

# **Artificial Intelligence, Engineering Systems and Sustainable Development**

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# **Artificial Intelligence, Engineering Systems and Sustainable Development: Driving the UN SDGs**

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INVESTOR IN PEOPLE

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# Preface

In 2015, all member states of the United Nations adopted the 2030 Agenda for sustainable development. In view of ensuring peace and prosperity in the present and future, for all people and the planet, the 2030 agenda provides a very comprehensive shared blueprint. The agenda sets forward the creation of a global partnership between all developed and developing countries, having as core objective an urgent call for action to attain the 17 Sustainable Development Goals (SDGs). From climate action to good health and well-being, 17 high level themes and 169 targets have been identified and expected to be delivered by 2030, in the United Nations' Sustainable Development Goals (SDGs). It is important that measures to end poverty and other deprivations are taken along with strategies that lead to reduction in inequalities, enhanced health and education, and the promotion of economic growth, without neglecting actions for preserving our oceans, forests and tackling climate change in general.

Development in any country is impossible if, reliable and affordable energy, safe water and sanitation, as well as telecommunication facilities, are not easily accessible. These elements are indispensable for productive growth, healthy development and allow productive industrial growth through efficient and robust transportation systems. Engineering disciplines have a crucial responsibility of forming engineers who at the most basic level should be able to implement transportation, energy and telecommunications systems, as well undertake projects on safe water and sanitation. Hence, engineers have a major role to play to support the delivery of the SDGs. Integrated and intelligent engineering solutions which can deliver robust infrastructure, sustainable energy and access to the latest communication technology are indispensable to accomplish several of these SDGs. It is also vital to bridge the digital divide, where access to the internet is still a major obstacle in several parts of the world. In order to provide the means for cohesive solutions that can achieve sustainable development, engineers will have to employ state of the art disruptive technologies such as 5G, IoT, AI, cloud computing, blockchain and 3D printing among others.

AI and machine learning techniques are now widely used in all branches of engineering to build and optimise systems, solve intractable problems and also provide AI technology with new data inputs for interpretation. The combination of AI and engineering can indeed act as a real catalyst to achieve the UN SDGs.

The main purpose of this book, therefore, is to analyse different concepts and case studies in engineering disciplines such as Chemical, Civil, Electrical, Telecommunications and Mechanical Engineering with a view to demonstrate how

engineering systems and processes can leverage the power of AI to drive the UN SDGs. Such a study is of paramount importance and will be a valuable source of information for researchers, engineers and policymakers to be able to better design and adopt AI-enabled techniques in different engineering areas with a view to catalyze the achievement of the UN SDGs.

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