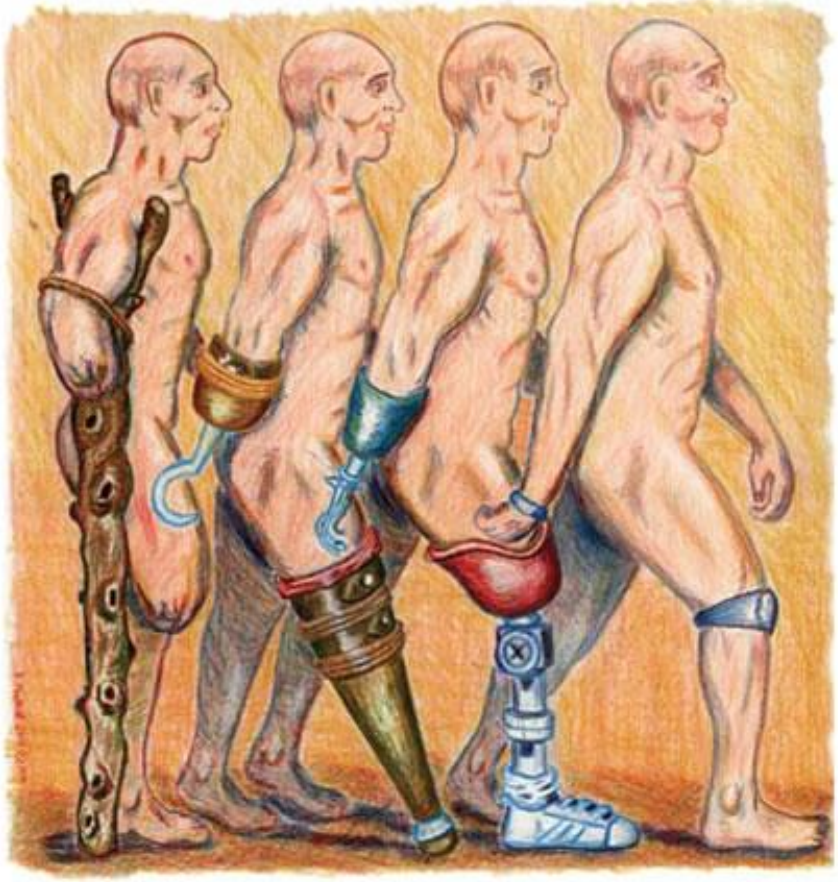
Prosthesis & Biomechatronics

History of prosthesis



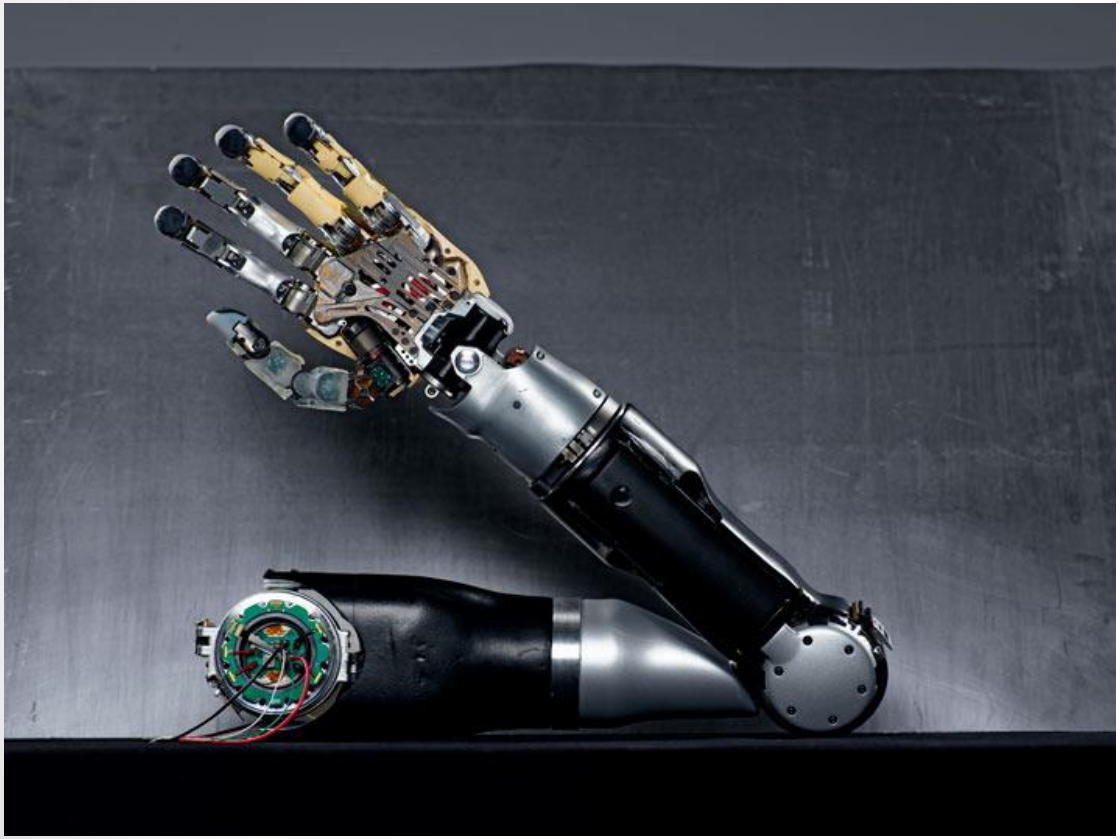
From the beginning…

- From ancient civilization
- Materials: wood, metal, leather
- Dark Ages: the knight's armor
