

# Collaborative Assembly Cell Design – A User Perspective

Workshop @ IROS 2015 – *SAFETY FOR  
HUMAN-ROBOT INTERACTION IN  
INDUSTRIAL SETTINGS*

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**SCANIA**

**VOLVO**

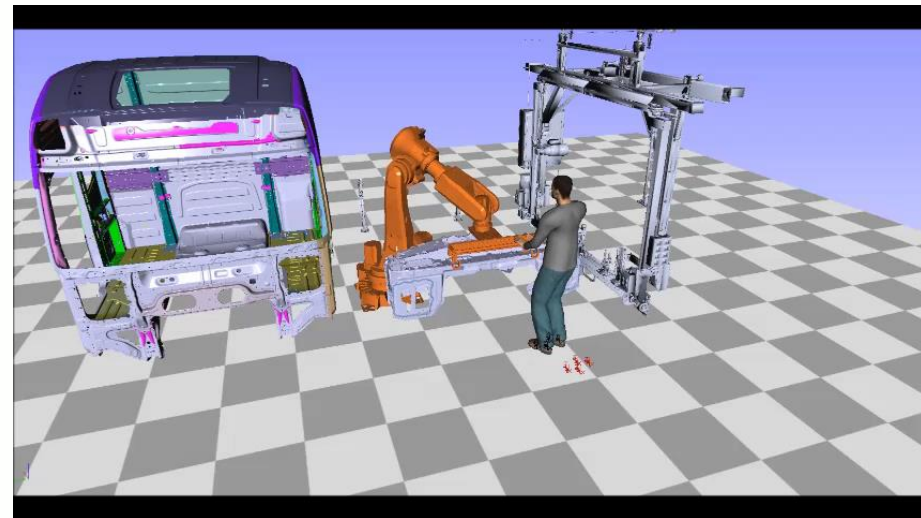
# Introduction

- Varun Gopinath – PhD student – 3<sup>rd</sup> year
- ToMM – Team of man & machine.
- Objective –
  - Automotive industry in sweden
  - Mixed model assembly
  - Collaborative assembly
  - Operator Safety, Ergonomic assembly task, Productivity

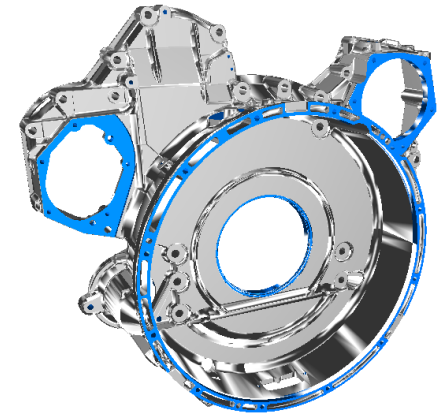
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# Case 1:

- Virtual demonstrators.
- Assembly Cell characteristics
  - Assembly of a front panel of a truck.
  - Continuously moving line.
  - Large and heavy parts.
  - Long assembly length.
  - More than one operators.



## Case 2:

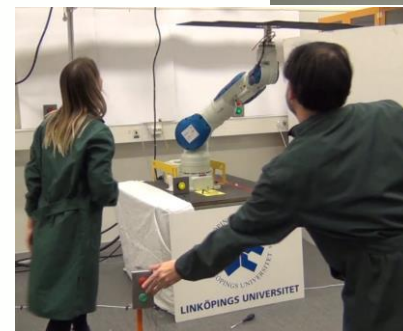
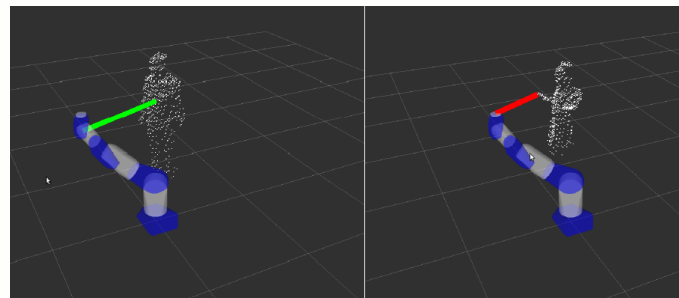


- Virtual demonstrators.
- Assembly Cell characteristics
  - Assembly of a fly wheel housing.
  - Stop and go stations
  - Heavy and compact parts.
  - More than one operators.



# Case 3:

- Virtual & Physical demonstrators
- Assembly Cell characteristics
  - Assembly of a under body panels.
  - Continuously moving line
  - Light parts
  - Large number of variants



# Conclusion & way forward:

1. Interviews with operators.
  - Technology for safety?
  - Interface elements?
  - Number of robots?
  - Number of operators?

## Main feedback

- Safety !
- Want to feel in control
- Technology should not interfere their work
- HMI to be developed
- Vision system is okay