

Soft Robots and Soft Sensors For Safe and Adaptive Manipulation

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1. Soft Actuation for Industry

- Most industrial robots are stiff
- Compliance achieved through torque sensors
 - No intrinsic safety
 - Time delay
- Intrinsic safety can be achieved with springs (SEA)
 - Used a lot in research
 - But rarely used in industry:
compromised position control

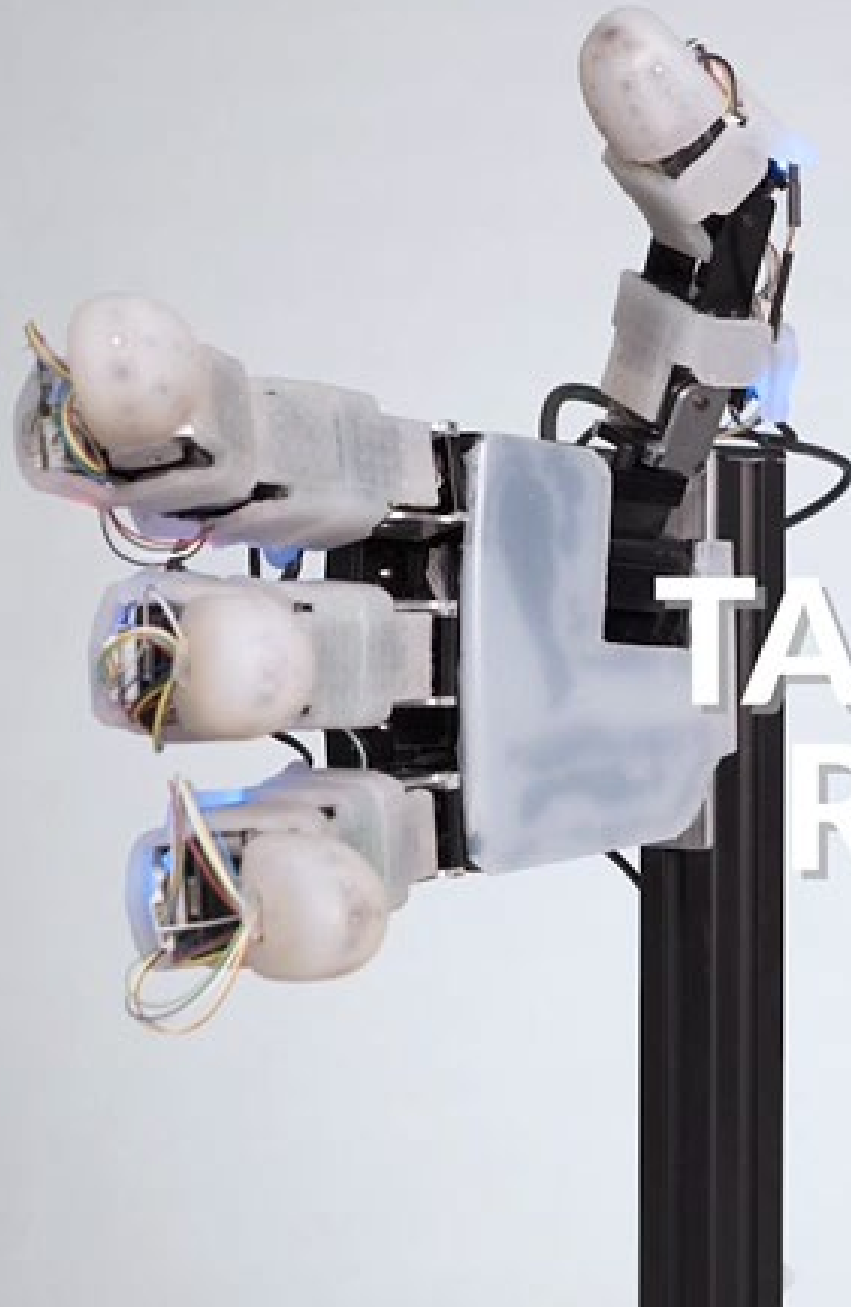
We want:

