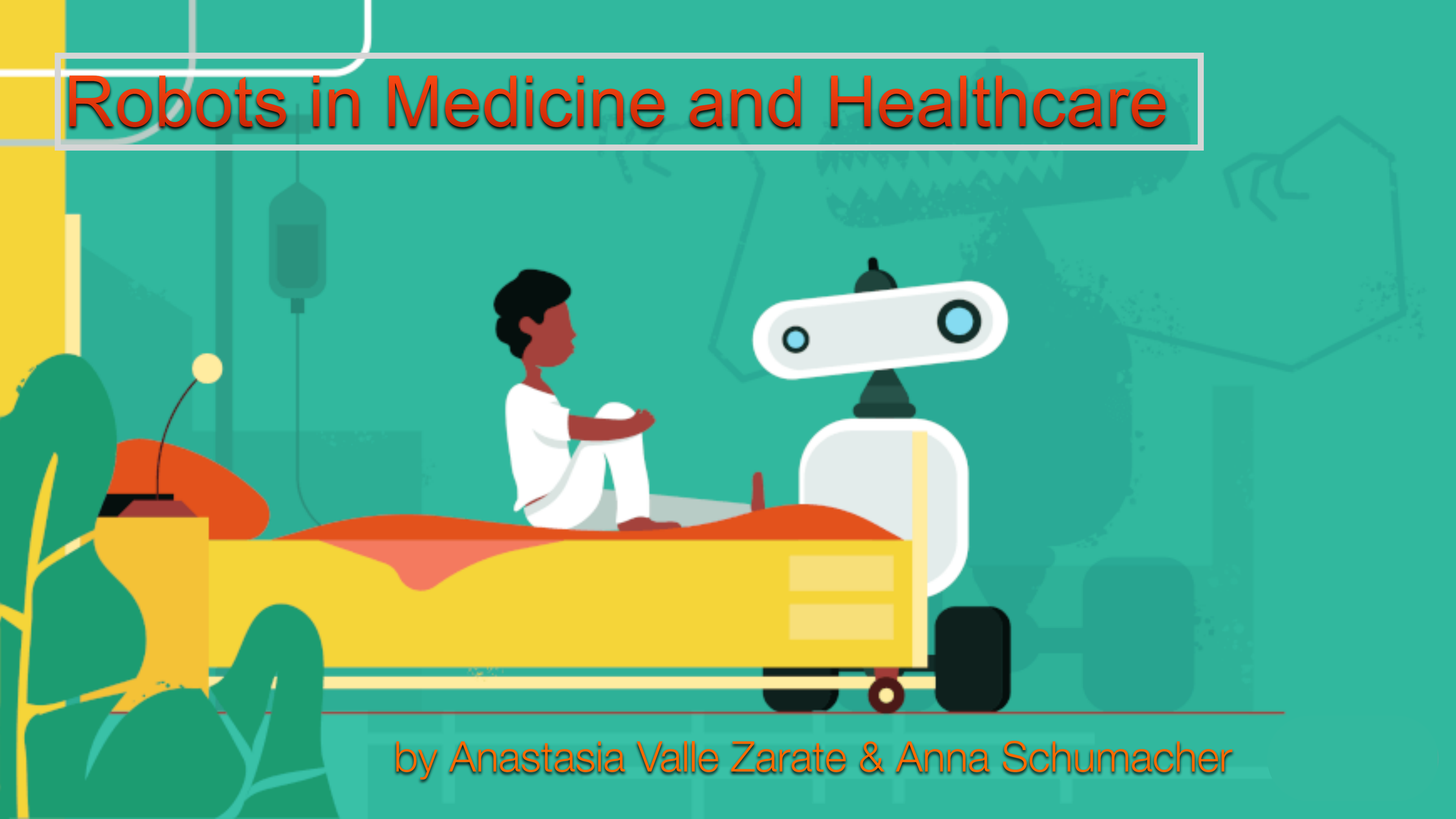
Robots in Medicine and Healthcare



by Anastasia Valle Zarate & Anna Schumacher

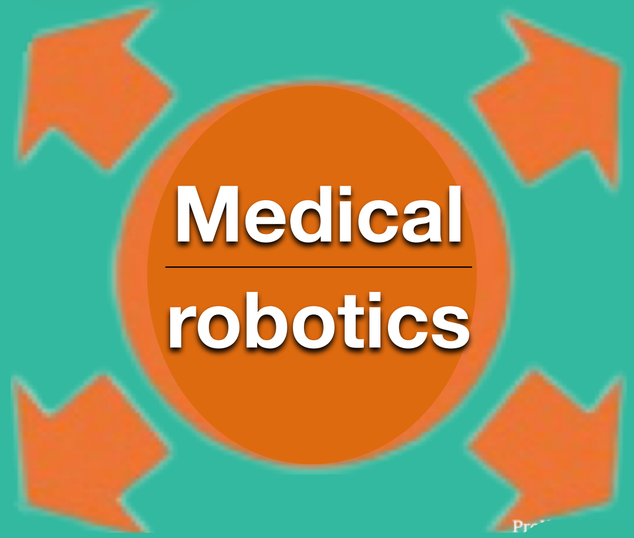
Structure

- types of robots used in medical fields
- examples
  - Surgical robots
  - Hospital and ambulatory care
  - Prosthetics and rehabilitation
  - Nano-robots
- advantages and disadvantages
- ethical aspects
- visions of the future

