

# AI tools in the design process of industrial products

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**Abstract.** The definition of Artificial Intelligence that can be found on the pages of Wikipedia is the intelligence exhibited by machines or software which clearly has a rather broad and vague meaning that in many circumstances has been misunderstood.

I would therefore focus more on Artificial Intelligence Tools, i.e. the spectrum of mathematical procedure that can be used to gain, explore and exploit knowledge during a design process.

To gain knowledge means to probe design opportunities in a systematic way in order to collect sufficient data to be able to understand and predict product behaviour. To explore knowledge means to be able to drive automatically through the design options using optimization techniques. To exploit knowledge means to be able to take rational decisions about the configuration of a product to be produced.

All these actions can be performed by means of software components based on AI-related tools: Neural networks, Evolutionary Computing, Classifier Systems just to name a few.

In the development of decision support software for design optimization there is not one technique that would prevail but a blending of tools, including more traditional mathematical algorithms, that contribute to the finding of the best design configuration.

In this presentation a selection of industrial application from transportation industry to consumer goods will be used to showcase the use of AI-tools in daily design activity while possible future needs will be identified by looking at the opportunity offered by collaborative environments.