- Pirate's pigleg and hook

Modern limbs

- New materials: plastics, carbon-fiber composites
- Electronic technology's development
- Modern hygiene

Biomechatronics

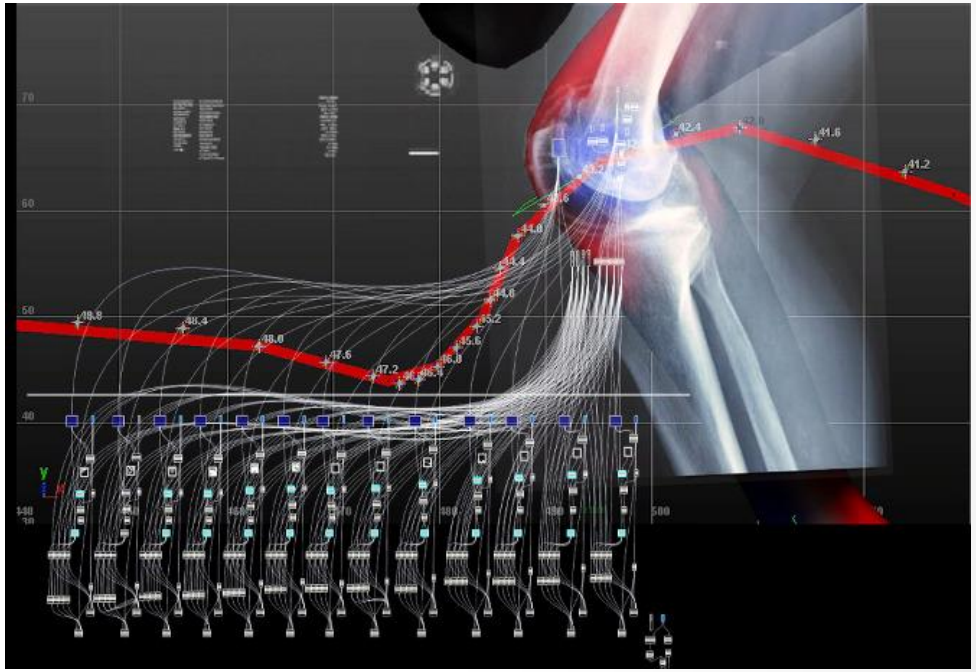


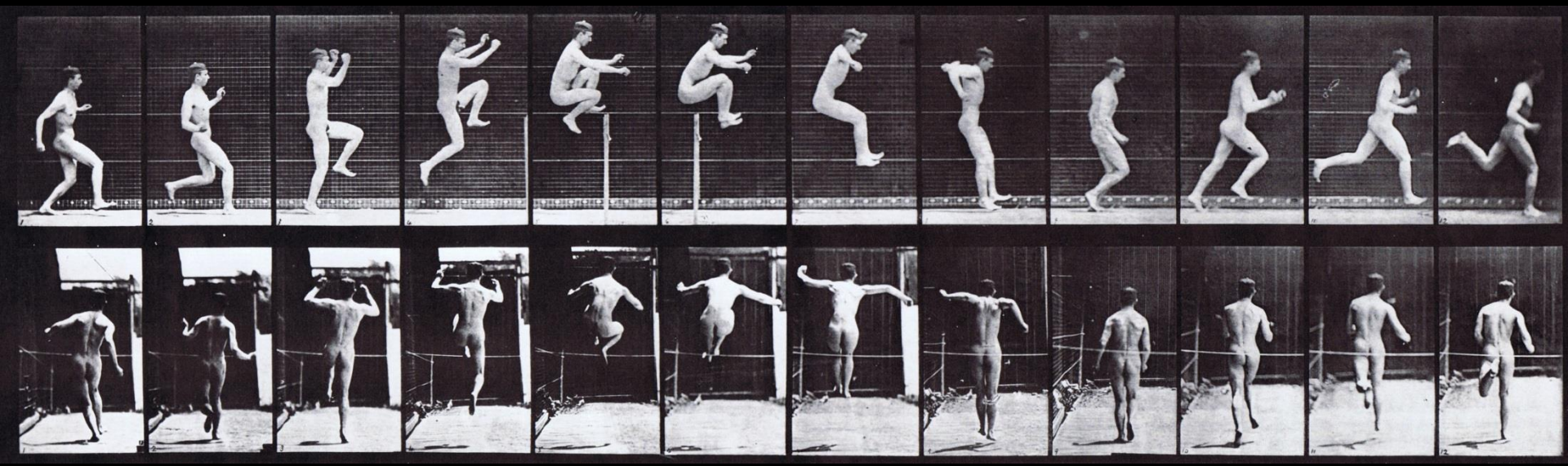
Includes:

