Advanced Certificate in AI in Sustainability

Smart Cities and AI

Advanced Certificate in AI in Sustainability: A professional certification program focused on the application of artificial intelligence (AI) to promote sustainability in various industries and sectors. The course covers topics including AI technologies, sustainability challenges, and the intersection of AI and sustainability.

Artificial Intelligence (AI): Related terms: Machine Learning, Deep Learning, Natural Language Processing

A field of computer science focused on creating intelligent machines that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation. AI includes several subfields, including Machine Learning, Deep Learning, and Natural Language Processing.

Carbon Footprint: The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO2).

Clean Energy: Related terms: Renewable Energy, Sustainable Energy

Energy generated from sources that do not release harmful pollutants or greenhouse gases, such as solar, wind, hydro, and geothermal energy.

Climate Change: A long-term alteration in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be a change in average weather conditions, or in the distribution of weather around the average conditions.

Data Analytics: The process of examining data sets to draw conclusions about the information they contain, including identifying trends, patterns, and correlations.

Deep Learning: Related terms: Artificial Intelligence, Machine Learning, Neural Networks

A subset of Machine Learning that uses multi-layered neural networks to model and solve complex problems, such as image and speech recognition, natural language processing, and game playing.

Energy Efficiency: The use of less energy to provide the same level of energy service.

Greenhouse Gas (GHG): A gas in Earth's atmosphere that traps heat, leading to a rise in the planet's temperature, also known as the greenhouse effect. The main greenhouse gases are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and fluorinated gases.

Internet of Things (IoT): Related terms: Smart Cities, Sensors, Connectivity

A network of interconnected physical devices, vehicles, buildings, and other objects that are embedded with sensors, software, and other technologies to collect and exchange data over the internet.

Machine Learning (ML): Related terms: Artificial Intelligence, Deep Learning, Neural Networks

A subset of Artificial Intelligence that uses statistical algorithms and mathematical models to enable machines to learn and improve from experience, without being explicitly programmed.

Natural Language Processing (NLP): Related terms: Artificial Intelligence, Machine Learning, Deep Learning

A field of computer science focused on the interaction between computers and human language, enabling machines to understand, interpret, and generate human language in a valuable way.

Neural Networks: Related terms: Artificial Intelligence, Deep Learning, Machine Learning

A type of Machine Learning model inspired by the structure and function of the human brain, consisting of interconnected nodes or "neurons" that process information and learn from experience.

Renewable Energy: Related terms: Clean Energy, Sustainable Energy

Energy generated from sources that are naturally replenished, such as solar, wind, hydro, and geothermal energy.

Sensors: Related terms: Internet of Things, Smart Cities

Devices that detect changes in the environment and convert them into an electrical signal, enabling machines to collect and analyze data from the physical world.

Smart Cities: Related terms: Internet of Things, Sensors, Connectivity

Cities that use technology, data, and connectivity to improve the quality of life for citizens, enhance the efficiency and sustainability of urban systems and services, and promote economic growth and social development.

Sustainability: The ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable Development: Related terms: Sustainability, Social Development, Economic Development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs, taking into account economic, social, and environmental factors.

Sustainable Energy: Related terms: Clean Energy, Renewable Energy

Energy generated from sources that are both environmentally friendly and economically viable, such as solar, wind, hydro, and geothermal energy.

Urban Planning: The process of designing and managing the built environment, including land use, transportation, housing, and public spaces, to promote the health, safety, and welfare of citizens.

Zero-Carbon: A goal of reducing greenhouse gas emissions to net-zero, meaning that any remaining

emissions are balanced by removing an equivalent amount of carbon dioxide from the atmosphere.