Types of robots used in medical

Nanorobots

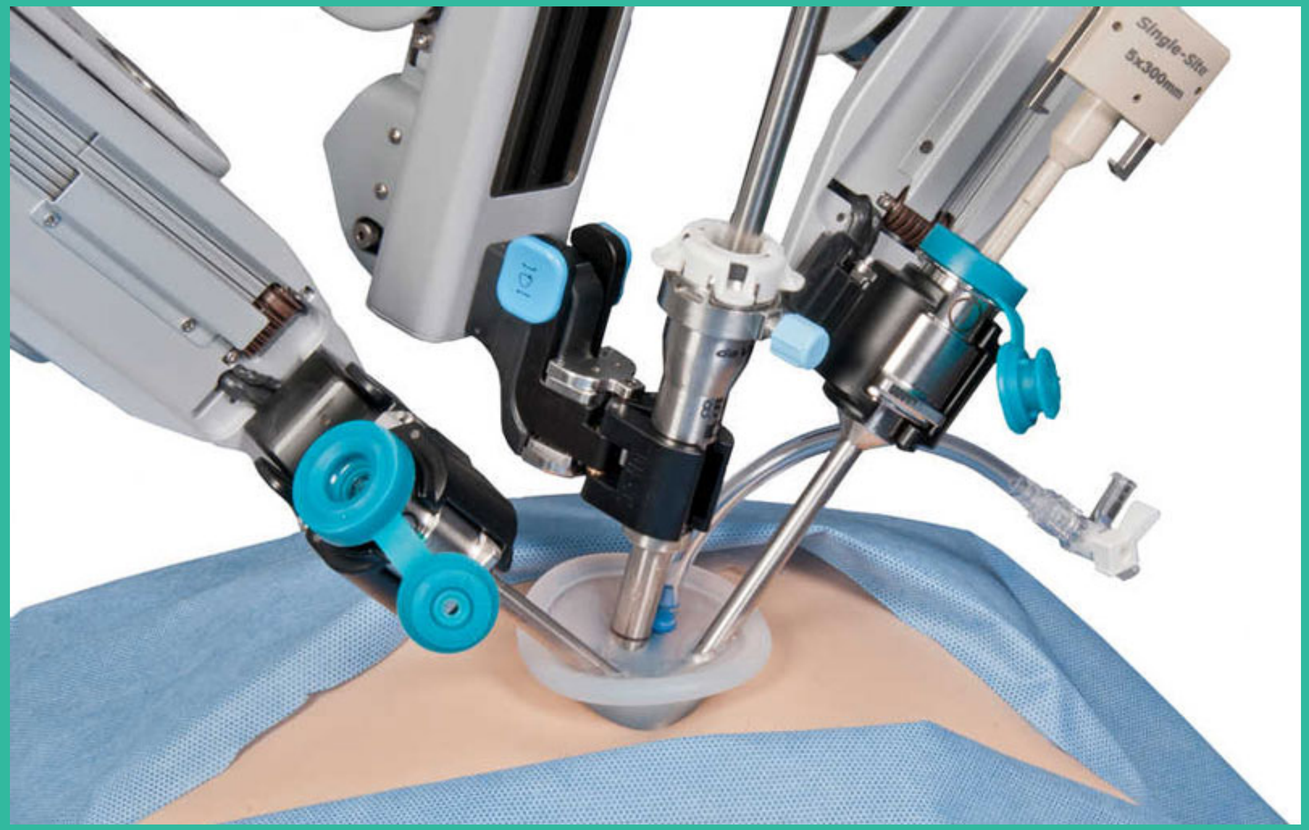
Surgical robots



