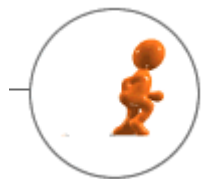




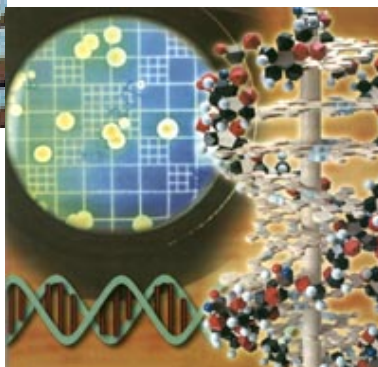
黃宜正 彰化師範大學機電工程學系
教授兼工學院院長
美國哥倫比亞大學機械工程博士



What's Mechatronics

- Mechatronics = "Mechanical" + "Electronics"
- Elctromechanics = "Electronics/Electrical [EE]" + "Mechanics"

綜觀機器”人”



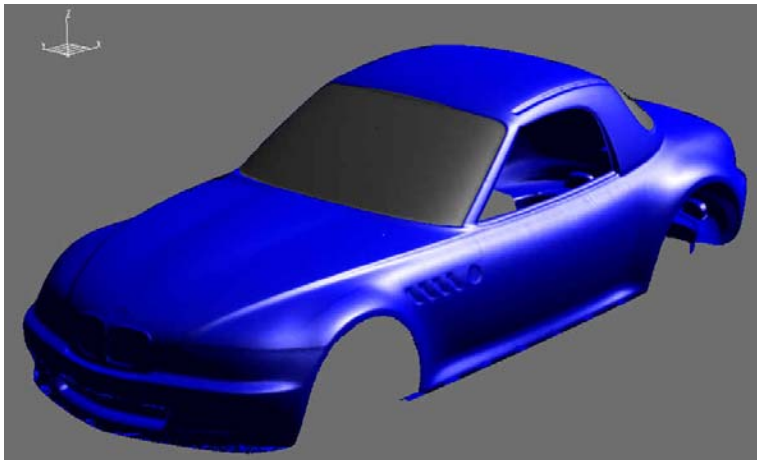
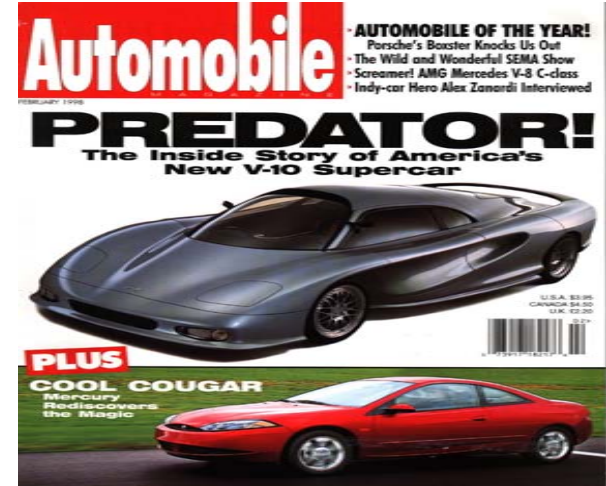
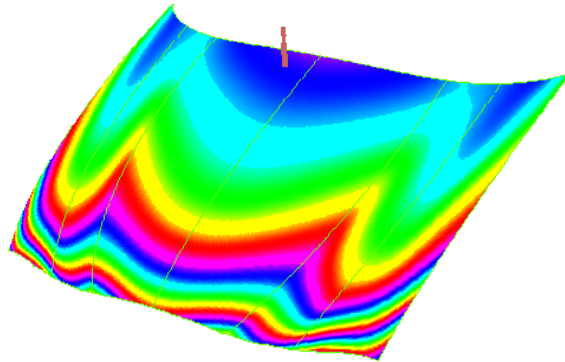
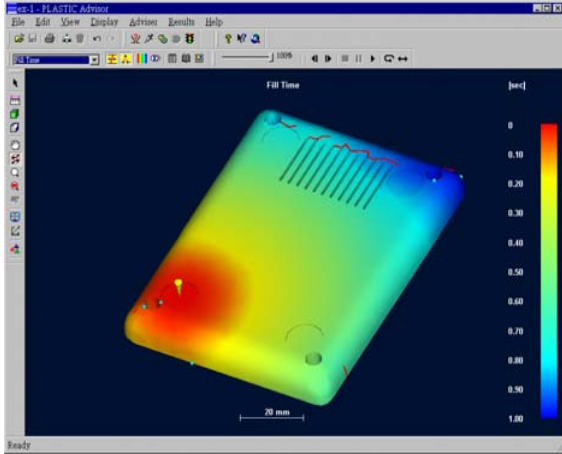
HOBBLE RADIO & CLOCK
IDEA IN.
mydoob.com



