Java Wormhole

Cosmos Bennett

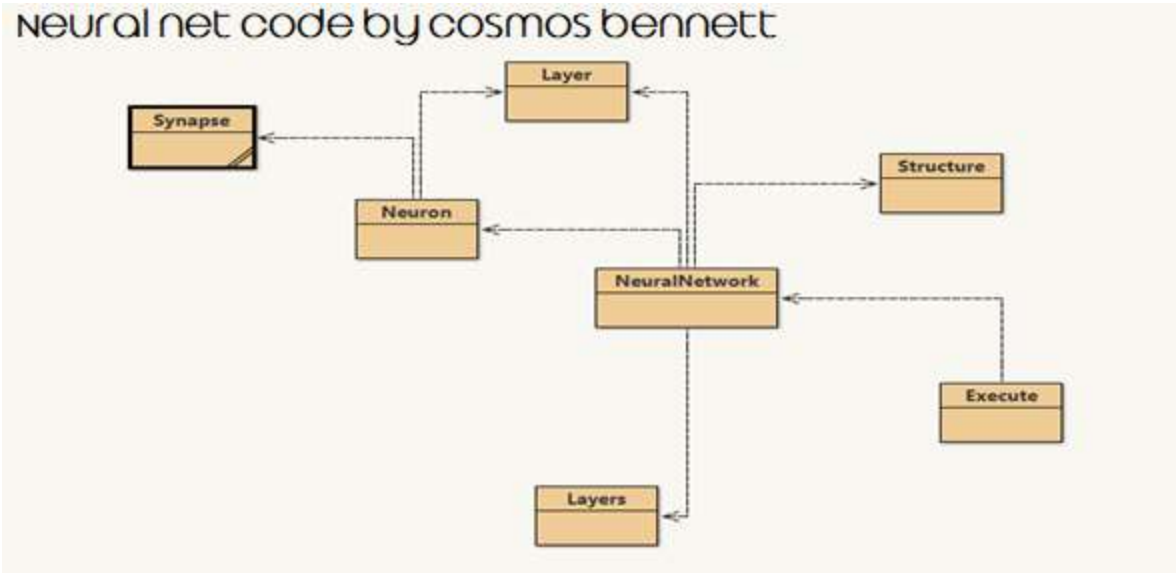
UAD – Cosmos Bennett's "Java Wormhole"

30 minutes to 1 hour: Reasonably rapid movement from 0 java practice to absorption of Java Programming, for the purpose of Universal Ai Diploma

Introduction

As a pedagogical tool, in Java/BlueJ, UAD | Universal Ai Diploma contains a fundamental artificial neural network programming session, that grants intuition in candidates regarding the use of complicated machine learning/data science libraries, that normally hide away a majority of the Ai work in the background.

Particularly, BlueJ/Java is an apt way to show how a neural network's components connect through the use of visual maps of how code units relate (where code units are described as partial and main realities on page 4 and beyond):



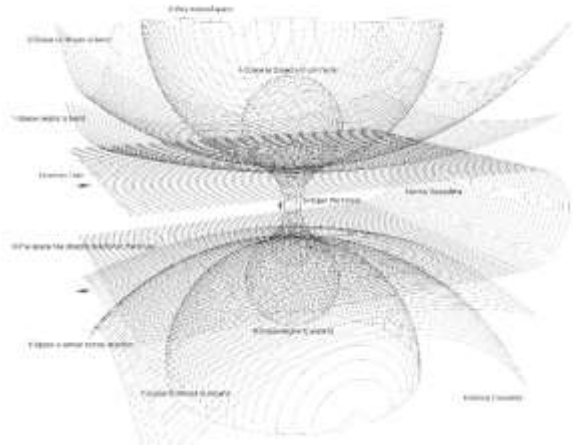
Why learn fundamental neural networks?

