

Industrial Path Solutions

Swedish Manufacturing Conference 2026



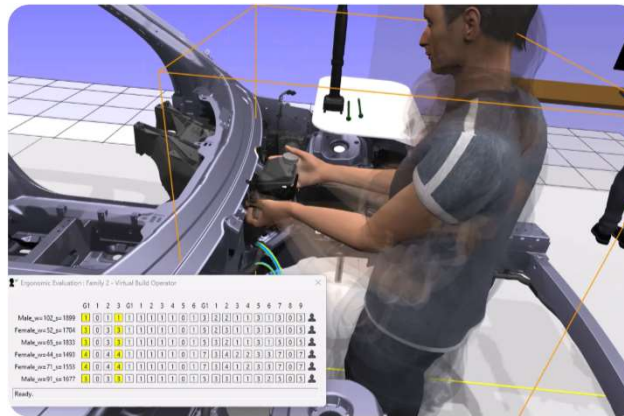
Digital Human Modelling in IPS

- Enable engineering teams to integrate human performance and ergonomic assessment into digital product and production development.

Algorithms to predict realistic human motions in assembly based on grasp and gaze.



Anthropometrically correct manikin families and ergonomic assessment tools.



Virtual Reality for simplified simulation setup.

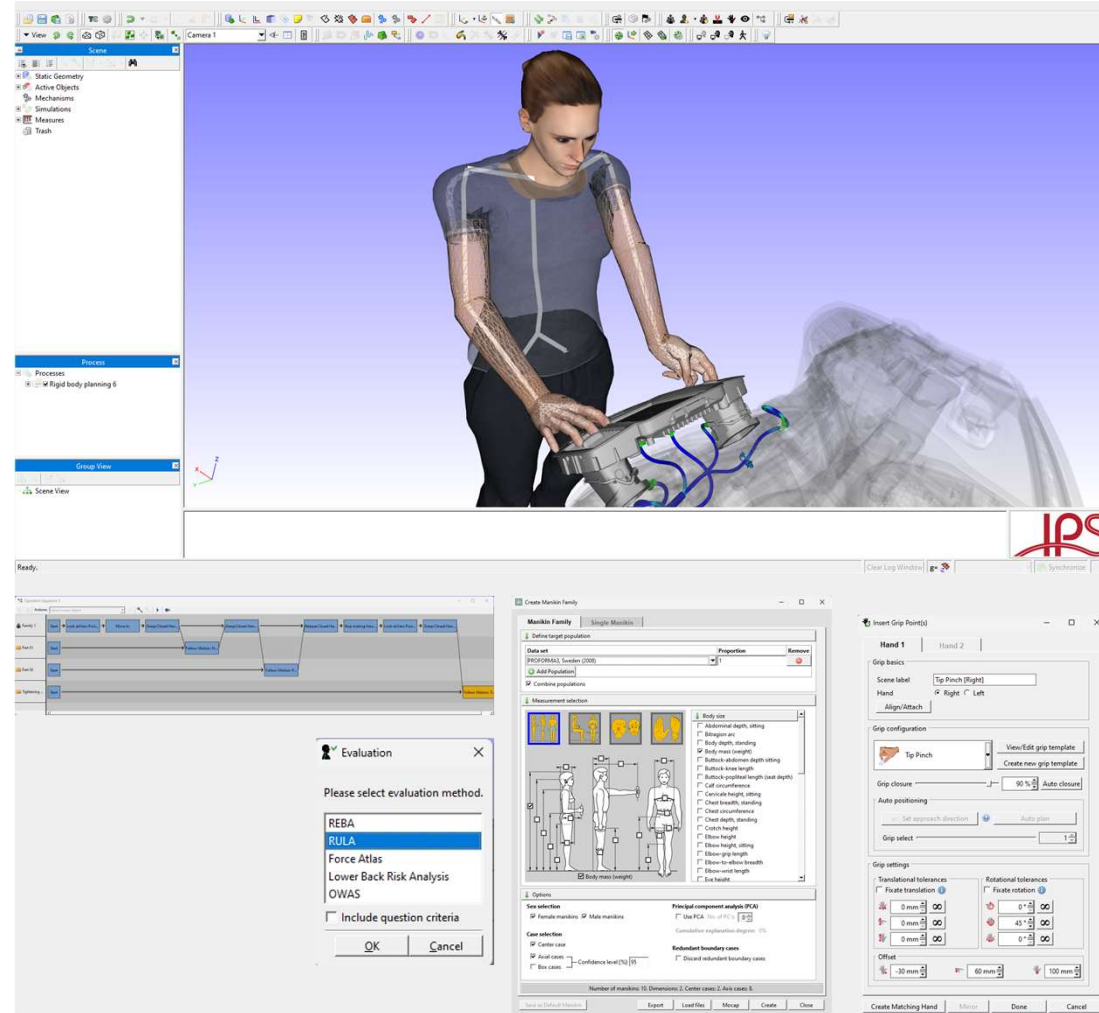


Key technology - IPS IMMA

- Biomechanical model with 82 rigid segments connected by revolute or ball joints creating 162 DoF.
- Manikin families based on anthropometry data from various databases.
- Full body posture prediction by maximizing comfort $g(\theta)$ while fulfilling equality constraints $h(\theta)$.

$$\max_{\theta} g(\theta) \quad \text{s.t.} \quad h(\theta) = 0$$

- Motion planning with collision avoidance setup through operation sequence editor.
- Standard or custom (company specific) ergonomic evaluation criteria.