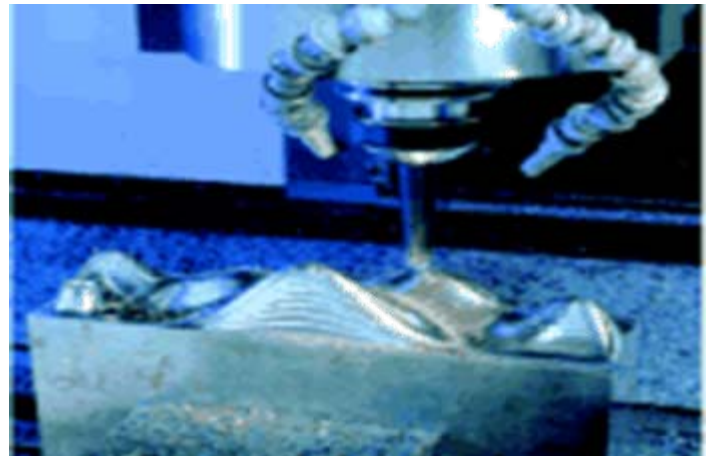
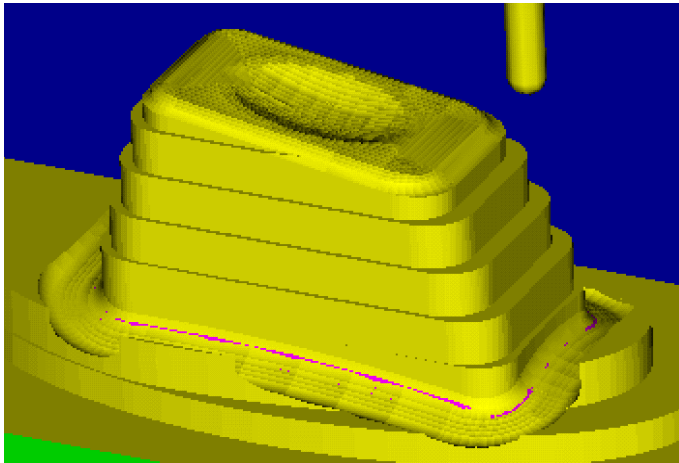
Your Dream ! How to do it ?



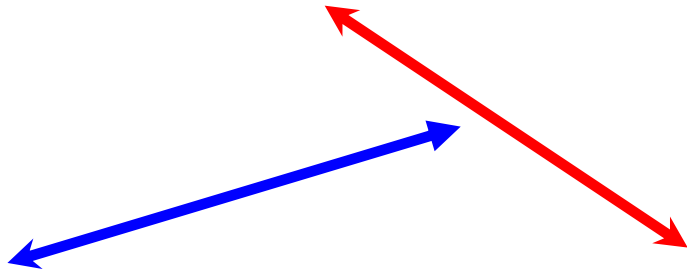
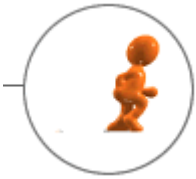
Cad Design : curvature, thermo