- **Precise**
- **Fast**
- **Safe**

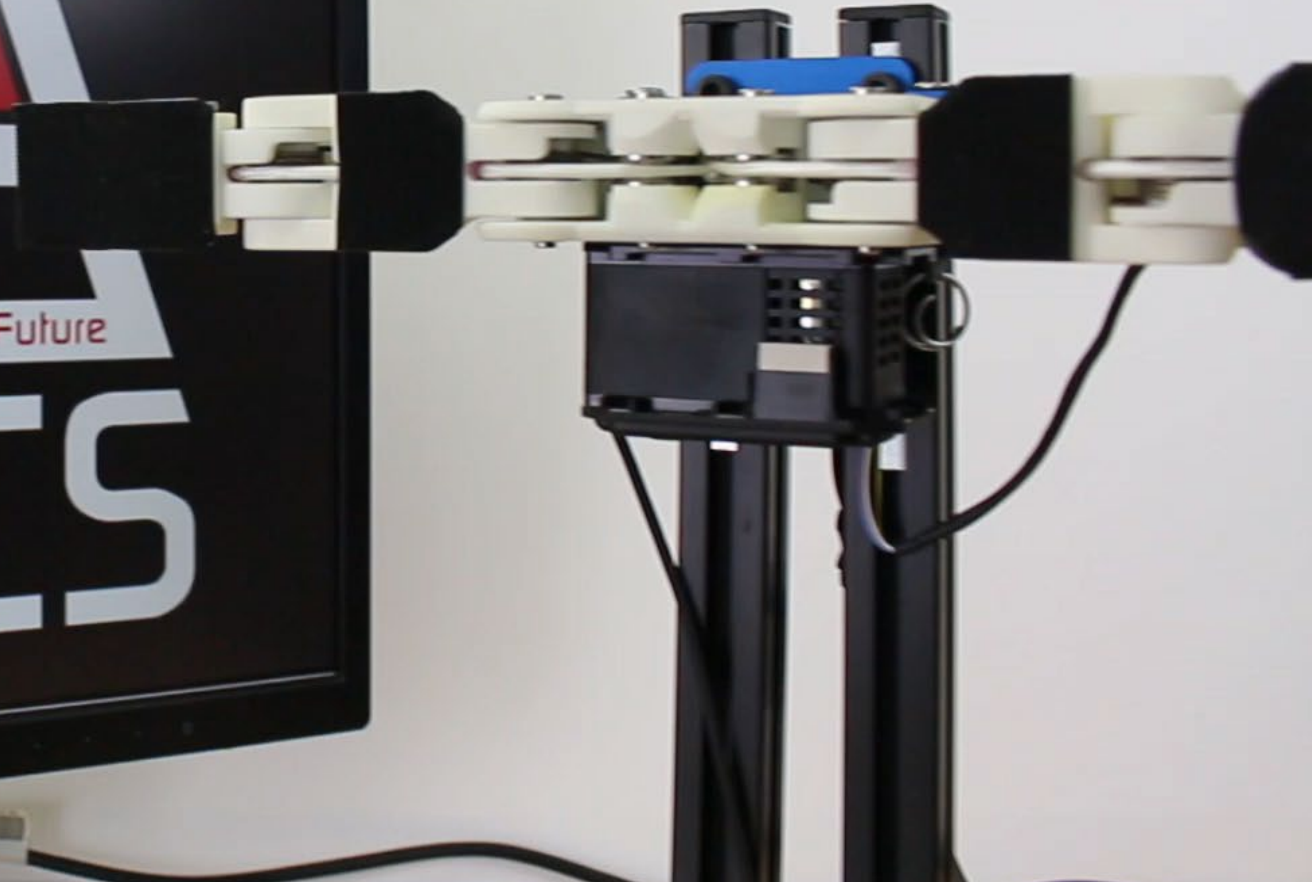
