

AI- Project

Collaborative HRI in industrial setting

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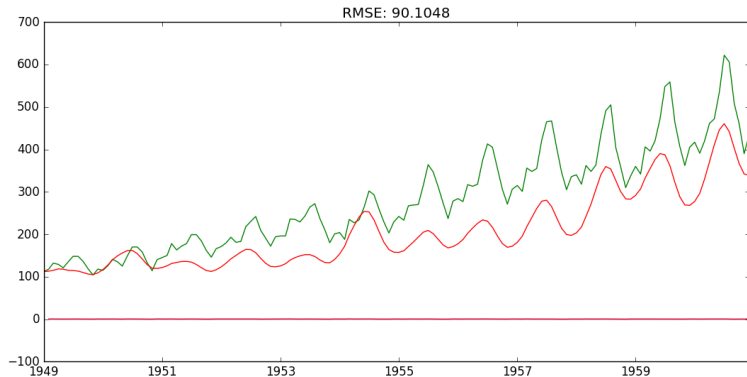
Outline

- 1 Prediction simulation
- 2 Modification in Goal
- 3 Parallel Task
- 4 Milestones

Data Assumptions

- Data is assumed to be seasonal
- Working time is assumed to increase over time

Prediction simulation



- **Collaborative Task:**

Robot has to pick up a raw material from Location A and drop it in Location B. **The robot Does the work in the energy efficient manner** until the human completes his/her task and ask for the next raw material, which is predicted by the robot using previous iterations of human work

Parallel task for planner to optimise

- Two ways to model the collaboration in industrial robot:
 - Reactive paradigm
 - Hierarchical paradigm
- Energy saving in both paradigms in industrial robots
 - Change in acceleration vs energy
 - Maximum energy trajectory for an industrial robot

- Dividing Human task:
 - Ask for the material (Puts hand in a way that material can't be dropped). Handling has been included in perception. Notifies human to put hand properly
 - Take the material (Took the material and is not working on it) Robot prompts the human that he is taking lot of time
 - Work on material (Stops working) Robot stops learning if the working time has gone over a threshold.

Schedule Planning	
Date	Expected Work
2 nd February, 2017	Implementation of Perception module in Python
9 th February, 2017	Implementation of Intention Prediction/Evaluation in Python
16 th February, 2017	Implementation of Planner in Python
23 rd February, 2017	Implementation of Action Renderer in Python
9 th March, 2017	Integrating all components and Testing
16 th March, 2017	Rendering actions using ROS/SWI-Prolog/Robot Studio for a simple task
23 th March, 2017	First Draft Submission