Industrial Edge Computing - Application in Smart Manufacturing

Alexander Metzler
TU Berlin, Berlin, Germany,
Department of AV

Farah Nasir
TU Berlin, Berlin, Germany,
Department of AV

***Abstract*—**

- **Short definition of the Industry 4.0 vision and the challenges that arise. (latency, number of devices, amount of data, etc.)**
- **Give a short outline of how EDGE/FOG computing concepts can help to solve the above stated problems/limitations**
- **State the goal of the paper (Applications of Edge Computing in Smart Manufacturing)**
- **Outline the chosen approach**
- **(Provide a short summary of the main results)**

***Index Terms*—IIoT, Industry 4.0, Fog, Edge, CPS**

I. Introduction

- Give a more precise definition of the Industry 4.0/ Smart Manufacturing concept (connectivity, flexible & predictive manufacturing) and the challenges (latency, number of devices, big data)
- Definition of Edge/Fog computing and how these concepts can help to solve the above stated problems/limitations of current systems/implementations
- Precise definition of the goal of this paper
- Outline the chosen approach
- Outline the structure of the remaining paper

II. Related Work

- Short outline of manufacturing as a whole (main goals) and the current trends.
- Outline existing concepts towards I. 4.0 (e.g using a centralized cloud) and state their limitations
- Outline existing works introducing Edge/Fog concepts that try to address the limitations and point out there pros & cons
- State the purpose of this work

III. Edge Computing in Smart Manufacturing

- Outline current key technologies in smart manufacturing including CPS, AS, etc.
- Outline possible concepts to integrate Edge/Fog computing capabilities into the I. 4.0 vision / current manufacturing context

IV. Evaluation

- Evaluate/State the advantages that can be obtained from the integration of Edge/Fog computing
- Identify and outline the drawbacks/difficulties and open problems
- Give a short summary stating the most promising technologies & concepts and highlight their potential towards a flexible & smart manufacturing landscape

V. Conclusion and Future Work

- Provide a short summary of the paper and the most important results (key technologies for the future)
- State what these technologies mean for smart manufacturing
- Outline possibilities for further work