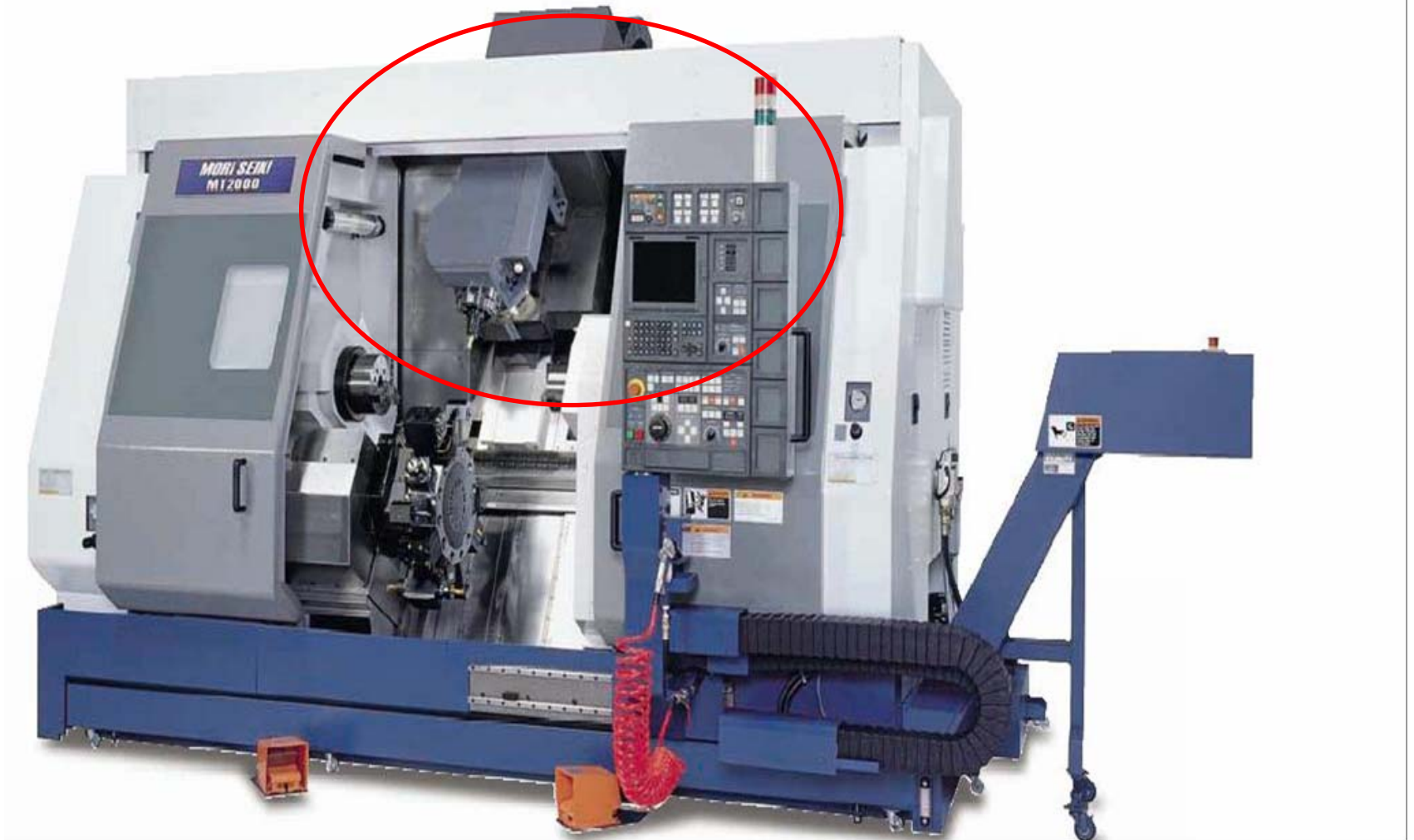
CAD → Manufacture



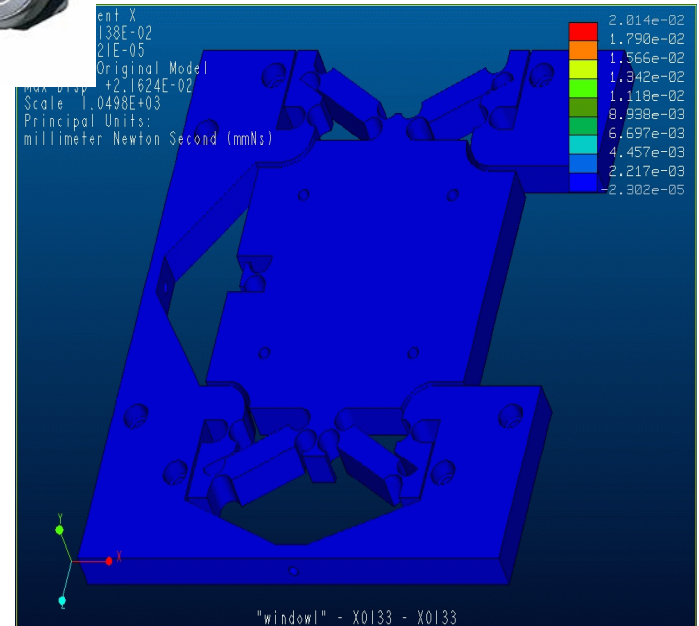
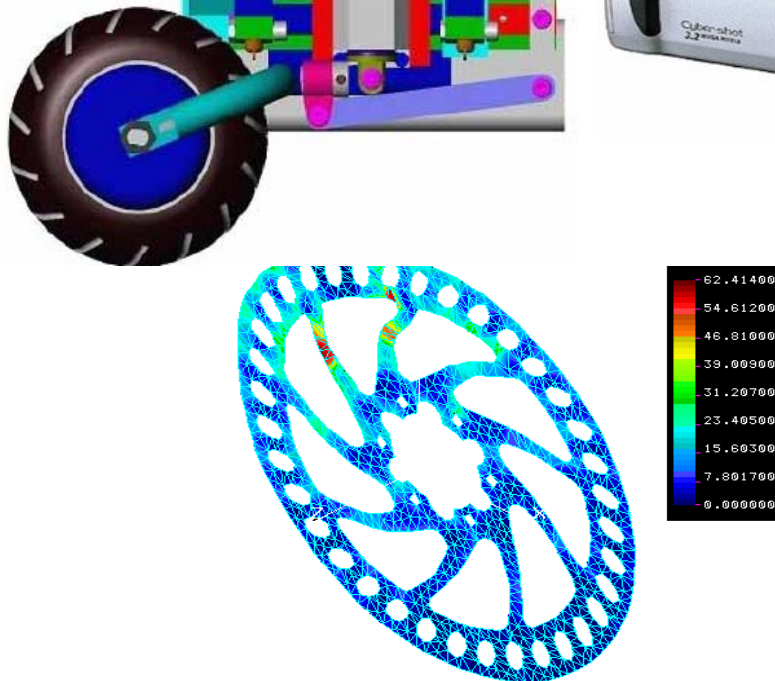
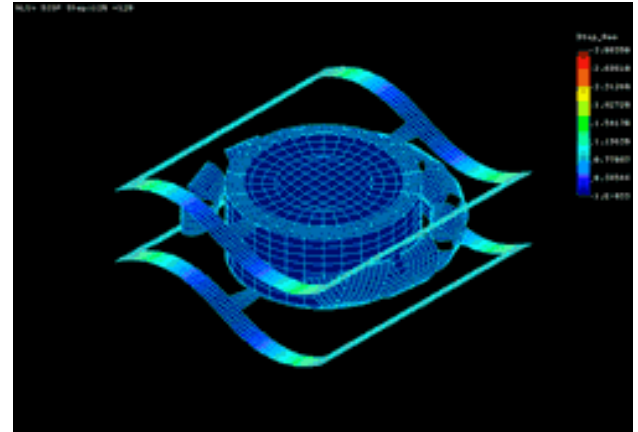
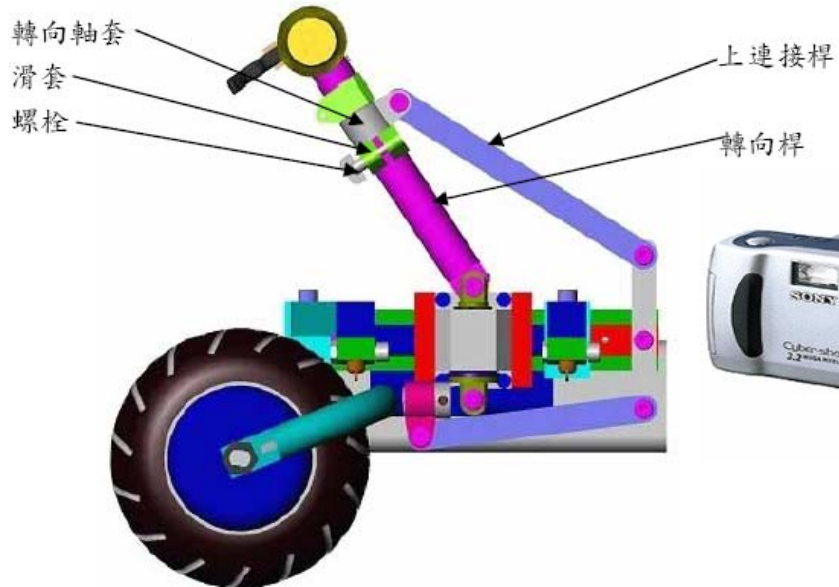
CAM → Machine Center



