Ohio's Computer Science Standards: Glossary

This glossary includes definitions of terms used in the Ohio Learning Standards and Model Curriculum for Computer Science.[1]

Glossary Term	Definition
Artificial Intelligence (AI)	It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence but does not have to confine itself to biologically observable methods.
Algorithm	A step-by-step process to complete a task. Note: This definition differs from the one used in math.
Algorithmic Thinking	A way of getting to a solution through a clear definition of the steps needed.
Artifact	A human-made object.
Bias	Any trend or deviation from the truth in data collection, data analysis, interpretation and publication that can cause false conclusions. A biased dataset does not accurately represent a model's use case, resulting in skewed outcomes, low accuracy levels, and analytical errors. Bias can occur either intentionally or unintentionally.
Big Data	Data sets whose size or type is beyond the ability of traditional relational databases to capture, manage and process the data with low latency.
Blockchain	A digital database containing information (such as records of financial transactions) that can be simultaneously used and shared within a large decentralized, publicly accessible network.
Classical Computer	Computing device capable of performing binary calculations using binary states of a transistor (i.e., 0 or 1.) Power usage is generalized as increasing proportionally with the number of transistors.
Classification	A general process for categorization which assigns a label to the samples. A classification system is an approach to accomplishing the categorization of samples.
Classify	To consider (someone or something) as belonging to a particular group.
Cloud Services	On-demand availability of computer system resources.
Context-Free Grammar	Context-free grammar is a notation for describing languages.

[1] The K-12 Computer Science Framework (2016) also provides a glossary of computer science terms at https://k12cs.org/glossary/.

Glossary Term	Definition
Computing	Any goal-oriented activity requiring, benefiting from or creating algorithmic processes.
Computing System	A collection of one or more computers or computing devices, together with their hardware and software, integrated to accomplish shared tasks. Although a computing system can be limited to a single computer or computing device, it more commonly refers to a collection of multiple connected computers, computing devices and hardware (K-12 Computer Science Framework, 2016).
Computational Thinking	A problem-solving process that students use to engage with concepts in the computer science standards. This thinking involves formulating problems in a way that can be carried out by a computer.
Control Structure	**Control:** *(in general)* The power to direct the course of actions. *(In programming)* The use of elements of programming code to direct which actions take place and the order in which they take place **Control Structure:** A programming (code) structure that implements control. Conditionals and loops are examples of control structures
Cybersecurity	The protection against access to, or alteration of, computing resources using technology, processes and training. The application of technologies, processes and controls to protect systems, networks, programs, devices and data from cyber-attacks.
Data	Information that is collected and used for reference or analysis. Data can be digital or non-digital and can be in many forms, including numbers, text, a show of hands, images, sounds or video.
Data Representation	The way information is organized for interpretation and communication. It is the format used to receive, process, represent, store, transform and transmit data, such as numbers, text, graphics and sound.
Decision Tree	A decision tree uses a tree-like graph or model as a structure to perform decision analysis. It uses each node to represent a test on an attribute, each branch to represent the outcome of the test, and each leaf node to represent a class label.
Device	A unit of physical hardware that provides one or more computing functions within a computing system. It can provide input to the computer, accept output or both.
Encryption	The process of converting information or data into a code, especially to prevent unauthorized access.
Hacktivist	A person or group who carries out cyber-attacks for a cause.
Hardware	The physical components that make up a computing system, computer or computing device.