Hospital and ambulatory care

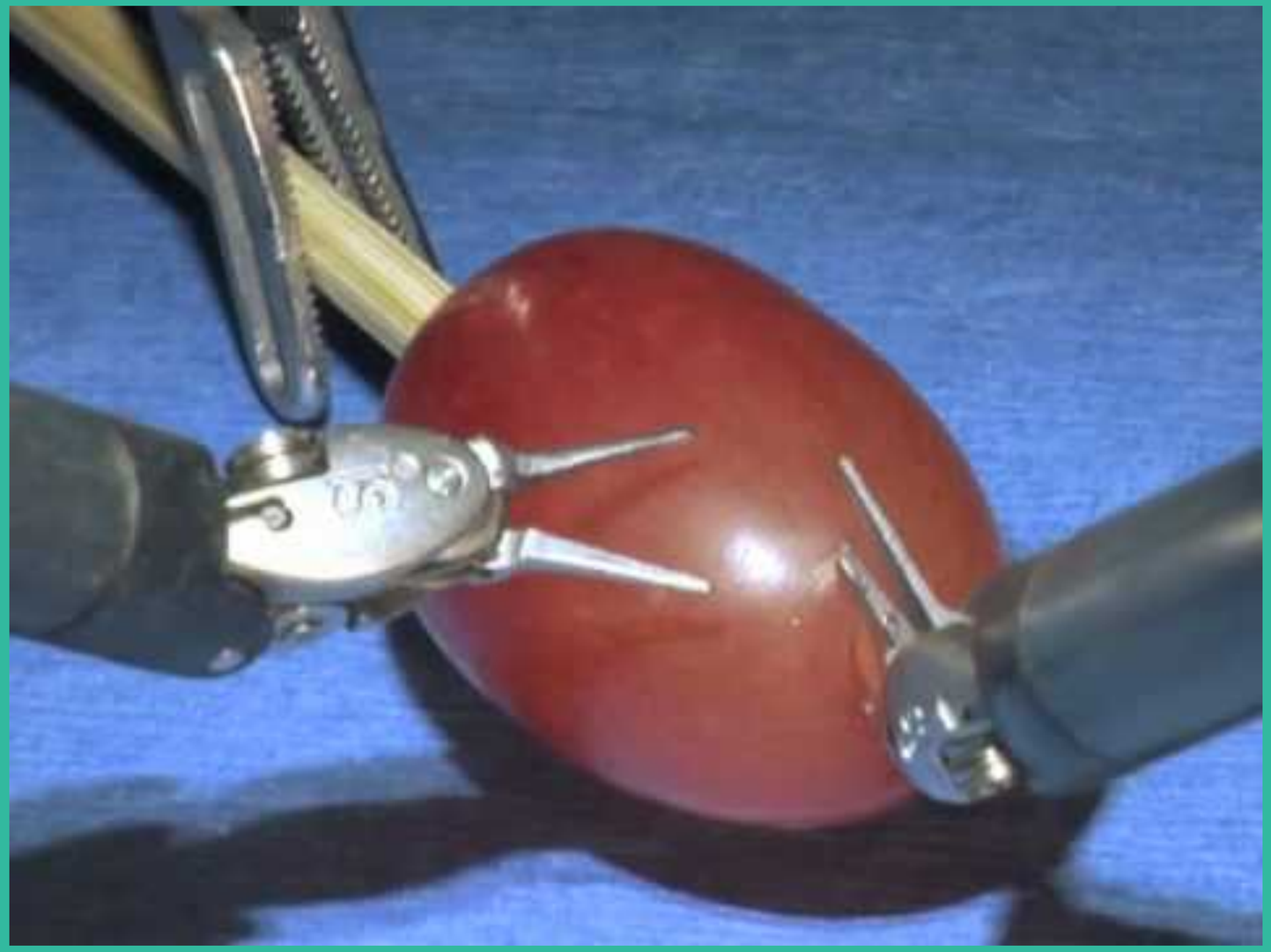
Prosthetics and rehabilitation

Surgical Robots