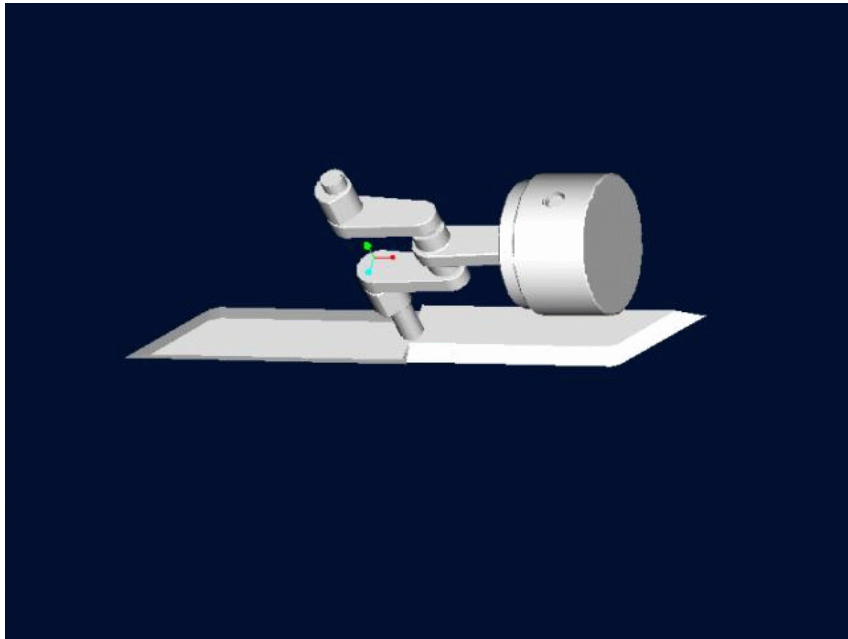
CAM → Machine Center



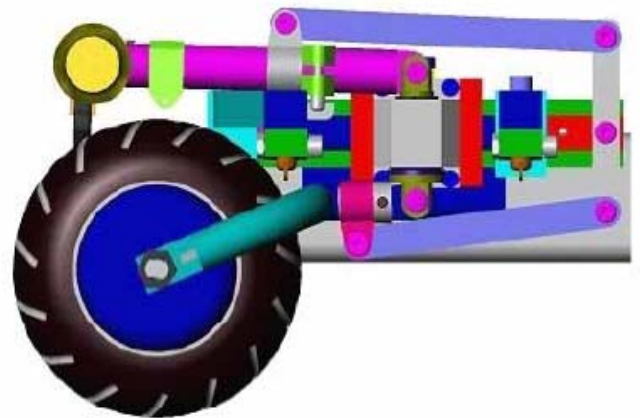
CAD Analysis → CAE



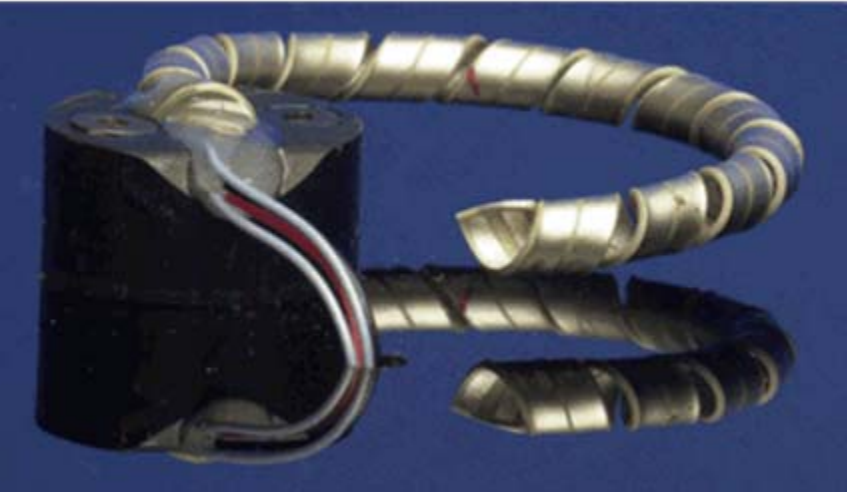
Power & Dynamic motion



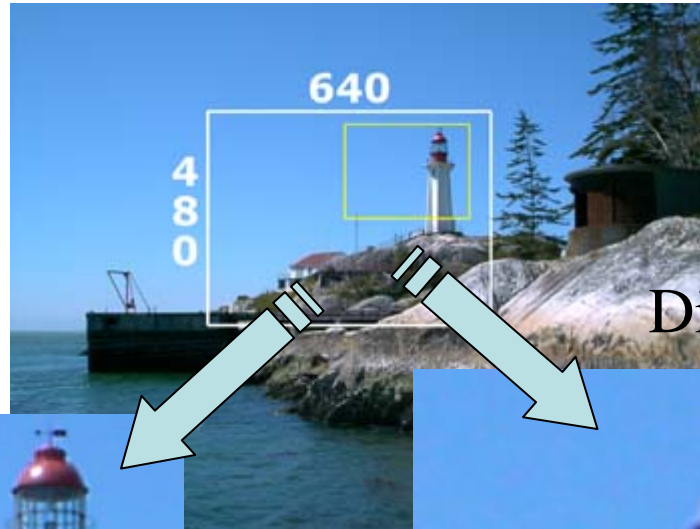
cutmachine1.exe



Realizations



Optical Zoom



Digital Zoom



No degradation of image quality



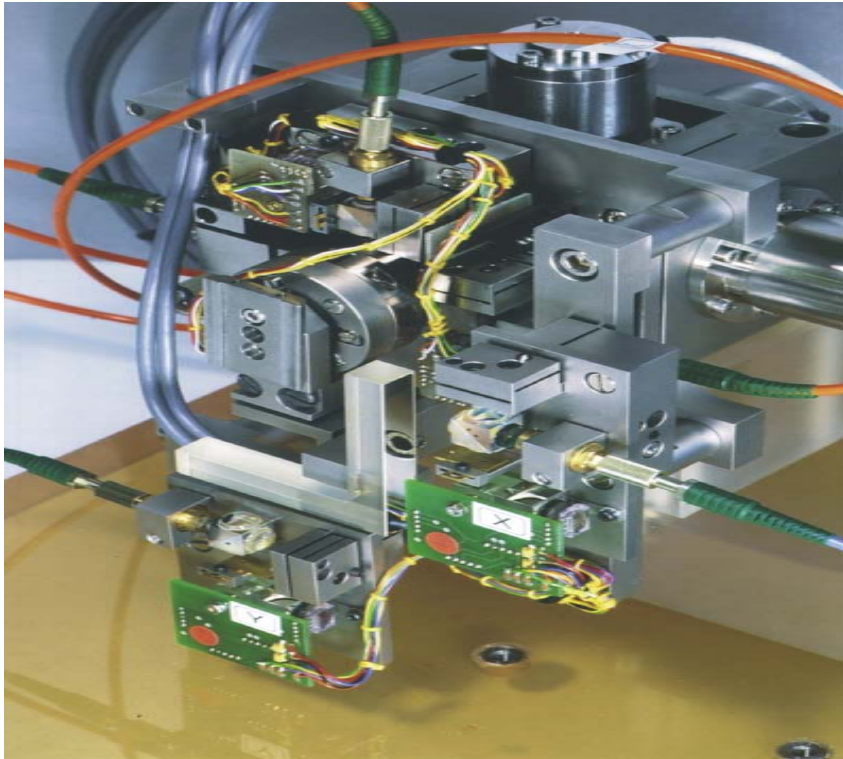
