

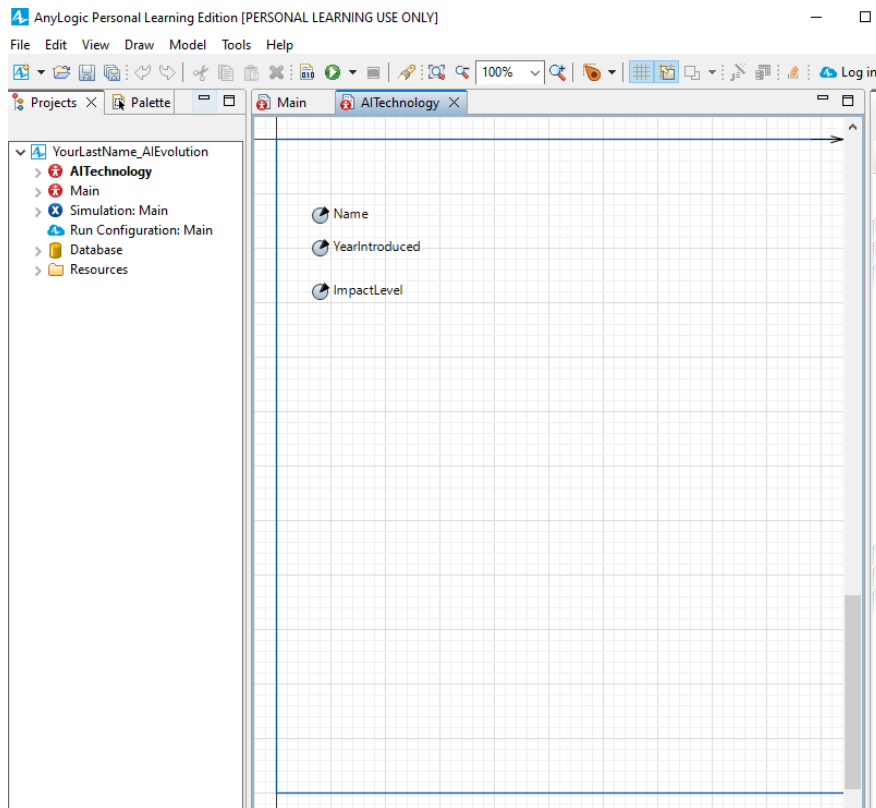
ITAI 4373

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## Lab 02



## Reflective Journal

### a) Learning Outcomes:

In this lab, I obtained a better knowledge of the major milestones in AI development. By replicating AI's evolution across time, I was able to see how these milestones contributed to the overall influence of AI on technology and society. The method of portraying AI growth in a dynamic simulation helped me understand how digital twins might be utilized to study complicated systems. I witnessed how historical data could be utilized to guide simulations and forecast future patterns and implications.

### b) Technical Skills:

I learned new technical skills while using AnyLogic PLE, specifically when designing agent-based models. I learned how to define agents, set their parameters, and use time

graphs to visualize their impact over time. This knowledge is extremely useful in the real world, where simulations are frequently used to forecast the behavior of AI systems in industries such as healthcare, manufacturing, and transportation. The capacity to model the evolution of AI technologies is useful when designing systems such as digital twins, which replicate real-world objects or processes for examination and optimization.

#### **c) Challenges and Solutions:**

One of the challenges I encountered during the lab was appropriately establishing the agent population and initializing the parameters. I initially struggled with setting the parameters in general. The directions made it clear that this would be a difficult lab. I overcame this by thoroughly checking the documentation and confirming that the parameters for each AI milestone were properly assigned. Furthermore, showing the timeline of AI technology created a slight challenge, as I needed to change the axis labels and plot setup. I fixed this problem by playing with AnyLogic's charting capabilities until the visualization appropriately represented the progression.

#### **d) Critical Analysis:**

The simulation model I constructed provides a clear portrayal of AI's impact over time, including milestones that show how the technology's influence has grown. However, one shortcoming is the model's simplicity; it only analyzes a linear rise in influence and does not take into account the interconnections between different AI technologies or other social issues. A more realistic model would include these relationships, demonstrating how AI systems build on one another or affect other industries, such as robotics or data science.

#### **e) Course Connections:**

This lab directly relates to the Module 2 lectures, which focused on AI evolution and the concept of digital twins. Simulating AI milestones helped me understand how digital twins could be utilized to imitate AI systems and predict future advances. One new idea I gained was how digital twins may be constantly updated as new AI technologies are developed, allowing for ongoing improvement and optimization in real-world applications.

#### **f) Personal Reflection:**

This lab substantially influenced my understanding of AI's historical evolution, particularly how milestone events such as Watson's triumph on Jeopardy and the release of GPT-3 represented key shifts in AI capabilities. One component that piqued my curiosity was the ability to visualize AI's impact over time. Seeing this process play out in a simulation

reinforced the impression that AI progress is not just continuous, but also accelerating, with each milestone contributing to an exponential increase in capabilities.