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Engl 149

Robotics in Virtual Reality

Virtual Reality

Figure 1

Virtual Reality and Robotics

- Controlling a robot inside VR
- Creating a simple pick-and-place experiment

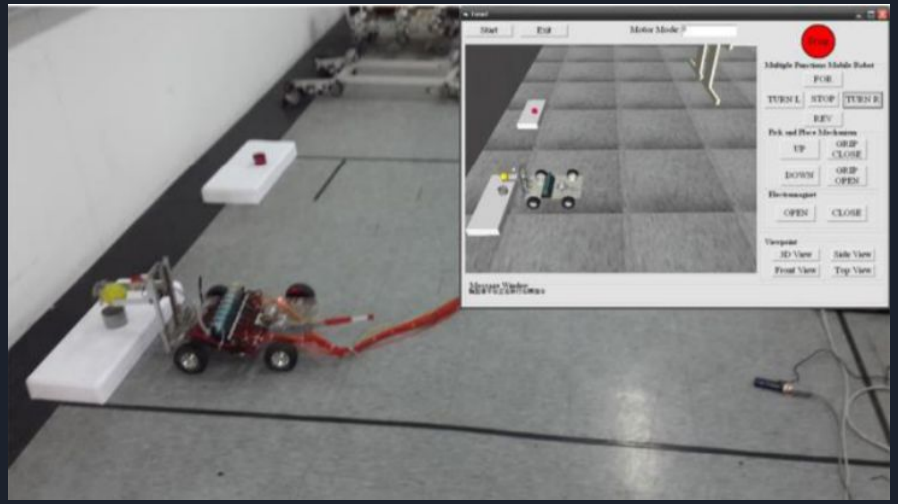

Figure 2.1

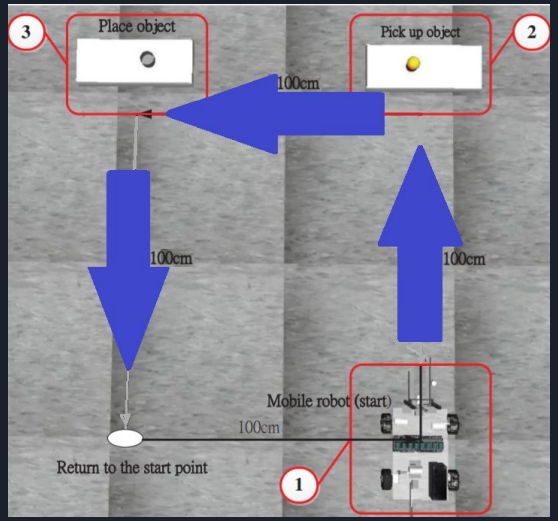

Figure 2.2

The Dangers of Robotics

- 38 reported fatal accidents in the past 31 year
- Real numbers are unknown

Death-Related Accidents

- Struck by Robotics arm
- Stabbed by Robotic palletizer
- Crushed by Robotic units
- Amputated by Robotic Clamp
- Pinned by Robotic driller

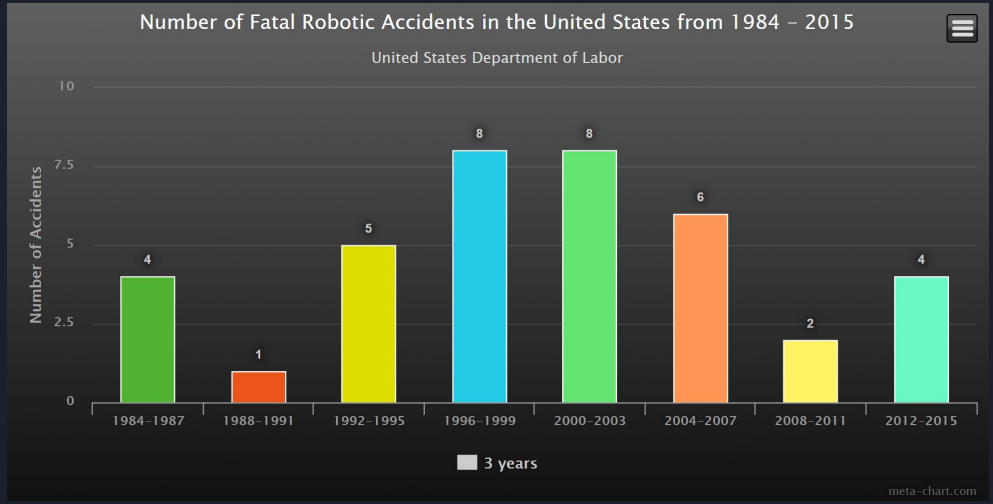

Figure 3

Aftermath

- Average Robotic Replacement Costs: $50,000 - $75,000
- Average Medical Costs per Stay: $18,000