Severe degradation of image quality



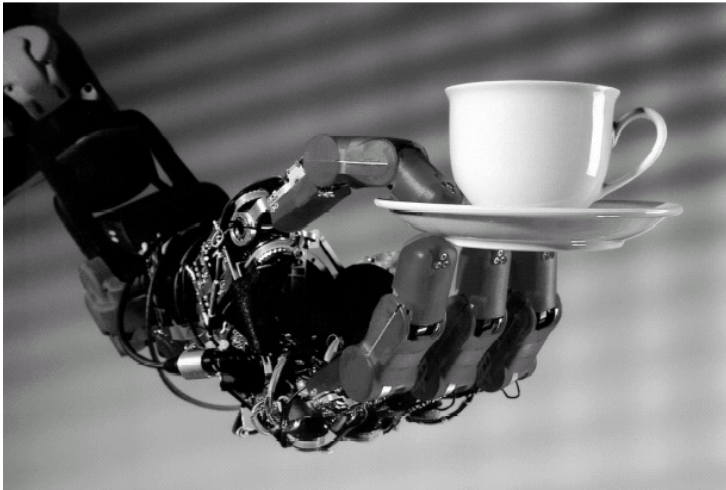
Honda

- Mechanical parts
- Mechanism
- Power
- Motion

Mechanical + Electronics → Nerve



- Robotics
- Imagination → Your Dream

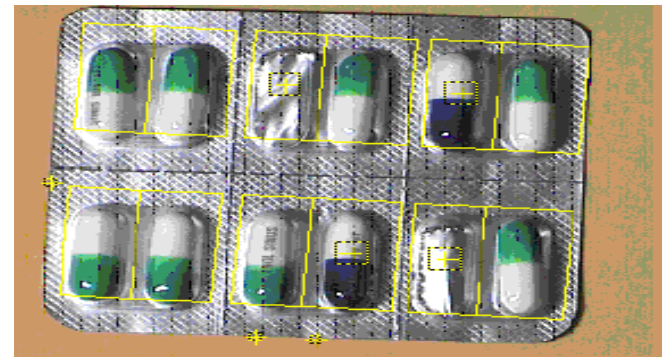
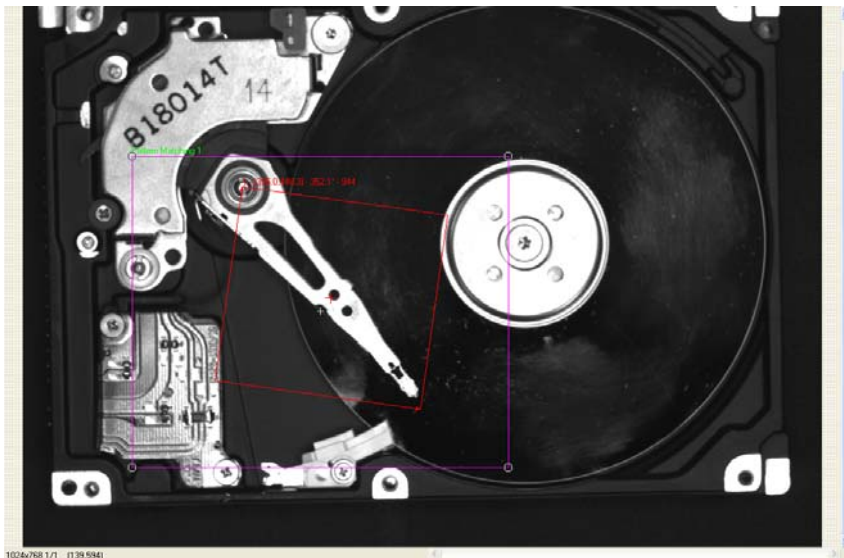
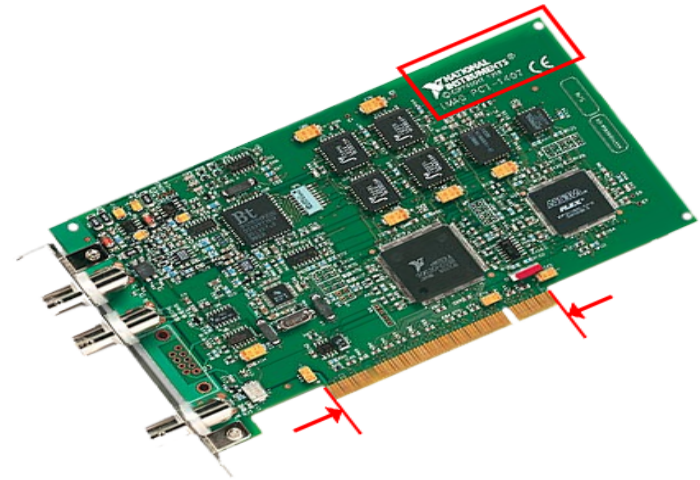


