

# ROBOTIC APPLICATIONS



## HEAD & NECK

### ROTARY POSITION SENSORS:

- Neck twist
- Head tilt

### PIEZO FILM SENSORS:

- Face (touch)
- Touch on all exposed surfaces

### PHOTO OPTIC:

- Lidar for object recognition
- Lidar for collision avoidance

### TILT:

- Gait monitor
- Balance

## HANDS

### LINEAR POSITION SENSORS:

- Wrist and forearm

### ROTARY POSITION SENSORS:

- Wrists
- Knuckles
- Finger joints

### FORCE SENSORS:

- Finger tips (touch)
- Palm (grip forces)

### PIEZO FILM SENSORS:

- Finger tip touch
- Touch on all exposed surfaces

## JOINTS

### LINEAR POSITION SENSORS:

- Elbows and shoulders
- Hips and knees

### ROTARY POSITION SENSORS:

- Wrists and ankles
- Torso and neck

### SAFETY TORQUE SENSORS:

- All rotary articulated joints

## FEET

### LINEAR POSITION SENSORS:

- Lower leg

### ROTARY POSITION SENSORS:

- Ankles
- Toes

### FORCE SENSORS:

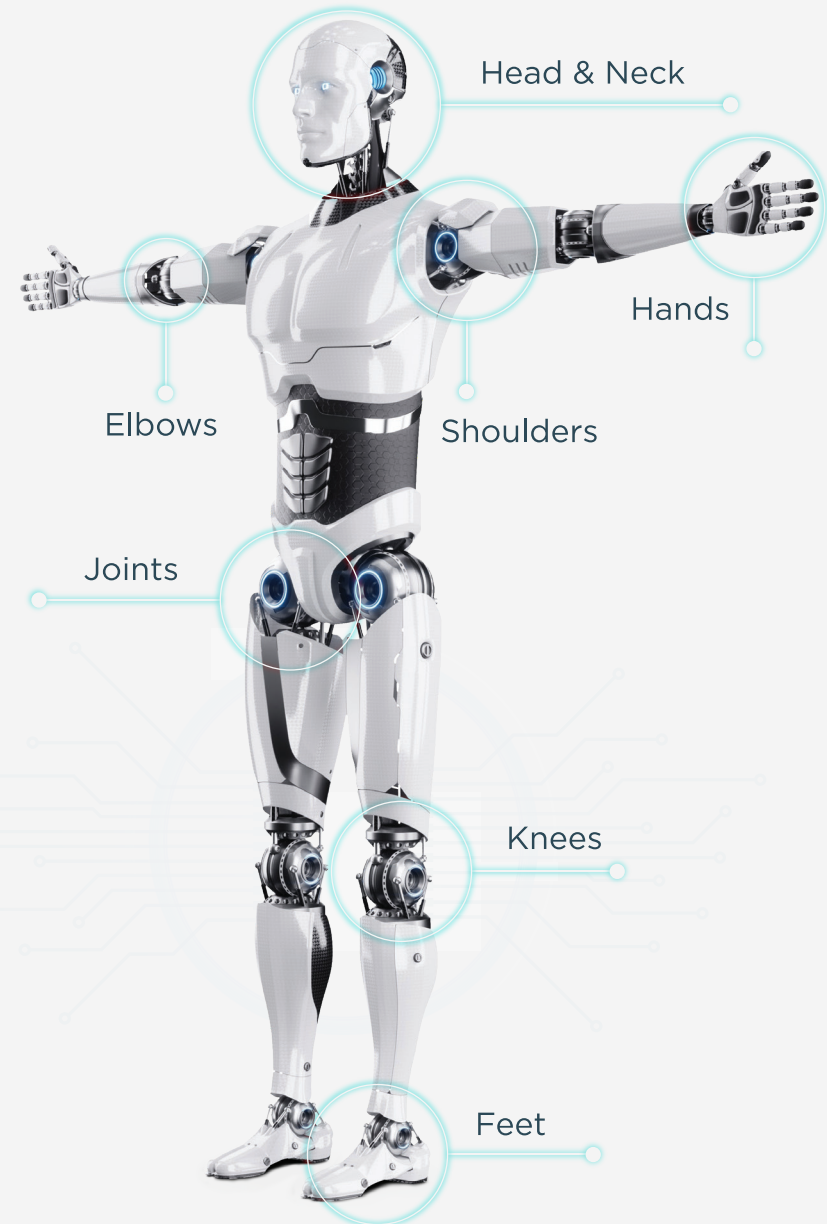
- Toe & heel (touch)
- Total foot (balance)

### PIEZO FILM SENSORS:

- Ball, heel, toe tip (touch)
- Touch on all exposed surfaces

### VIBRATION & SHOCK:


- Monitor jumping & running



# SENSOR DRIVEN SOLUTIONS FOR HUMANOID ROBOTS



## SENSOR TYPES

Linear Position	Rotary Position	Force & Torque	Vibration, Shock, Tilt	Piezo Film
 <p>LVDT</p>	 <p>RVDT/RVIT</p>	 <p>Compression Load Cell</p>	 <p>2-Axis Tilt</p>	 <p>Piezo Tabs</p>
 <p>Cable Extension</p>	 <p>Magnetoresistive Chips</p>	 <p>Tension Load Cell</p>	 <p>Piezo Embedded Accel</p>	 <p>Sheets</p>
 <p>Precision Potentiometer</p>	 <p>Precision Potentiometer</p>	 <p>Safety Torque Sensor</p>	 <p>MEMS Packaged Accel</p>	 <p>PIN &amp; APD Photodiodes</p>
			 <p>MEMS Embedded Accel</p>	 <p>PIN 2-D</p>