Figure 4

How it works

1. Actions from VR recorded.

2. Data transferred into the HMI (Human Machine Interface).

3. Commands issued to the actual robot.

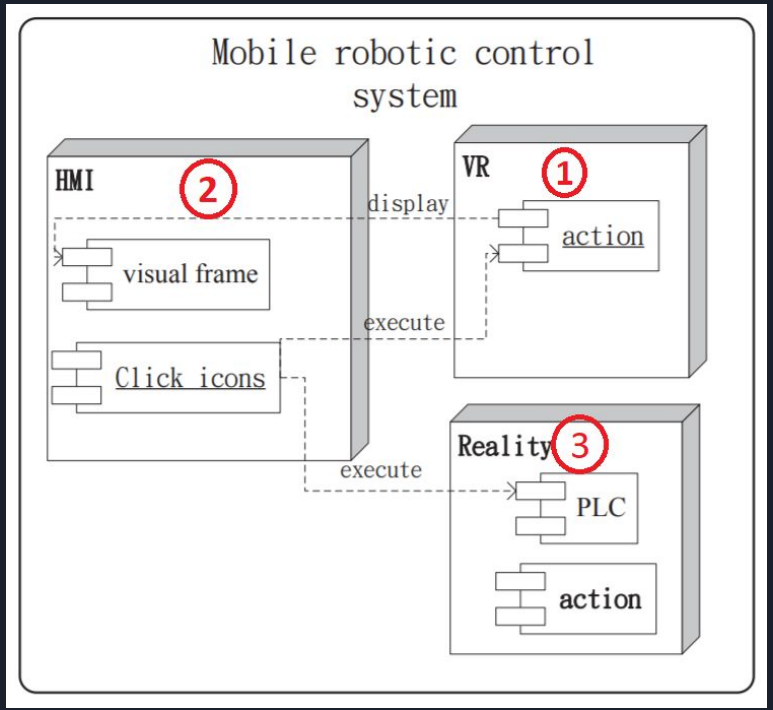

Figure 5

How this could prevent accidents?