SEGWAY → Your free way

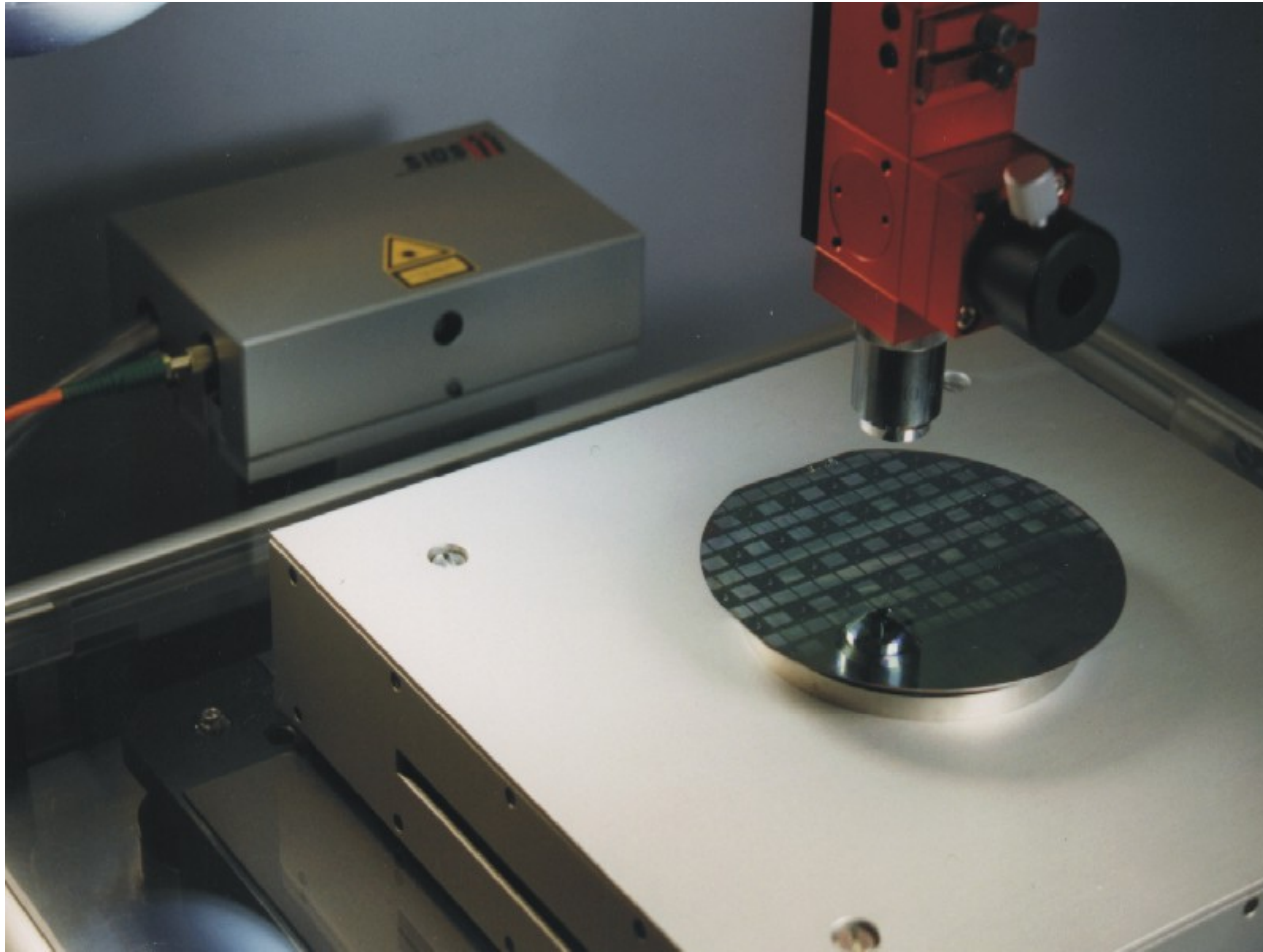
- **Segway Human Transporter**
- **Maximum speeds:** 6 mph (Beginner key), 8 mph (Sidewalk Operation key), 12.5 mph (Open Environment key)
- **Weight:** 83 pounds (38 kg)
- **Motors:** two (one per wheel) brushless, independent, 2-horsepower DC servo motors and helical gearboxes (24:1 gear ratio)