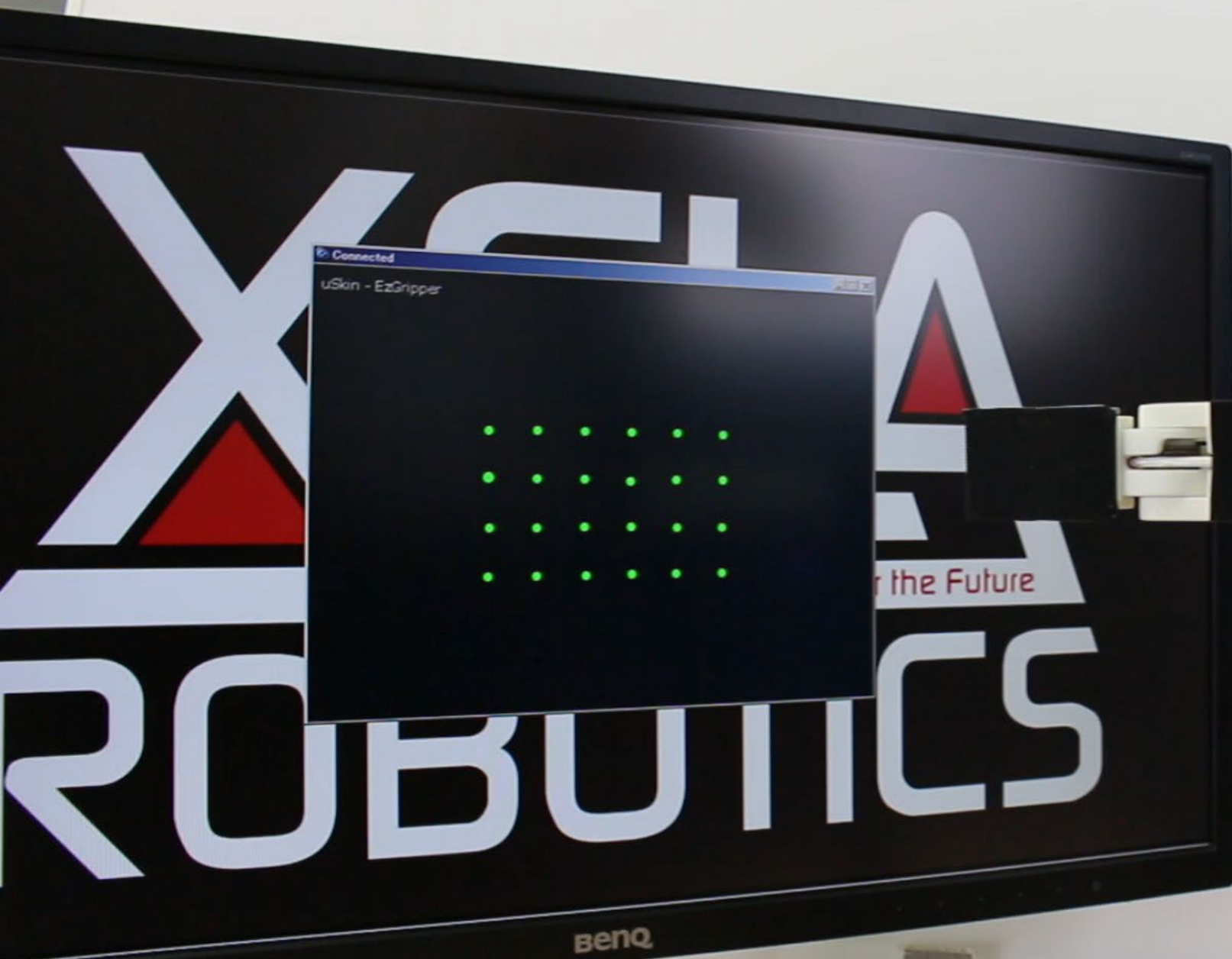