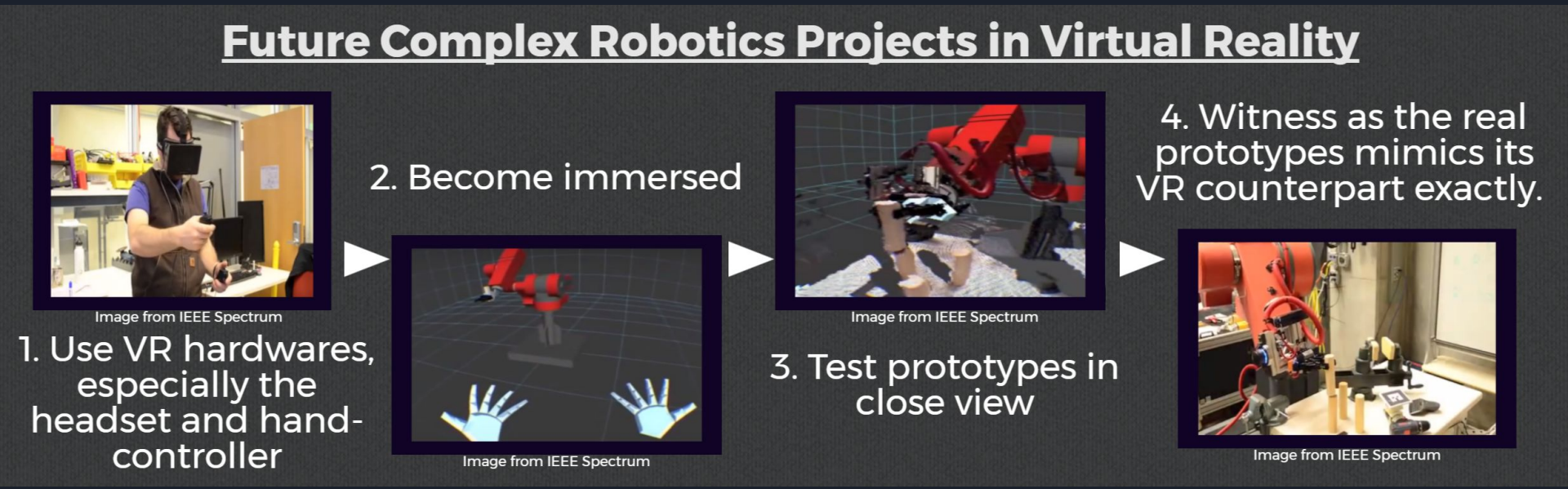

Figure 6

Limitations

What would you invest more in?

Virtual Reality

Reality

Figure 7

This is gaining popularity

- CNC Milling Machine
- Hands-free Motion Control

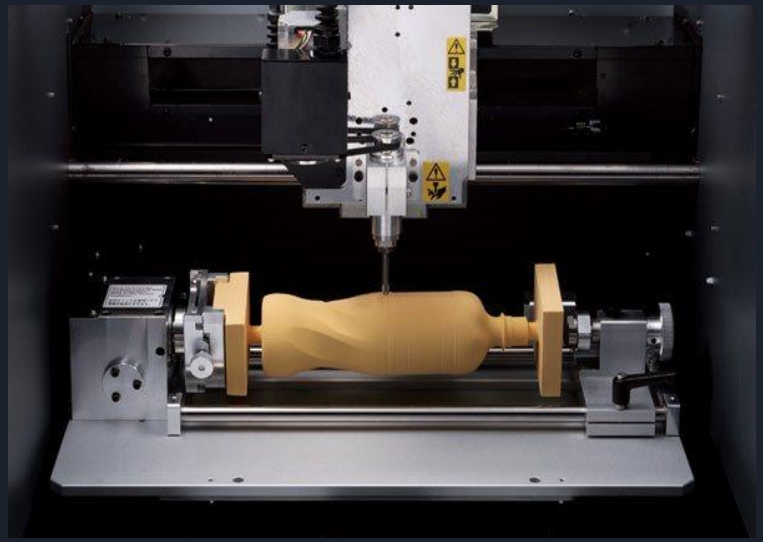

Figure 8.1

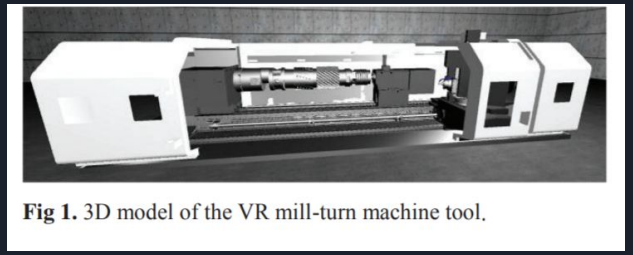

Fig 1. 3D model of the VR mill-turn machine tool.

Figure 8.2

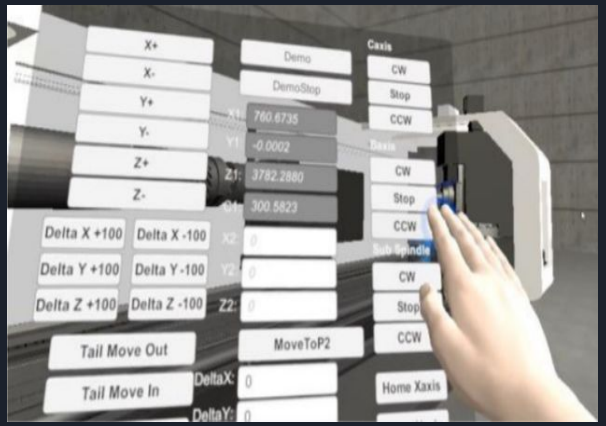

Figure 8.3

Q & A

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