Glossary Term	Definition
Inference	A conclusion reached based on evidence and reasoning.
Intelligent agent	A program that can make decisions or perform a service based on its environment, user input and experiences.
Intelligent device	A smart device that adapts or learns using the information it receives
Internet of Things (IoT)	The network of physical objects that are embedded with sensors, software and other technologies to connect and exchange data with other devices and systems over the internet (examples: virtual assistants, security cameras, Smart Homes).
KNN	K-nearest neighbors' algorithm (k-NN)
Machine Learning	The field of study that gives computers the ability to learn without being explicitly programmed.
Malware	(Malicious software) any program or file that is intentionally harmful to a computer, network or server.
Modeling	**Model:** A representation of some part of a problem or a system. Note: This definition differs from that used in science. **Modeling**: The creation or use of a computer model.
Modularity	The characteristic of a software/web application that has been divided into smaller modules. An application might have several procedures that are called from inside its main procedure. Existing procedures could be reused by recombining them in a new application.
Nation-States	Malicious cyberattacks that originate from a particular country and are an attempt to further that country's interests.
Natural interaction	Involves the ability to communicate intelligently and cooperatively, for example, much like a human assistant who is aware of various characteristics of the user, including her physical and emotional state, location, tastes, desires and habits.
Natural Language Processing	Natural language processing (NLP) is a method to translate between computer and human languages. The goal of NLP is to build software that will analyze, understand and generate human languages naturally, enabling communication with a computer as if it were a human.
Network	A group of computing devices (for example, personal computers, phones, servers, switches and routers) connected by cables or wireless media for the exchange of information and resources.
Packet	A small piece of information from a larger whole set of information.

Glossary Term	Definition
Program	**Program (n):** A set of instructions that the computer executes to achieve a particular objective. **Program (v):** To produce a program by programming.
Programming	The craft of analyzing problems and designing, writing, testing and maintaining programs to solve them.
Quantum Computer	Computing device capable of performing quantum calculations using states of qubits including superposition, interference and entanglement (i.e., 0, 1, or both.) Power usage is generalized as increasing exponentially with the number of qubits.
Qubit	A unit of computing information that is represented by a state of an atom or elementary particle (e.g., spin, momentum and position) and can store multiple values at once due to the principles of quantum mechanics.
Sensor	A device that responds to a physical stimulus (such as heat, light, sound, pressure, magnetism, or a particular motion) and transmits a resulting impulse (as for measurement or operating a control).
Simulation	The imitative representation of the functioning of one system or process using the functioning of another.
Smart Device	Devices that connect to the internet using wifi or mobile networks.
Software	Programs that run on a computing system, computer or another computing device.
Storage	**(Place)** A place, usually a device, into which data can be entered, in which the data can be held, and from which the data can be retrieved later. **(Process)** A process through which digital data is saved within a data storage device using computing technology. Storage is a mechanism that enables a computer to retain data, either temporarily or permanently.
Supervised Learning	Training a model from input data and its corresponding labels.
Tagged	A way of identifying a piece of information.
Technological Device (Basic)	A device that does not have smart or intelligent capabilities.
Training data	Training data is labeled data used to teach AI models or machine learning algorithms to make proper decisions.
Threat Actor	Person exploiting vulnerabilities.
Threat Vector	Means of exploiting a vulnerability.

Glossary Term	Definition
Troubleshooting	A systematic approach to problem-solving that is often used to find and resolve a problem, error or fault within software or a computing system.
Unsupervised learning	A type of machine learning algorithm used to draw inferences from sets of data consisting of input data without labeled responses (e.g., cluster analysis.)
Variable	A symbolic name that is used to keep track of a value that can change while a program is running. Variables are not just used for numbers; they can also hold text, including whole sentences (strings) or logical values, such as true or false. A variable has a data type and is associated with a data storage location; its value is normally changed during the course of program execution. Note: This definition differs from that used in math.
Visualization	Data can be displayed for communication in many ways. People use computers to transform data into new forms. Visualization is the representation of an object, situation or set of information as a chart, image or another sensory medium to enhance understanding.

References

About the National Science and Technology Council. (2016). Retrieved from https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf Algorithmic thinking [Blog post]. (n.d.). Retrieved from https://teachinglondoncomputing.org/resources/developing-computational-thinking/algorithmic-thinking/

AdaBoost Algorithm - A Complete Guide for Beginners - Analytics Vidhya. (2021, September 15). Retrieved March 8, 2022, from Analytics Vidhya website: https://www.analyticsvidhya.com/blog/2021/09/adaboost-algorithm-a-complete-guide-for-beginners/

ArXiv:Quant-Ph/0010040 v2 18 Oct 2000 - Cs.duke.edu. https://www.cs.duke.edu/courses/spring06/cps237/Quantum.papers/overview.grover.search.pdf