- Mechanics
- Biology
- Electronics
- Neurosciences
- Robotics

Research

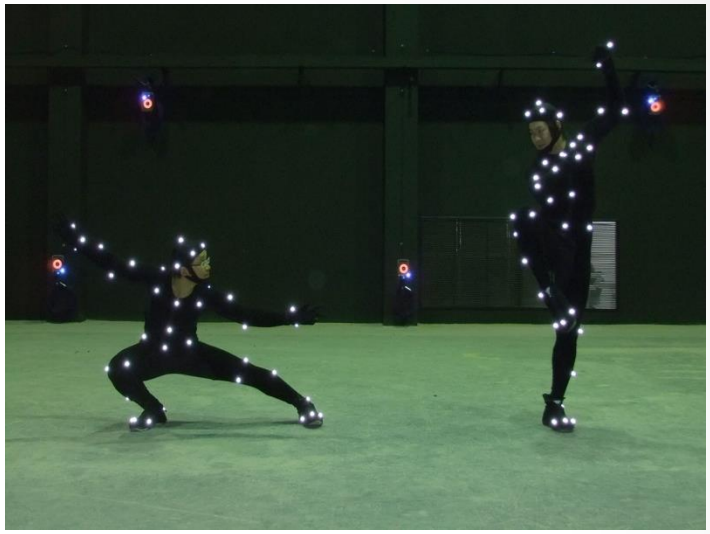
- Investigate, analyze the nature (bionics)
- Interfacing
- Testing