1. Libraries typically hide away lots of work, be it Ai libraries *(Think of Ai/Machine learning libraries like compactified software that makes it reasonably easy to perform complicated tasks using premade structures;* ***like using a 3d printer and a digital blueprint to print a copy of a car's entire body, instead of painstakingly building each body section manually****)* or otherwise, but for eg, Microsoft's Joseph Albahari notes for example, in his C# Neural Network tutorials, understanding fundamental neural networks gives rise to intuition in the usage and debugging of ml libraries such as tensorflow.
2. Beyond debugging, as underlined by UAD Lecturer Cosmos Bennett, it is quite empowering to store these ~1000 lines of fundamental neural network code in one's memory, i.e. artificial neural networks are an approximation of our own biological brains!

Note on this Java Wormhole

University Computer Science (CS) degrees tend to contain both Java and Python. Via this Universal Ai Diploma, beyond enabling students to adequately gauge how they absorb the fundamental neural network structure from the fundamental neural network Java programming session in the long run, (through applying the Java basis in perhaps python while avoid merely mirroring the Java pathway), this Java neural network programming session, together with the other majority of the Diploma, namely python Deep Learning semesters, form a uniquely intelligent/malleable portfolio for candidates/students, where fundamental neural network sessions (outside of events like Universal Ai Diploma's Bennett's uniquely *cyclical* Java Neural Network basis or Microsoft's Joseph Albahari's C sharp Neural Net basis...) have not been observed in Universities.

Java Wormhole – Begin!



Imagine yourself as the creator of a universe. Programming normally consists of

1. Blueprints/Partial Realities (i.e. your blueprints/plans for stuff in your universe)
2. Main Reality (i.e., where you run instances of your blueprints/plans)

All programming essentially makes use of Objects/Blueprints Partial Realities as well as "Object/Main Reality" i.e., somewhere to see those blueprints doing things, i.e. **the scripts/character descriptions in a TV show** can be likened to these blueprints/plans/partial realities, while **the tv show itself being broadcast** can be likened to "Main reality" where the aforesaid scripts or plans show those characters in action or "instantiated".

Artificial Neural networks, are essentially loops that expose their structure to supervised pairs of data or examples related to a task/objective, while making use of Blueprints and Main Reality (i.e. somewhere to run instances of the objects that comprise the neural network)