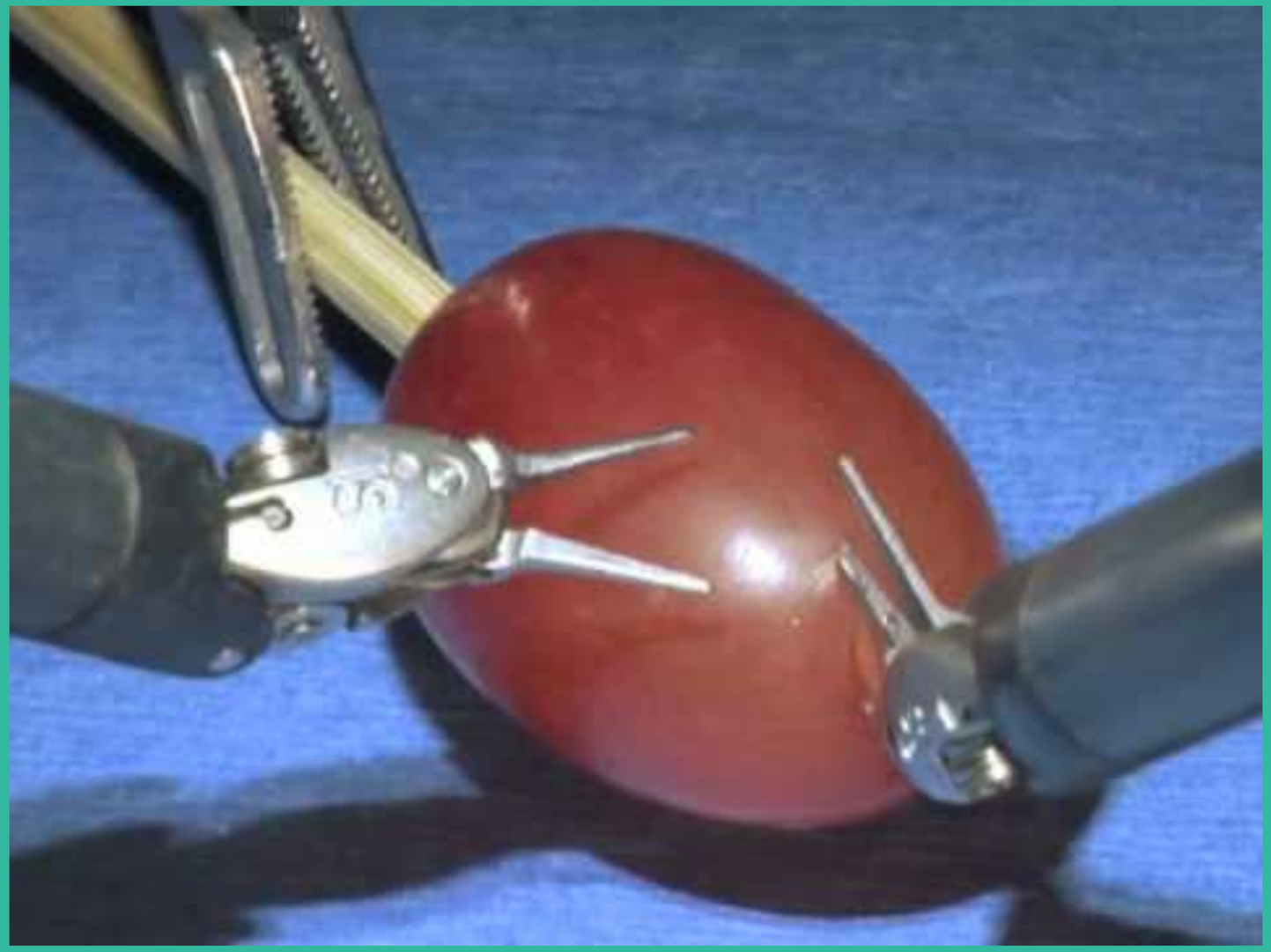


- complex procedures
- more precision, flexibility and control
