

# **A Fuzzy Algorithm to Dynamic Flow Shop in Industry 4.0**

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## **Abstract**

One of the main characteristics of Industry 4.0 is the customization of products. In this sense, changes in production can be made to the batches that are already scheduled to be processed. The impacts of those changes must be analyzed, and the scheduling updated. This involves complex decisions such as many others within Industry 4.0. This work solves the dynamic job scheduling problem applying multi-criteria decision analysis and fuzzy logic. It was created a set of scenarios to compare heuristics and meta-heuristics in order to solve the shop floor problem, with dynamic arrivals constraints.

## **Keywords**

Flow Shop, Scheduling, Fuzzy Logic, Decision Making.

## **Biographies**

**Rodrigo Luiz Gigante** earned Masters degree in Production Engineering from the University of São Paulo (2010); BS in Applied Mathematics and Scientific Computing from the University of São Paulo (2007). He is a professor at Facens University. His areas of expertise are Operational Research, Discrete Event Simulation, Scheduling, Queue Theory, Production Planning and Control and Logistics.

**Henrique Ewbank de M. Vieira** is Professor in Industrial Engineering at Facens University, Brazil. He has a Post-Doc in Environmental Sciences from Paulista State University, Sorocaba, Brazil. He earned PhD in Management from Federal University of Rio de Janeiro, Brazil, Graduate Certificates in Logistics & Supply Chain Analysis and in Systems & Supportability Engineering from Stevens Institute of Technology, New Jersey, USA, and B.S. in Industrial Engineering from Estácio de Sá University, Brazil. He has taught courses about operations research, management and data science for graduate and undergraduate students. His research interests include demand planning, inventory management, supply chain, and multi-criteria decision making.