

Welcome – Project Pitch

LLM4CVC

About Us

Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University



Background

- Founded 1906
- More than **900** scientific and non-scientific **employees**



Goal

- Promoting the **innovative strength** and competitiveness of **production industry**



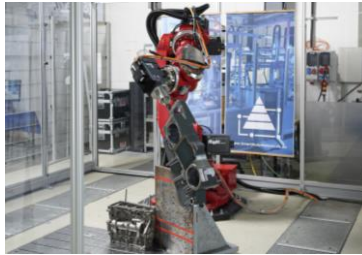
Competence

- **Pioneering basic research**, applied research and the resulting consulting and implementation projects.

Technology Stack for CVC



AI-/Vision-based Applications



Robot-based Machining

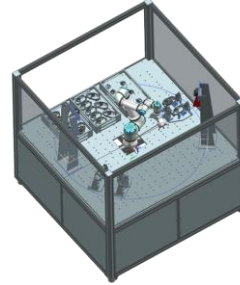


Large Language Models



Automated Dis-/Assembly

Closed and ongoing Projects in CVC



AutoPilot

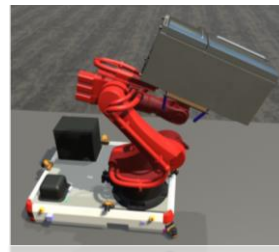


Holistic concept for circular production equipment, including **flexible cell** integration, **reuse**, and a **digital platform**



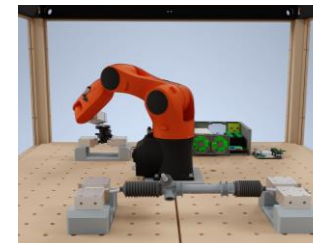
HyPairBot

Hybrid process chain (additive + subtractive) for **defect detection** and **remanufacturing**



AurowaE

Robot-assisted **recycling** process for heat exchangers with **AI detection**, semi-automatic emptying, and automated **dismantling of critical raw materials**



Reman-Cell

Fully flexible and reconfigurable **disassembly cell** equipped with **vision systems**, flexible gripper systems, and a robot

CE Network



Aachen



Concept Vision – LLM4CVC

The Challenge

We use disassembly to recover **parts and materials**

- Need to control how much and what we disassemble

Disassembly is not „**yet**“ fully automated

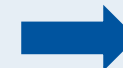
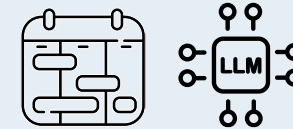
- Varying **Products**
- Varying **Product groups**

BUT AI + skill-based robotics

The Approach



Flexible planning and AI data processing



Our Goals



Process **diverse** disassembly **information**

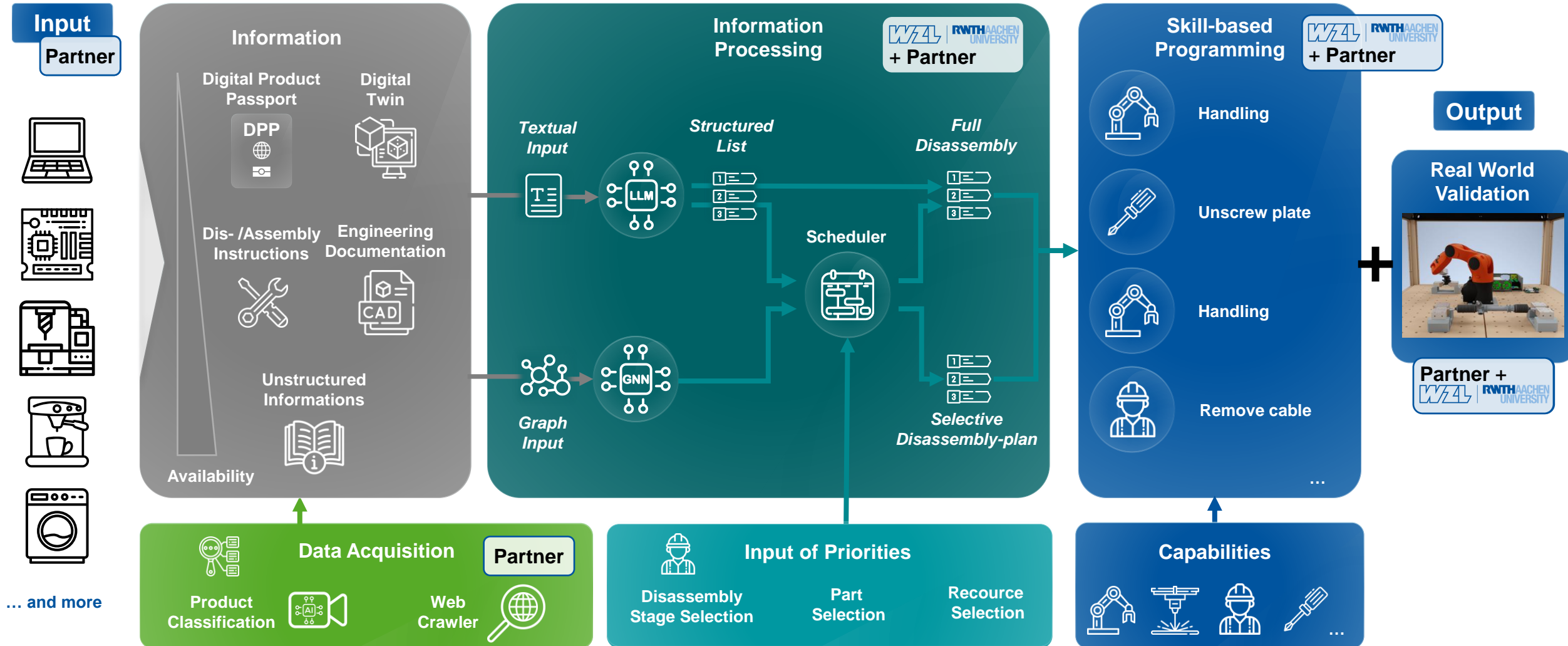


Create a **skill-based robotics** solution for disassembly



Offer adaptive **selective** and **partial disassembly**

Project Vision - LLM4CVC



Partners

We are looking for ...

Partners for Vision-Based Product Recognition & Web Crawling

- Companies specialized in computer vision or **few-shot learning**
- Providers of **web crawling** and **structured data extraction technologies**
- Partners with experience in annotation tools and pipelines

Partners for LLM-Based Software Development

- Research institutes focused on **LLMs**, NLP, or multimodal AI
- Start-ups or companies with expertise in RAG, **prompt engineering**, or **model fine-tuning**

Validation Partners (Real-World Use Cases)

- **Industrial companies** with **complex products**
- Providers of **real-world disassembly** or recycling scenarios
- Contributors of product data, disassembly processes

Interested?
Let's discuss how your expertise and vision can contribute to this exciting project!

Tim Schnieders, M. Sc.

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