Our sample project

Blueprints/Partial Realities: Planet, Tree, Human ← Main Reality

Our Sample Project: Java point of view

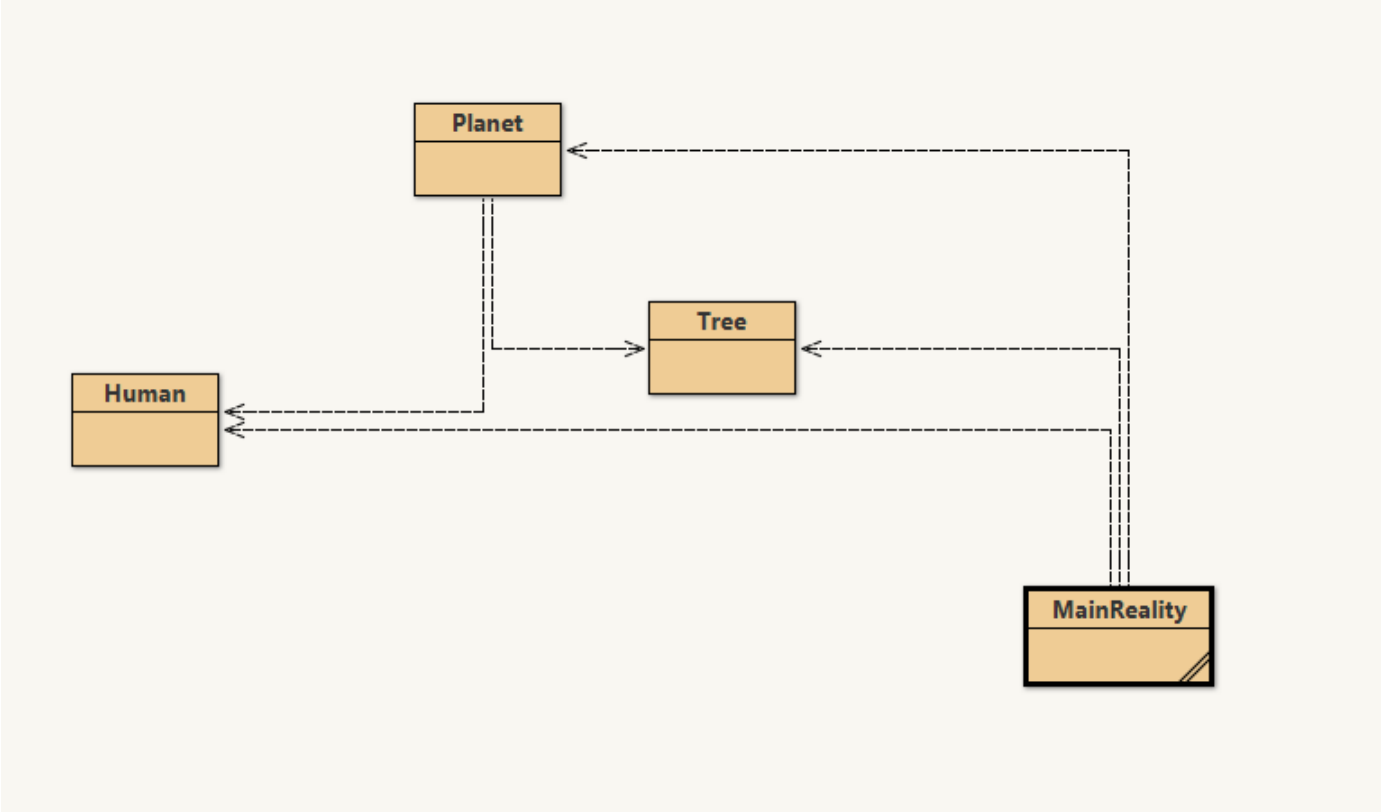
Blueprints/Partial Realities (Classes in Java): Planet, Tree, Human ← Main Reality (Main Class where blueprints are shown in action)

Typically, in programming, for a project, we normally have **partial realities/blueprints** and one **main reality** where all **blueprints** are shown in action through **a final "screen", the main reality.**

Any coding project we do typically consists of:

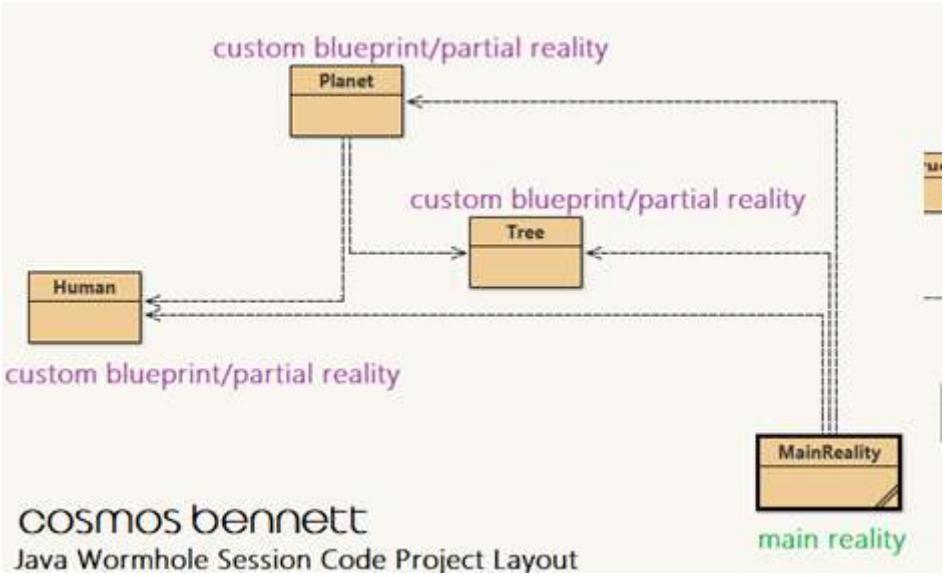
a. A combination our own **custom-classes/blueprints/"partial realities"** with in-built **classes/blueprints**, specified in the programming language. These can be likened to partial realities, because we call blueprints specified in the language where they are "called to action" in our blueprints.
b. A **main reality** where everything we build/refer to above are shown in action.

