Pitch of the Project Proposal

AI4orce
Standardized AI for Logistics Automation on Resource Constrained IoT

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Teaser

Today
1. Centralized AI methods require a lot of IT resources (CPU, RAM, GPU). Powerful hardware is mandatory.
2. A lot of data is needed in the right format and a very good quality covering the reality as much as possible.
3. Shifting AI results to an operational level is always an individual task and takes a lot of time.

→ This leads to high invests for AI and for a measurable benefit.

With **AI4orce** we want to develop
a standardized AI approach that is resource aware
an AI approach that requires only “standard HW”
results are easy-to-integrate.

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Planning logistics – securing mobility – shaping the future

We are actively working with industry in logistics domain. We develop technologies like Internet of Things nodes for in diverse application areas, e.g. manufacturing, material flow control systems. We work on AI, Machine Learning and IT infrastructures to enable new ecosystems to enable a digital market for the European economy.

Fraunhofer IML
Fraunhofer Institute for Material Flow and Logistics

A Institute of Fraunhofer Society, Europe’s largest application-oriented research organization
Located in Dortmund, Germany
270 employees & 270 students

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Materna is a b2b IT service provider. The family business is located in Dortmund for about 40 years.

The e-government products of Materna SE achieve the highest impact in Germany.

The computing lab for artificial intelligence is prepared for cloud and big data analytics purposes. The nationally well-acknowledged software mobility data market place (mdm) is developed and maintained by Materna SE. We are actively working in mobility and logistics domain.
Proposal

Introduction

Idea

• Resource constraints in IOT in logistics limits usage of AI (technical topic)
• Privacy constraints and governance requires a standardized framework beyond federated learning (how to distribute, how to update models incrementally, how to scale with available resources)
• Mobility & Supply Chain Optimization (functional topic)

Project outcome

• Resource aware proactive supply chain management by usage of distributed real-time prognosis and analysis methods for massive heterogeneous data streams
• Standardized AI architecture for simplified business scenario integration
• Proof of concept demonstrators

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Proposal - Goals

Technical Perspective

• Distributed Resource Constrained AI Algorithms
• Standardized AI process and data preparation
• Standardized AI results to reduce efforts for process integration

Business Scenario Perspective

• Optimization and predictive planning of transports and mobility scenarios
  – reduce traffic and emissions
  – reduce costs of transports
  – enable & support synchromodality
  – enable & support seamless integration

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Partners

• Materna SE – IT Platform & Service Provider, IT & AI Partner
• Fraunhofer IML – IT Architecture, AI (link to ML2R), Transfer Research to Industry

• Industry with Use-Case
• Industry, embedded systems manufacturer
• Industry, system design
• Industry, [logistics / transport / mobility] service operator
• Research, University on AI
• Research, University on Resource Constraint AI
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