Glossary

Actuator A mechanical or electronic device in a system that converts control signals to produce physical action.

Artificial intelligence Computer systems or machines that autonomously perform tasks typically requiring human intelligence, such as learning, reasoning, problem-solving, and decision-making.

Computational design A specialization of the broader category of design technology that focuses on the study, use, and design of algorithms and computational methods in and for the design process.

Cyber-physical system A system that interconnects computers to physical systems to facilitate autonomous ways of monitoring and controlling physical processes.

Design technology The study, use, and design of digital tools and technologies in and for the design process.

Digital twin A virtual or digital representation that replicates the characteristics and behaviors of physical objects and systems based on bidirectional data exchange.

Edge computing The computational processing and analysis of data that occurs 'on-the-edge' of a network or device such as a sensor. Also described as fog computing.

Internet of things (IoT) Machines and objects that use the Internet as a global platform to autonomously communicate, dialogue, compute, and coordinate.

Large language model A machine learning model trained on a vast corpus that can generate general-purpose language outputs

Machine learning A subfield of artificial intelligence (AI) that develops systems and programs using learning algorithms that can make classifications and predictions based on data.

Physical computing The design and creation of interactive systems and responsive environments using sensors, actuators, and programmable control systems.

Prototype A digital artifact and/or physical object that represents and communicates a design idea.

Provocatype An early-stage prototype of a design idea that is created to provoke discussion and reflection among project stakeholders. Also described as a provotype.

Sensors Devices or components that detect and measure physical and environmental phenomena such as light, temperature, pressure, motion, and vibration and convert inputs into electrical signals or digital data that can be analyzed and utilized by other systems or devices.

Urban computing The study, use, and design of computer technologies and computational methods to sense, analyze, and instrument data to understand and calibrate urban processes.

Urban technology The study, use, and design of digital tools and technologies in and for the urban environment.