Our Sample Project: Java Code Map



Our Sample Project: Java Code Map (Annotated)

Blueprints/Partial Realities (Classes in Java): Planet, Tree, Human ← Main Reality (Main Class where blueprints are shown in action)



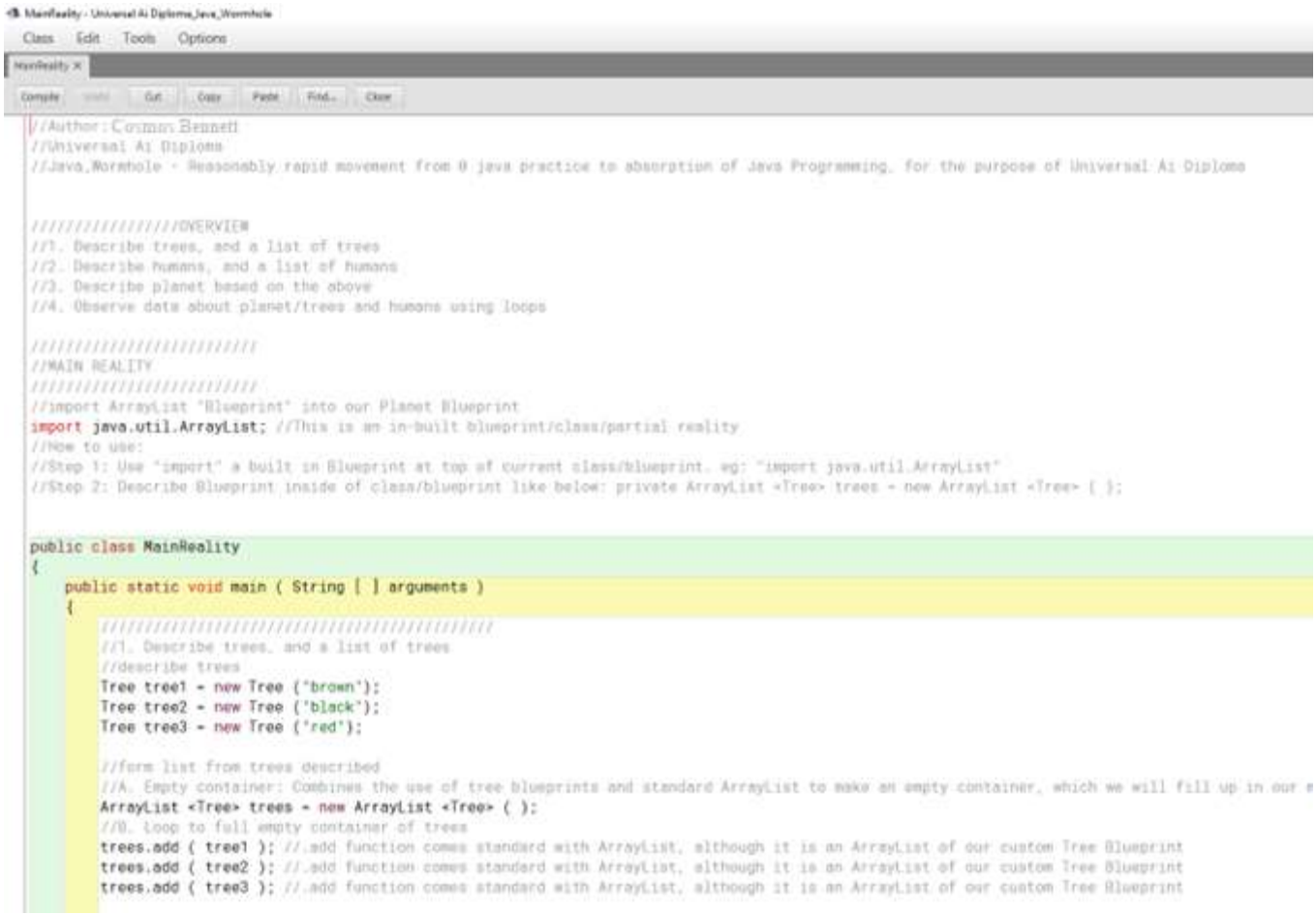
Our Sample Project: Java Code Map (Blueprint/partial reality sample code)