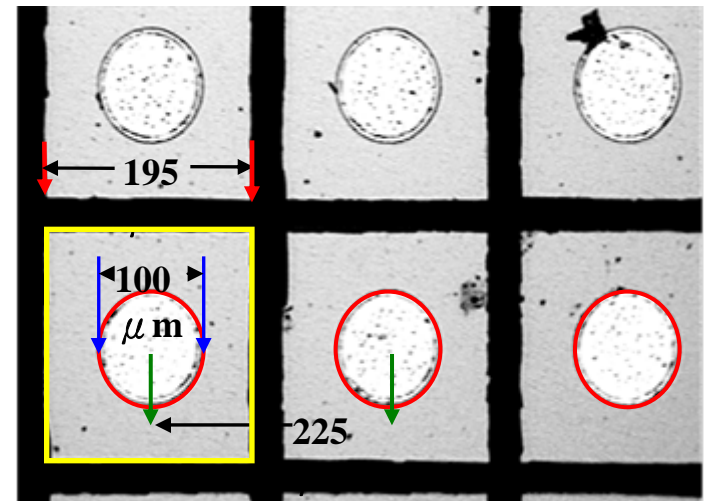
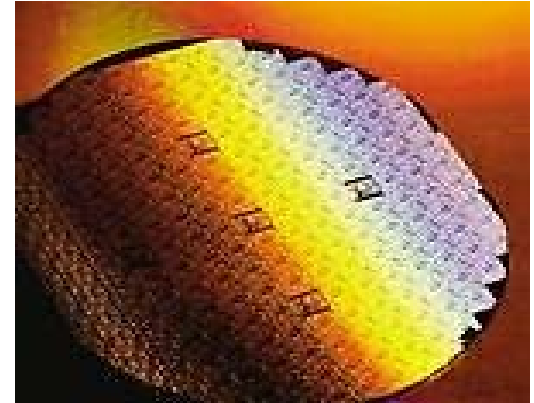
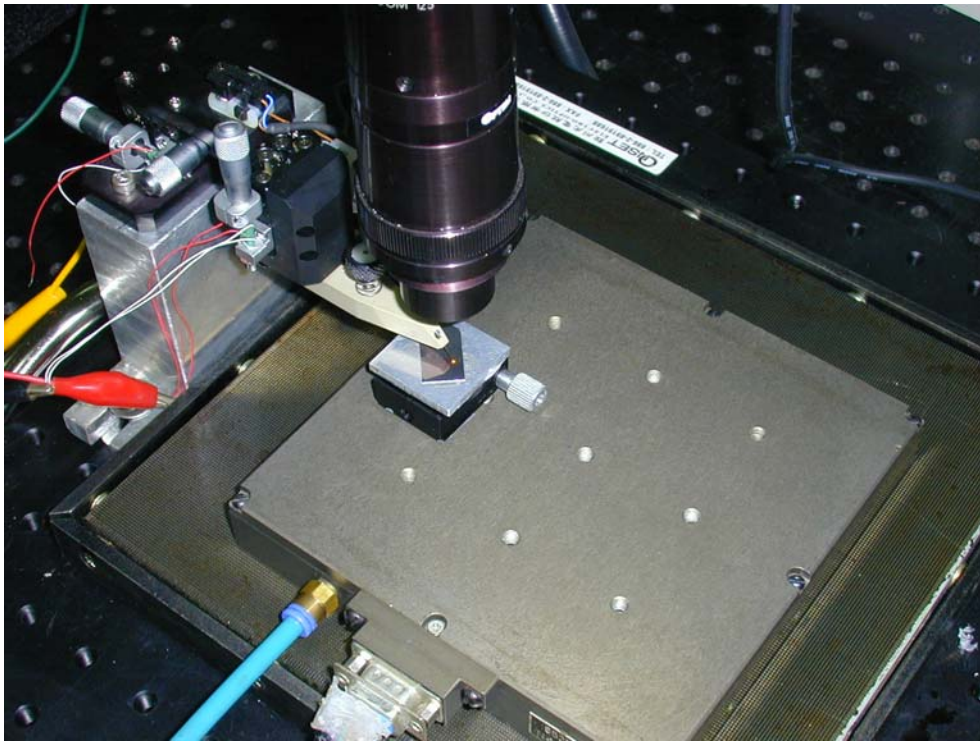
Vision System