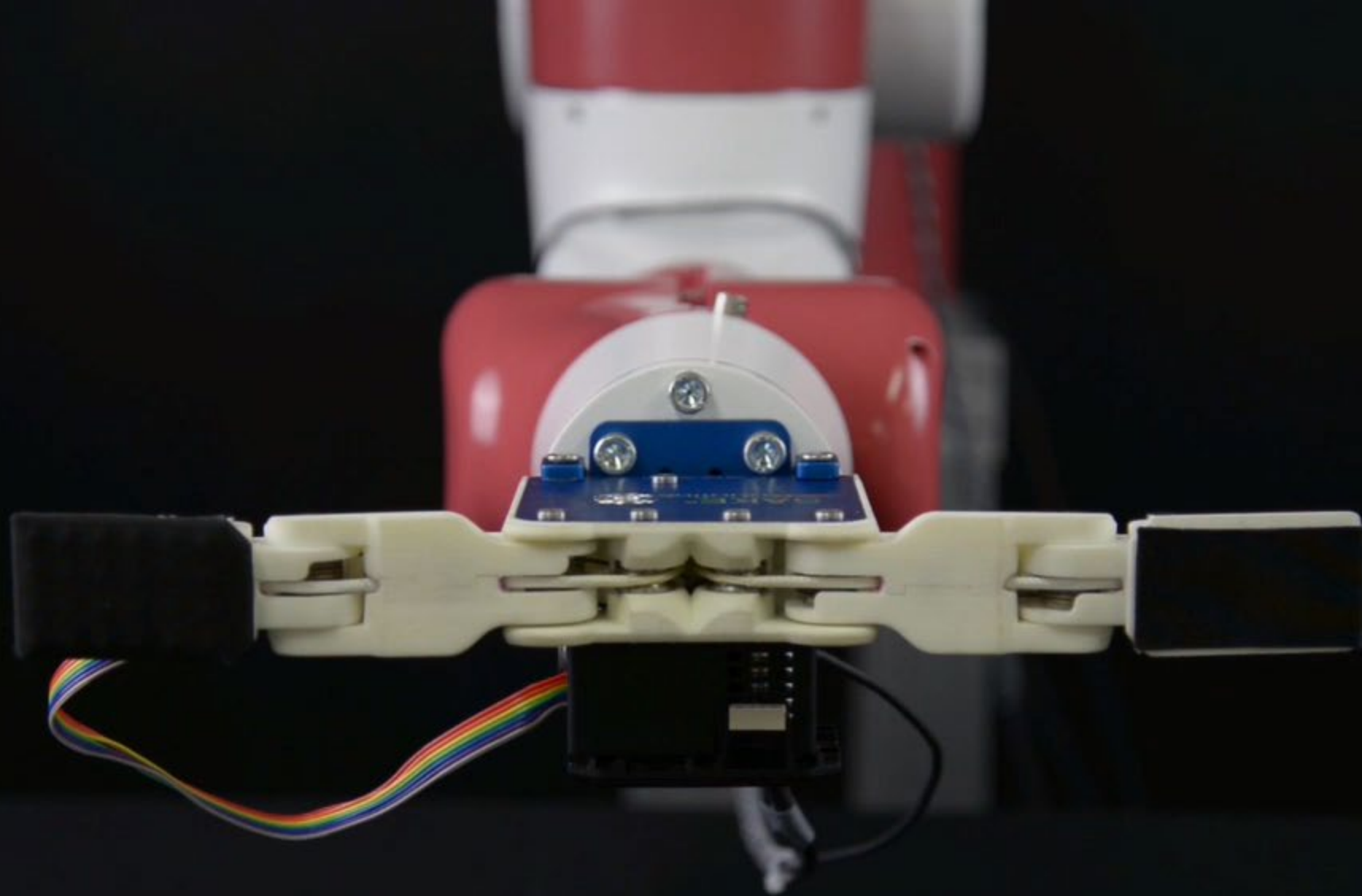
2. Soft Sensitive Skin for Manipulation

- Current sensors: too big, mostly only 1-axis force
- uSkin by XELA Robotics
 - Soft
 - Distributed 3-axis measurements
 - Physically small
 - Digital output
 - Easy to integrate



AWARD WINNING
**TACTILE SENSOR
ROBOT HAND**





USKIN FEATURE:
SLIP DETECTION

Interested in XELA or Nicebot?

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