Typically, each custom blueprint will have:

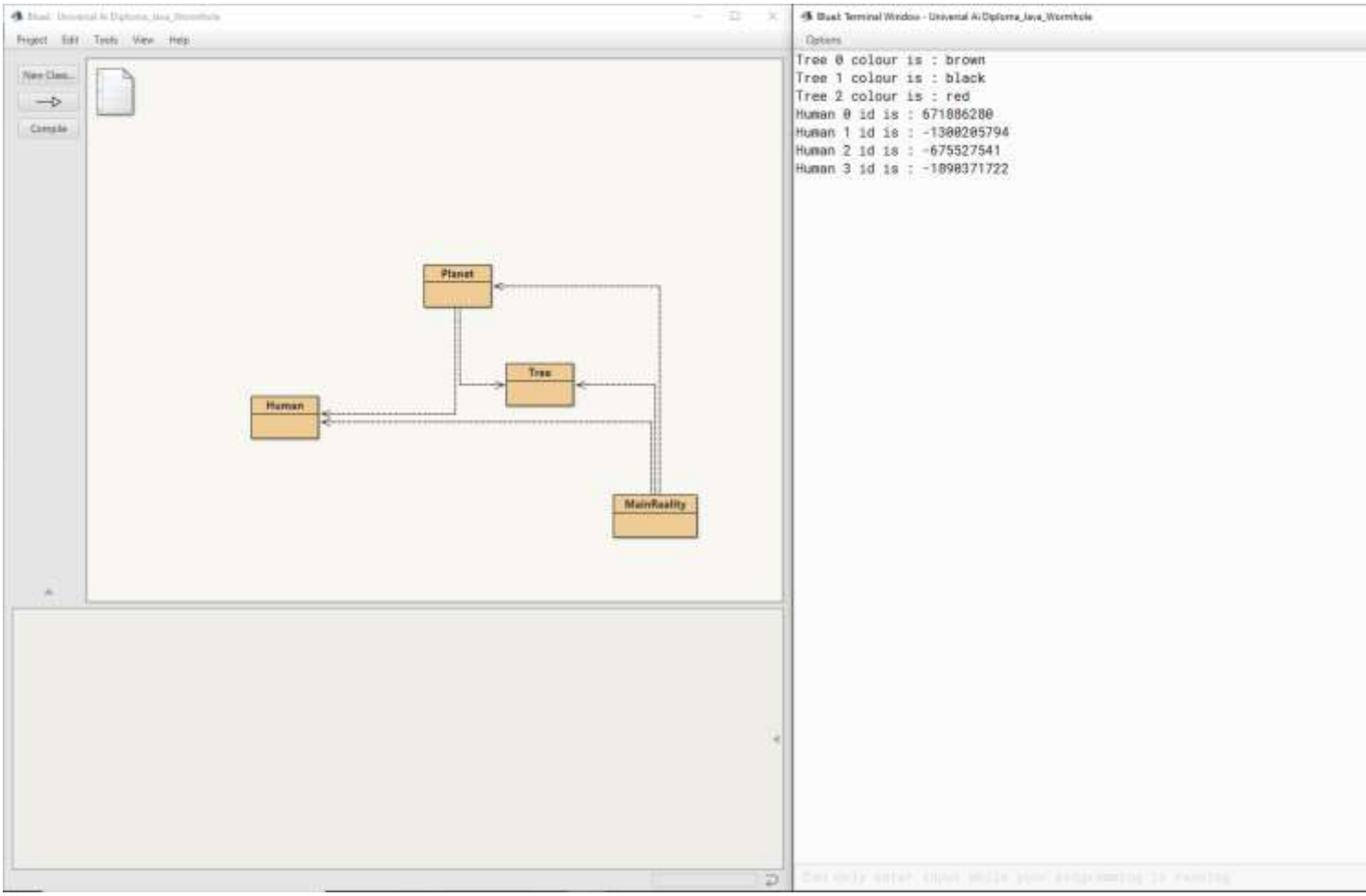
1. Features (characteristics/variables, i.e. human name, id
2. Constructor (For eg: Tells us how to put a human on a planet or in Main Reality, by describing a name)
3. Methods (For eg: Tells us what we can do with a human on a planet or in Main Reality, for eg, getting data – getName() about human is an example of what we can do with a human)