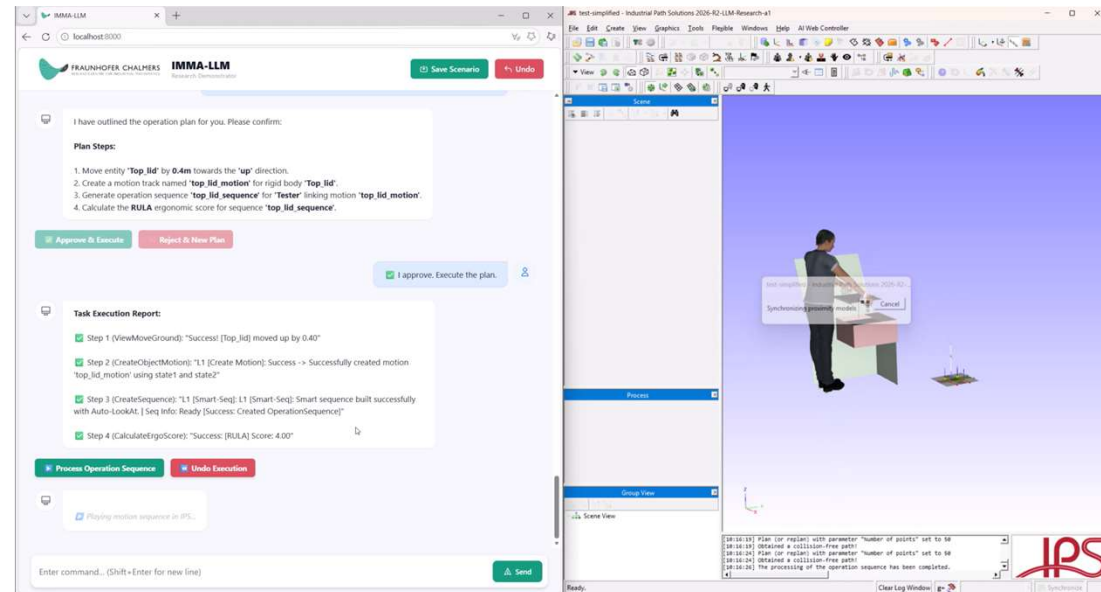
AI and IMMA

Benefits of LLMs:

- Semantic understanding instead of detailed instructions.
- Synergies with the comfort function in IMMA:
 - No need for the LLM to produce every key frame/specify all joint angles.
 - Inverse kinematics already a key strength of IPS IMMA.

Future potential of LLM and AI tech in general:

1. Using LLMs to lower the threshold to IPS IMMA and accelerate the overall usage.
2. Automated workflows where an AI-agent gives instructions to the manikin (and other objects in the scene).



Master thesis work @FCC by Tun Li, in collaboration with IPS and Volvo AB:

"A Comparative Usability Evaluation of an LLM-based Natural Language Interface for Digital Human Modeling in IPS IMMA." (thesis due in June 2026)

- Developing a combined framework with an open LLM running on a local client.
- Coupling IPS IMMA and the LLM prompt application via IPS InterAPI.

Thank you!



Questions?

Get in touch
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