Electronics

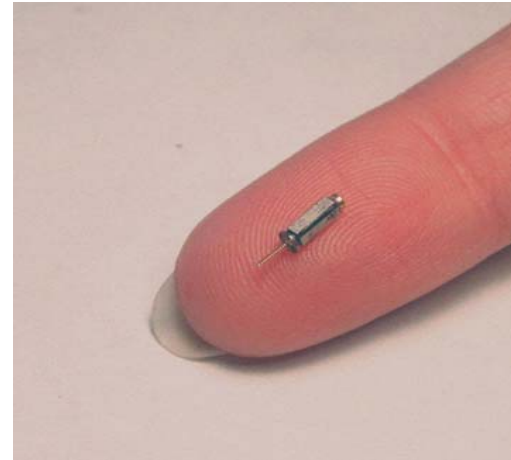
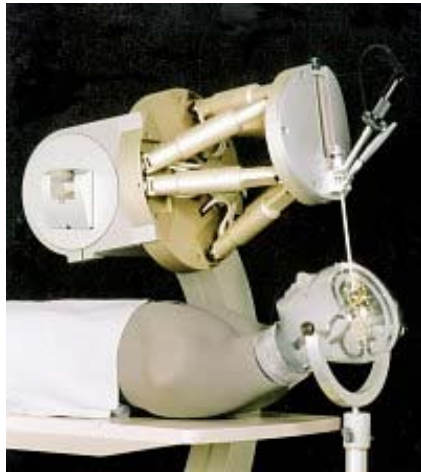


Motion in micro meter

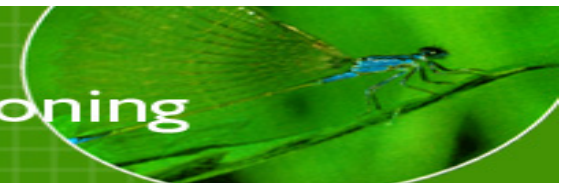


Human hair diameter ?

Motion in ultra fine u/nano meter



Equipment for
Nanopositioning

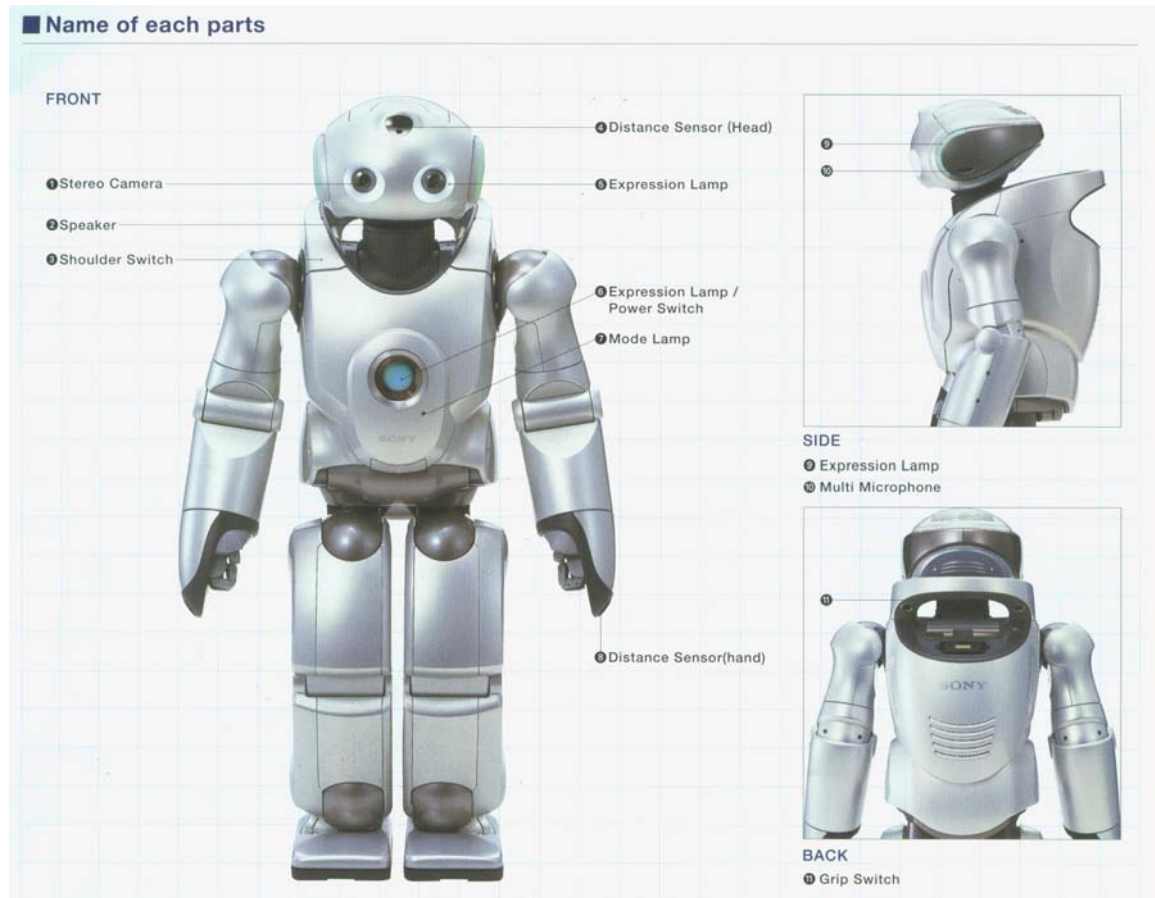


Human and Intelligent Machine



Sony → Entertainment

QRIO (世界第一個會跑步、跳舞的機器人)



TOYOTA

- How to do the human intelligence ?
- Here we go !

Industrial Robots: Show time !

- Fast Moving (created by Philips 15 years ago): How it works ?
- ABB Robots Automation for CRT

Can you Keep a Secret ?

- Before Commercial : designing and test
- Human with Robots
- Intelligent Enough ?
- More Compliance !
- Emotion ?

Conclusion

