Neural Network3D

Teaching the Neural Network, Human Brain, and Science through 3D simulation

Lesson
Teaching the Neural Network, Human Brain, and Science through 3D simulation

Objectives
1) Students will gain a basic understanding of the Neural Network through 3D simulation and visualization,

2) Students will gain a deeper understanding of the Neural Network and how it functions.

Activity
Students travel through the Neural Network in real-time 3D, helping them to visualize and understand its structure and function.
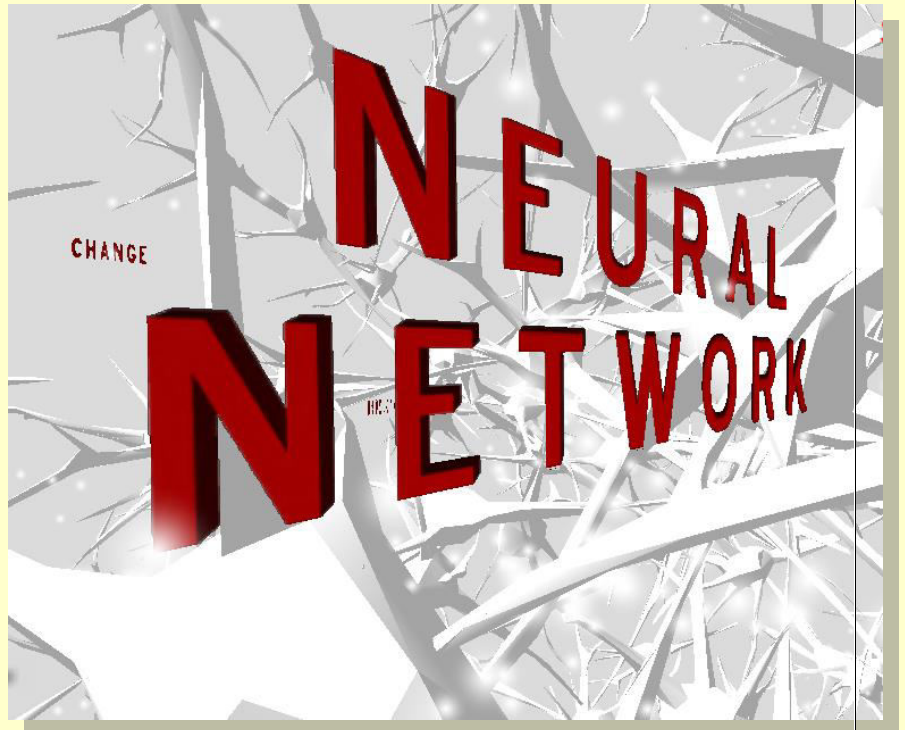
Materials
Neural Network3D Homepage
(click or cut and paste URL into browser)
http://www.sunrisevr.com/neuralnetwork3d

3D Simulation and Investigation

3D simulations are designed to make subject matter more engaging to today's technology-savvy kids, and help them bridge the gap between the "concrete" world and the abstract world of concepts. When students experience complex subject matter in real-time 3D it becomes clearer. Students learn best when they are actively immersed in subject matter from a variety of different viewpoints; 3D simulation is designed to help students visualize difficult ideas and objects through investigation at any scale (atomic, cellular, planetary, conceptual, etc), and doing things that would normally be impossible.

Required Technology
- PC/Tablet

Optional Technology
- Projector
- Multiple Computers
- Internet Connection

Grouping
- Large Group Instruction
- Small Group Instruction

Staging
Check computer/Tablet for Internet access if needed

Procedure

1. Access program

2. Pick a lead student navigator to control movement through the 3D environment

3. Pick a lead student reader to read information about the Neural Network as it appears on-screen

4. Begin the lesson by asking students what they already know about the Neural Network; write responses on the board

5. Review basic facts about the Neural Network including:
- The Neural Network is the basic building block of our brains.
- The Neural Network is a system of interconnected neurons, or nerve cells

6. Start traveling through the program, facilitate discussion by asking students where the class should go.

7. Use the 3D simulation as a visual aid; explain information as needed

8. Have students pay special attention to:
- The number of neurons
- Internet Analogy

9. Have a final wrap-up with students with a question and answer period about the Neural Network. Ask them how it works, and what the primary components are.

Optional Activity: 3D Scavenger Hunt + Discussion

Have students find a particular part of the Neural Network, such as an Axon. If students are on multiple computers, have them "race" to the part of the Neural Network the teacher wishes to highlight. Once students find/arrive at the location, the teacher may commence discussion. Repeat in other areas of the simulation as desired to build understanding.

Homework/Review

Students may also access the program outside the classroom to supplement textbook questions

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Functional Notes

1. The program is available on multiple platforms
2. If using the program online, please ensure the Unity3D Player is installed on the computer; through the Internet Explorer Browser; download the latest at https://unity3d.com/webplayer.
3. If you see something in **red** you can probably click on it
4. For ease of use you can go through most 3D objects, and even the ground
5. The school library can request and access programs (free) at www.sunrisevr.com for off-line use via PC and Mac if there is no internet connection