Big Data Analytics | IBM. (2022). Retrieved March 8, 2022, from Ibm.com website: https://www.ibm.com/analytics/big-data-analytics

CB Insights. *"Quantum Computing vs. Classical Computing in One Graphic." CB Insights Research, CB Insights, 1 Feb. 2021, https://www.cbinsights.com/research/quantum-computing-classical-computing-comparison-infographic/.*

CB Insights. "What Is Quantum Computing? Definition, Industry Trends & Benefits Explained." CB Insights Research, CB Insights, 3 Sept. 2021, https://www.cbinsights.com/research/report/quantum-computing/

Computing At School. (2013). *Computing in the national curriculum: A guide for primary teachers*. Belford, UK: Newnorth Print. Retrieved from https://www.computingatschool.org.uk/data/uploads/CASPrimaryComputing.pdf

Free online dictionary of computing. (n.d.). Retrieved from http://foldoc.org

Grade Band Progression Charts. (2021, June 29). Retrieved March 8, 2022, from AI4K12 website: https://ai4k12.org/gradeband-progression-charts/

K–12 Computer Science Framework. (2016). Retrieved from http://www.k12cs.org

MachineLearningMastery. (2016, September 8). A Gentle Introduction to the Gradient Boosting Algorithm for Machine Learning. Retrieved March 8, 2022, from Machine Learning Mastery website: https://machinelearningmastery.com/gentle-introduction-gradient-boosting-algorithm-machine-learning/

Massachusetts Department of Elementary and Secondary Education. (2016, June). *2016 Massachusetts digital literacy and computer science (DLCS) curriculum framework*. Malden, MA: Author. Retrieved from http://www.doe.mass.edu/frameworks/dlcs.pdf

McCarthy, J. (2012). What is AI? / Basic Questions. Retrieved March 8, 2022, from Stanford.edu website: http://jmc.stanford.edu/artificial-intelligence/what-is-ai/index.html

McTear, M. (2010). The Role of Spoken Dialogue in User–Environment Interaction. *Human-Centric Interfaces for Ambient Intelligence*, 225–254. https://doi.org/10.1016/b978-0-12-374708-2.00009-7

Merriam-Webster Dictionary. (2022). Retrieved March 8, 2022, from Merriam-webster.com website: https://www.merriam-webster.com/dictionary/algorithm

Mitchell, T. (1980). *The Need for Biases in Learning Generalizations by The Need for Biases in Learning Generalizations*. Retrieved from http://www.cs.cmu.edu/~tom/pubs/NeedForBias_1980.pdf

Oxford dictionaries. (n.d.). Retrieved from https://www.oxforddictionaries.com/us

Quantinuum: Glossary." *Accelerating Quantum Computing*, https://www.quantinuum.com/glossary

Fisher, Chris. "IBM: What Is Quantum Computing?" *IBM Quantum*, 2 Apr. 2009, https://www.ibm.com/quantum-computing/what-is-quantum-computing/

Ranschaert, E. R., Morozov, S., & Algra, P. R. (Eds.). (2019). *Artificial Intelligence in Medical Imaging*. https://doi.org/10.1007/978-3-319-94878-2

Samuel, A., & Gabel, F. (2019). *Artificial Intelligence for Games: Seminar Some studies in machine learning using the game of checkers*. Retrieved from https://hci.iwr.uni-heidelberg.de/system/files/private/downloads/636026949/report_frank_gabel.pdf

Shaw, A. (2021, March 29). *What is IoT (Internet of Things)? Definition, Meaning, Devices & Applications*. The Engineering Projects. Retrieved March 8, 2022, from https://www.theengineeringprojects.com/2021/03/what-is-iot-internet-of-things-definition-meaning-devices-applications.html

TechTarget Network. (n.d.). Retrieved from http://www.techtarget.com/network

Tech terms computer dictionary. (n.d.). Retrieved from http://www.techterms.com

Techopedia technology dictionary. (n.d.). Retrieved from https://www.techopedia.com/dictionary

Training Data - AI Solutions with Confident Training Data | Appen. (2021, August 26). Retrieved March 8, 2022, from Appen website: https://appen.com/solutions/training-data/