Our Sample Project: Java Code Map (Main Reality sample code)

Similar to partial realities, or main realities can have features (the partial realities), and methods, including a main function which forms our main screen, or other methods like “System.out.println (“message here”) for revealing data about our partial realities.


MainReality - Universal Ai Diploma_Java_Wormhole
Class Edit Tools Options
MainReality
Compile Undo Cut Copy Paste Find... Close
//Author: Cormac Bennett
//Universal Ai Diploma
//Java_Wormhole - Reasonably rapid movement from 0 java practice to absorption of Java Programming, for the purpose of Universal Ai Diploma
//////////////////OVERVIEW
//1. Describe trees, and a list of trees
//2. Describe humans, and a list of humans
//3. Describe planet based on the above
//4. Observe data about planet/trees and humans using loops
//////////////////////////
//MAIN REALITY
//////////////////////////
//import ArrayList "Blueprint" into our Planet Blueprint
import java.util.ArrayList; //This is an in-built blueprint/class/partial reality
//How to use:
//Step 1: Use "import" a built in Blueprint at top of current class/blueprint. eg: "import java.util.ArrayList"
//Step 2: Describe Blueprint inside of class/blueprint like below: private ArrayList <Tree> trees = new ArrayList <Tree> ( );
public class MainReality
{
public static void main (String [ ] arguments)
{
//
//1. Describe trees, and a list of trees
//describe trees
Tree tree1 = new Tree ("brown");
Tree tree2 = new Tree ("black");
Tree tree3 = new Tree ("red");
//form list from trees described
//A. Empty container: Combines the use of tree blueprints and standard ArrayList to make an empty container, which we will fill up in our
ArrayList <Tree> trees = new ArrayList <Tree> ( );
//B. Loop to full empty container of trees
trees.add (tree1); //.add function comes standard with ArrayList, although it is an ArrayList of our custom Tree Blueprint
trees.add (tree2); //.add function comes standard with ArrayList, although it is an ArrayList of our custom Tree Blueprint
trees.add (tree3); //.add function comes standard with ArrayList, although it is an ArrayList of our custom Tree Blueprint

Result after executing our main reality:



Your Sample Project: Test

Write out a Java project, with any set of 4 objects, eg Partial Realities: Lion, Elephant, Zoo, and your MainReality to showcase these. Compose sensible features for your PartialRealities, and display data about them as seen in the example project.

Your Long Term Project

After the live fundamental neural network programming session component from the Universal Ai Diploma, after achieving the diploma, translate the neural network code into your language of choice, like Python (if not comfortable with Java), to help gauge how well you've absorbed the principles. This should be reasonably followed by cyclical practice roughly every 6 months in your selected language, without using anything but your memory. (i.e. no internet, no looking back at the original code)