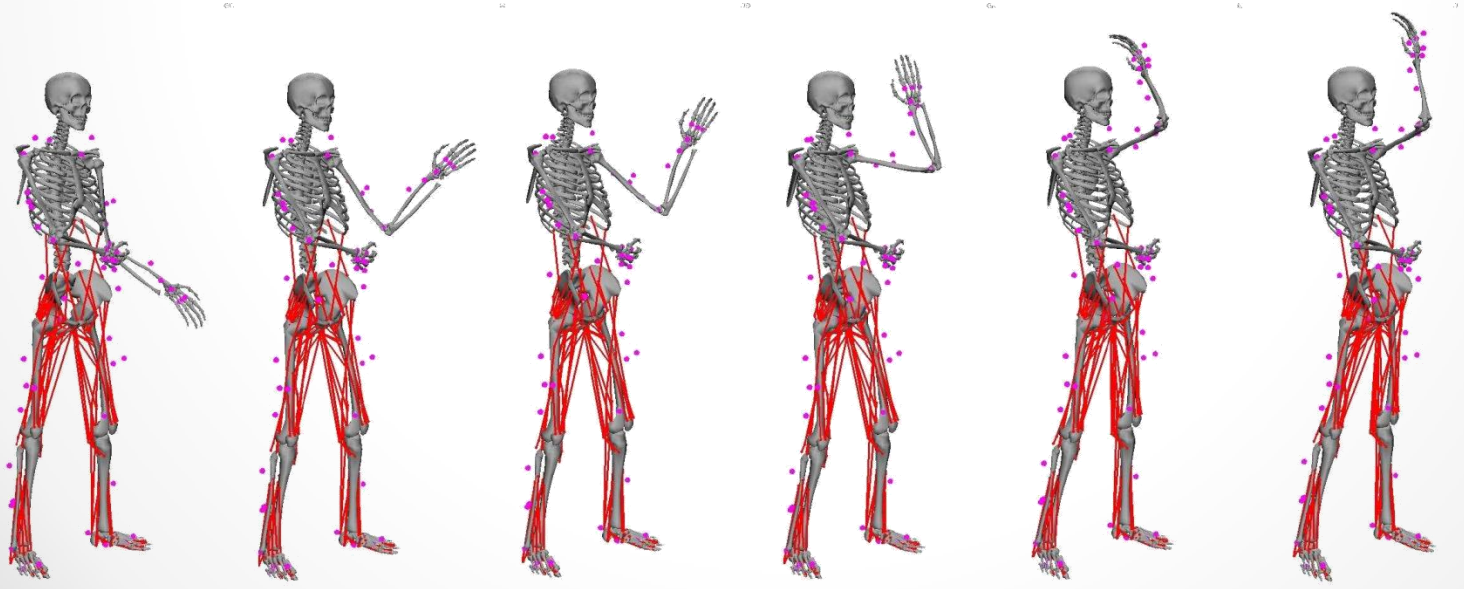




E. J. Muybridge: Running Through High Jump

Nowdays





How it works

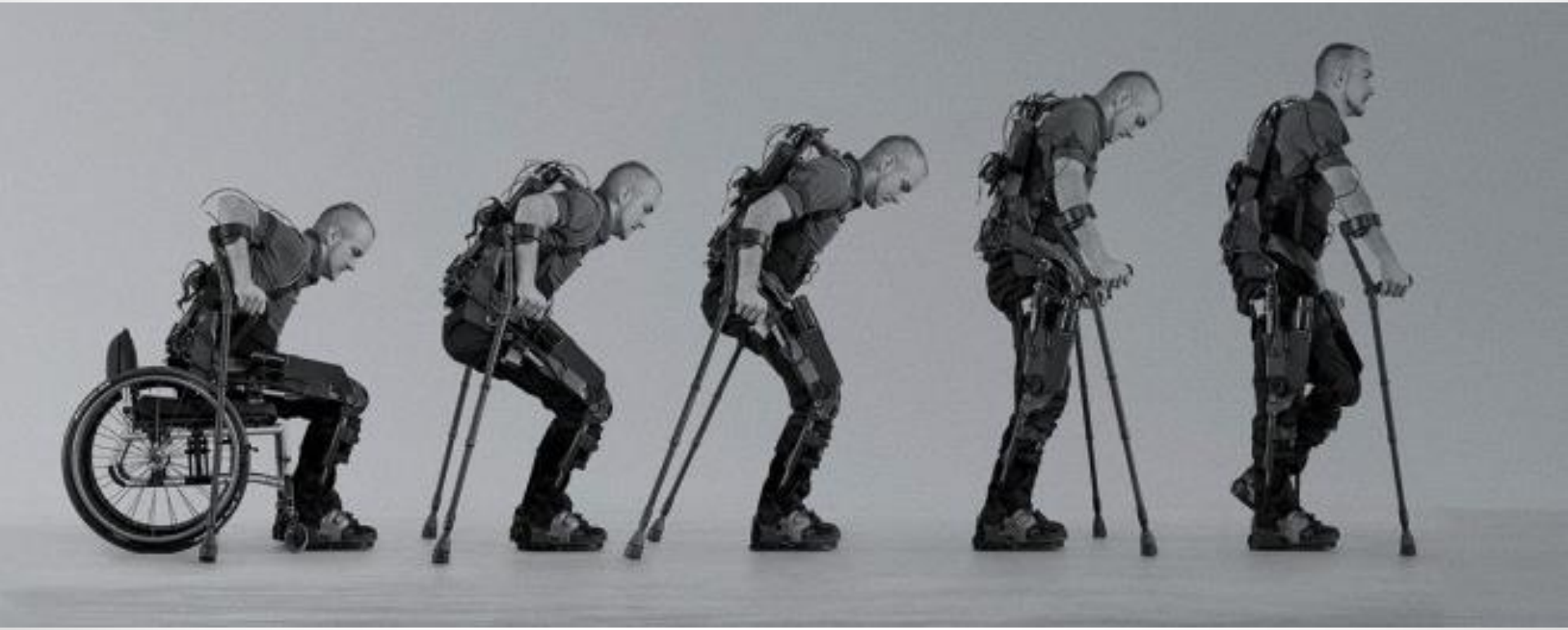
- Biosensors – nerve cells
- Mechanical sensors – muscle spindles
- Controller – brain, spinal cord
- Actuator - muscles

Argus II

- Retinal prosthesis
- Digital camera in the glasses
- Video-processing microchip
- Radio transmitter
- Radio receiver
- Retinal transplant

ReWalk

- Instead of wheelchair



i-limb ultra

Revolution of the hand prosthesis