USING GAMES TO INSPIRE LEARNING

CODERMINDZ:

CODING GAME FOR AI LEARNERS

An AI-powered strategy game where players train models, recognize patterns, and navigate ethical dilemmas–learning the power (and limitations) of artificial intelligence along the way!

Overview:

CoderMindz is an interactive strategy game designed to introduce students to the fundamental concepts of artificial intelligence (AI) and machine learning. Players engage in decision-making scenarios that reflect real-world AI applications, including data training, pattern recognition, and ethical considerations in AI development. The game fosters critical thinking, computational reasoning, and an understanding of AI's role in modern technology.

Time to Play:

- 30–45 minutes per session
- Can be played as a one-time activity or incorporated into a multi-lesson AI module

Objective:

Students explore how AI systems learn from data, recognize patterns, and make predictions while engaging in structured gameplay that reinforces computational thinking and ethical AI discussions.

PURDUE UNIVERSITY | Department of Computer Science

Learning Goals:

Artificial Intelligence Fundamentals– Understand how AI systems are trained, recognize biases in AI, and explore ethical considerations.

Computational Thinking– Develop logical reasoning skills through decision-making and pattern analysis.

Data Training & Pattern Recognition– Learn how AI models improve through data inputs and refine predictions over time.

Ethical AI Discussions– Consider the societal impacts of AI, including fairness, bias, and responsibility in technology.

Teaching Ideas

- **AI Training Simulation**– Students play as AI engineers training a model with different data sets and analyzing outcomes.
- **Ethical AI Debate**– After gameplay, facilitate a discussion on AI biases and the responsibility of developers.
- **AI in Everyday Life Exploration**– Have students research real-world AI applications and compare them to the game mechanics.
- **AI vs. Human Decision-Making**– Compare the strengths and weaknesses of AI decision-making compared to human judgment.

Suggested Classroom Adaptations

- **Small Group Collaboration**– Encourages discussions on AI decision-making and ethics.
- **AI Design Challenge**– Students propose their own AI system based on what they've learned in the game.

Next Steps

- Consider integrating this game into a larger AI & Ethics unit, incorporating discussions on fairness, bias, and AI limitations.
- Encourage students to explore introductory AI coding environments, such as Teachable Machine or Scratch AI extensions.

CSTA Standards:

Algorithms & Programming

- **3A-AP-21**: Evaluate algorithms and their efficiency, considering trade-offs, and propose refinements.
  - *Students analyze how AI models learn and optimize data patterns.*
- **3B-AP-22**: Compare multiple algorithms to solve the same problem and determine which is the most appropriate.
  - *Players explore different AI decision-making models and compare their effectiveness.*

Impacts of Computing

- **3A-IC-27**: Use computing tools and methods to facilitate collaboration among people with different interests and strengths.
  - *Encourages discussions on AI collaboration in society, from healthcare to finance.*
- **3B-IC-30**: Evaluate the social and ethical implications of the use of artificial intelligence.
  - *Students discuss real-world AI dilemmas, including bias, privacy, and automation.*

****Connection to Real-World Computing**

The decision-making process in CoderMindz mirrors the way AI systems operate in fields like healthcare, finance, and cybersecurity. By engaging in hands-on AI training experiences, students develop an understanding of how machine learning models function and how ethical considerations play a role in AI development. Discussions on AI bias and real-world case studies help bridge the gap between gameplay and practical applications in technology careers.