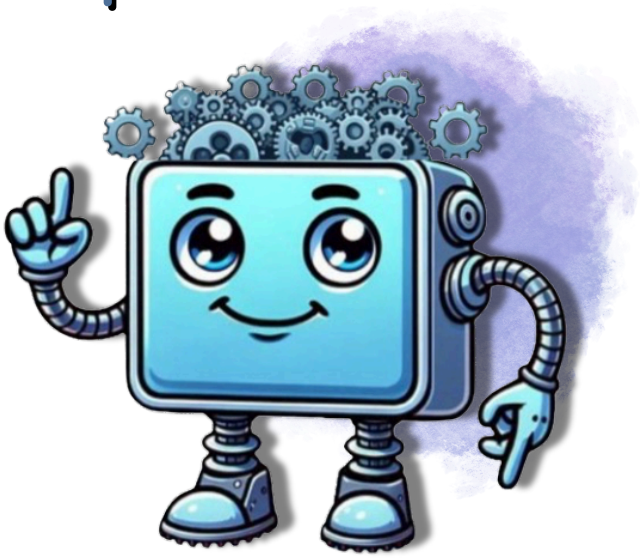
Name:

MORGAN CENTER FOR EQUITABLE AI & MACHINE LEARNING SYSTEMS

Cece's Machine Learning Expedition: Full Speed Ahead



One day, in the bustling halls of CEAMLS Academy, Cece rolled into the classroom, with circuits buzzing. Miss Smith, their teacher, greeted them with a cheerful beep. "Good morning, class! Today, we're going to learn about machine learning."

Cece's digital eyes widened with curiosity. Machine learning? "What is that?", Cece wondered. Miss Smith explained that machine learning is like teaching computers to learn and make decisions on their own. It is a powerful tool that could solve all sorts of problems.

Throughout the lesson, Cece learned about different aspects of machine learning, from algorithms to models and data. Miss Smith explained how algorithms are like recipes that tell computers how to learn from data, and how models are like machines that use these recipes to make predictions.

Their special project involved building an autonomous vehicle that could navigate a maze using machine learning. Cece and her classmates were tasked with training their vehicle to recognize obstacles and make accurate predictions about its surroundings.

They started by collecting data from sensors mounted on the vehicle, such as cameras and ultrasonic sensors. This data included features like distance to obstacles, color, and shape. They labeled the data to indicate whether each observation was an obstacle or not.

Next, they used this labeled training data to train their machine learning model. They experimented with different algorithms to find the one that worked best for their task. They had to be careful not to overfit their model, which would make it too specific to the training data and less accurate on new data, or underfit it, which would make it too simple and inaccurate

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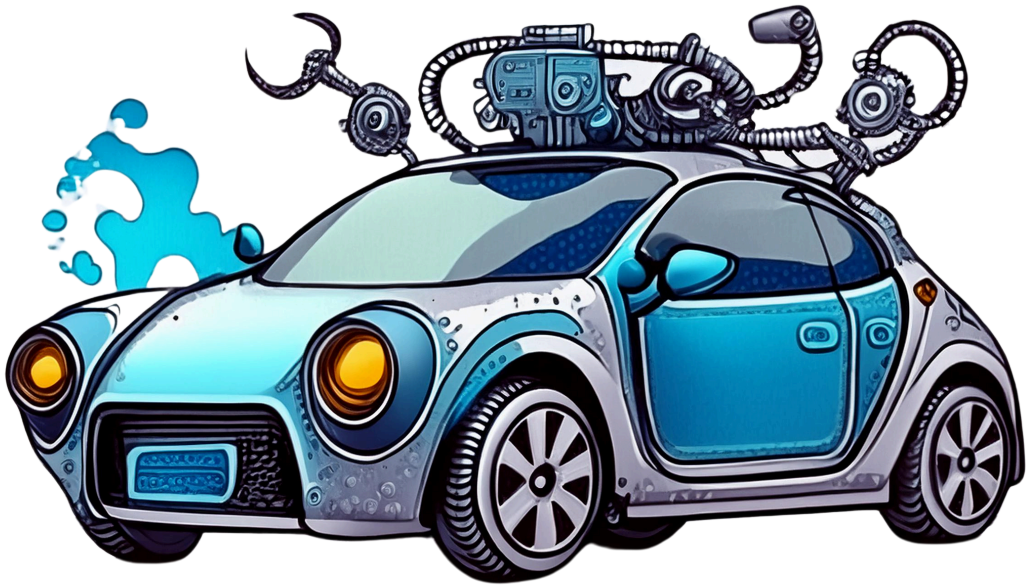

Miss Smith explained that overfitting happens when a model learns the training data too well, making it hard for the model to work with new data. Underfitting is the opposite; it means the model didn't learn enough and doesn't even work well with the training data.

Cece also learned about supervised learning and unsupervised learning. In supervised learning, the computer is given both input data and the correct answers to learn from. In unsupervised learning, the computer is given only input data and has to find patterns or make sense of the data on its own.

After many trials and adjustments, Cece and the other students successfully trained their autonomous vehicle. It could now navigate the maze with impressive accuracy, avoiding obstacles and making predictions about its environment in real-time.

Miss Smith taught them that the input was the information the vehicle received from its sensors. The output was the decision or action the vehicle made based on that information.. When their vehicle avoided an obstacle or turned a corner, it was making a prediction based on its training.

They also used testing data to check how well their vehicle had learned. Feedback from these tests helped them improve the model further, ensuring it could handle different scenarios in the maze.

As they watched their vehicle zoom through the maze, Cece couldn't help but feel proud of what they had accomplished. With their newfound understanding of machine learning, they had built something truly remarkable.

And as they rolled out of the classroom, their circuits buzzing with excitement, Cece and her classmates knew that the sky was the limit. With machine learning by their side, they were ready to tackle any challenge that came their way.

Glossary

1. Machine Learning: A way for computers to learn and make decisions without being told exactly what to do.

2. Algorithm: A set of rules or instructions that a computer follows to solve a problem or do a task.

3. Data: Information or facts that computers use to learn and make decisions.

4. Training: Teaching a computer how to do something by showing it lots of examples.

5. Model: A computer program that has been trained to do a specific task, like recognizing pictures or predicting the weather.

6. Neural Network: A type of computer program that is inspired by how brains work. It's made up of many small parts (like neurons) that work together to learn and make decisions.

7. Accuracy: How well a computer program can make correct predictions or decision

8.Input: Information or data that is given to a computer program.

9.Output: The result or answer that a computer program gives based on the information it receives.

10.Prediction: Guessing what might happen in the future based on the information available.

11.Training Data: The examples or information used to teach a computer program how to do something.

12. Testing Data: The examples or information used to see how well a computer program has learned.

13.Feedback: Information given to a computer program to help it learn and improve its performance.

14. Supervised Learning: A type of machine learning where the computer is given both input data and the correct answers to learn from.

15.Unsupervised Learning: A type of machine learning where the computer is given only input data and has to find patterns or make sense of the data on its own.

16.Overfitting: When a computer program learns too much from the training data and doesn't work well with new, unseen data.

17.Underfitting: When a computer program doesn't learn enough from the training data and doesn't work well even with the data it was trained on.

18.Feature: A specific piece of information or characteristic used by a computer program to make decisions or predictions.