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# Bridging Between AI and Robotics for Business and Product Development

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Contemporary robot control methodologies have their origin in the classical control systems design. Except for the increased adoption of modern computers in the hardware implementation, the design and analysis has been limited to the original knowhow.

When the robotics field covered operations in mostly structured environments there was limited need to explore complexity beyond the standard requirements of high speed and high repeatability. These along with the payload capacity, robot weight and power requirements provided the necessary specifications that could be met for most applications.

The situation started to change when the environments became unstructured and not fully known. This was brought up by the emergence of mobile robot applications. It gave rise to requirements that could not be satisfied with the contemporary control systems methodologies.

As a result, a new trust emerged, that of Artificial Intelligence. It provides tools to deal with situations that are basically complex, such as robots operating in unknown environments. The AI has provided an opportunity to use fundamental AI techniques to control systems operating in only partially known situations.

There is a need to look at this quest from the critical point of view that AI serves well when the systems can be a priori properly trained or used in non-real time applications, ex. e-commerce, as opposed to robotics that requires real-time operation that poses limitations in the current use of AI.

## Biography

Dr. Andrew Goldenberg PhD founder (1982) of Engineering Services Inc (ESI) In May 2015 ESI has been acquired by a Chinese consortium located in Shenzhen, P.R. China. In 2016 the company went public in Hong Kong. Dr. Goldenberg is the CTO of the public company and of its wholly owned subsidiary Anzer Intelligent Engineering Ltd. of Shenzhen, China, as well as the CEO of ESI. As of May 2019, Dr. Goldenberg is with Anviv Mechatronics Inc. pursuing business in AI & Robotics. Since 1982 Dr. Goldenberg has also been a Professor of Mechanical and Industrial Engineering at the University of Toronto, cross appointed in the Institute of Biomaterials and Biomedical Engineering and the Department of Electrical and Computer Engineering. Currently Dr. Goldenberg is a Professor Emeritus at the University of Toronto.

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