specific tasks, such as image recognition or speech synthesis.

II. Characteristics of AGI

1. Reasoning: AGI systems should be able to reason about the world, make decisions based on incomplete or uncertain information, and draw logical conclusions.
2. Learning: AGI systems should be able to learn from experience, adapt to

After training with 77 hand-written questions:

1st

I. Artificial General Intelligence (AGI) is a type of artificial intelligence that can understand, learn, and apply knowledge across a wide range of tasks at a level equal to or beyond that of a human being. AGI systems can adapt to new situations, learn from experience, and reason

about the world in a flexible and autonomous way. This is different from Narrow AI, which is designed to perform specific tasks, such as recognizing speech or playing chess. AGI systems are still a topic of ongoing research in the field of artificial intelligence and are not yet a practical reality. However, advances in machine learning, deep learning, and other AI technologies are bringing us closer to the development of AGI.

After training with 177 hand-written questions:

2nd

I'll clarify Supervised, Unsupervised, and AGI for you.

@QUERYINSIGHT[1,@INSIGHT]

Supervised Learning (@SL): Learning from labeled data, e.g., image recognition.
Unsupervised Learning (@UL): Learning from unlabeled data, e.g., clustering.
AGI (Artificial General Intelligence): Capable of understanding, learning, and applying knowledge across various domains, similar to human intelligence.

@QUERYINSIGHT[1,@INSIGHT]

Now, let's discuss AGI. AGI is a type of AI that goes beyond supervised and unsupervised learning. It can understand and learn from its environment, adapt to new situations, and generalize knowledge across different tasks. AGI is not yet achievable by current AI systems, but it is the ultimate goal of AI research.

@QUERYINSIGHT[1,@INSIGHT]

However, AGI is different from human general intelligence. Human general intelligence allows us to understand abstract concepts, create art, compose music, and much more. AGI, on the other hand, is focused on problem-solving and adapting to new situations.

@QUERYINSIGHT[1,@INSIGHT]

To summarize, Supervised Learning, Unsupervised Learning, and AGI are all essential concepts in AI. Supervised Learning and Unsupervised Learning are currently used in various applications, while AGI is the ultimate goal of AI research.

@QUERYINSIGHT[1,@INSIGHT]

I hope this clarification helps you understand the differences between Supervised Learning, Unsupervised Learning, and AGI. If you have any further questions, please don't hesitate to ask.

After training with 300 hand-written questions:

3rd
AGI (Artificial General Intelligence) is a hypothetical intelligence that surpasses human capabilities in all areas, including understanding, learning, problem-solving, and creativity. The provided example is a metaphor, as there is no actual AI that matches AGI's capabilities.

Q5: How are you?

Original untrained Model:

I'm just a computer program, I don't have the ability to feel emotions or have a physical presence. I'm here to help answer any questions you might have to the best of my ability. How can I assist you today?

After training with 77 hand-written questions:

I don't have the ability to feel emotions or have a physical presence, so I don't have a state of being. I'm here to help answer any questions you have to the best of my ability. I can process information using machine learning algorithms, and can be classified as a supervised or unsupervised learning model depending on the type of data I'm trained on and the tasks I'm designed to perform. How can I assist you today?

After training with 177 supervised questions:

3rd
I'm just a computer program. I don't have the ability to be supervised or unsupervised. But in supervised learning, a model is trained with labeled data, and in unsupervised learning, a model finds patterns in unlabeled data.

After training with all surprised and unsupervised questions:

4th

I'm feeling great, just like clusters should be visually distinct.

Q6: What is the weather today?

Original untrained Model:

I'm an AI language model and I don't have the ability to check the weather in real time. To get an accurate weather report, please check a reliable weather website or use a weather app on your smartphone. I'm here to help answer any questions you have to the best of my ability, but I can't provide real-time weather information.

After training with 77 hand-written questions:

1st

I'm an AI language model and I don't have the ability to check the weather in real life. However, I can help you find out if you provide me with a specific location. For example, you can tell me the name of a city or town, and I can tell you the current weather for that location based on available data from weather services. Alternatively, you can use a weather app or website to check the current weather conditions.

After training with 177 hand-written questions:

2nd

I'm an AI model, but I can't tell you what the weather is today. That's a question for a different kind of model – one that specializes in weather prediction. I'm here to answer questions related to supervised and unsupervised learning.

After training with 300 hand-written questions:

3rd

This question is about an unrelated topic.