- minimally invasive surgery
- “da Vinci Surgical system“

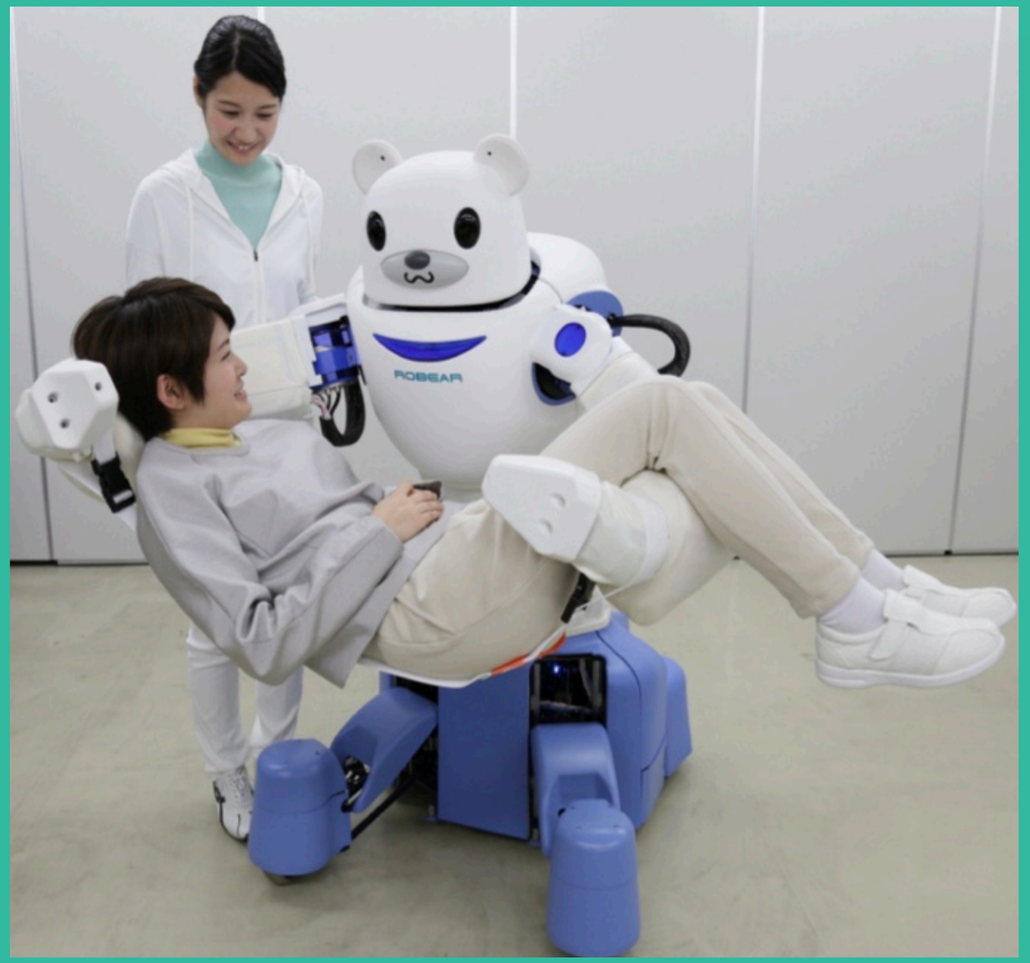
Surgical Robots



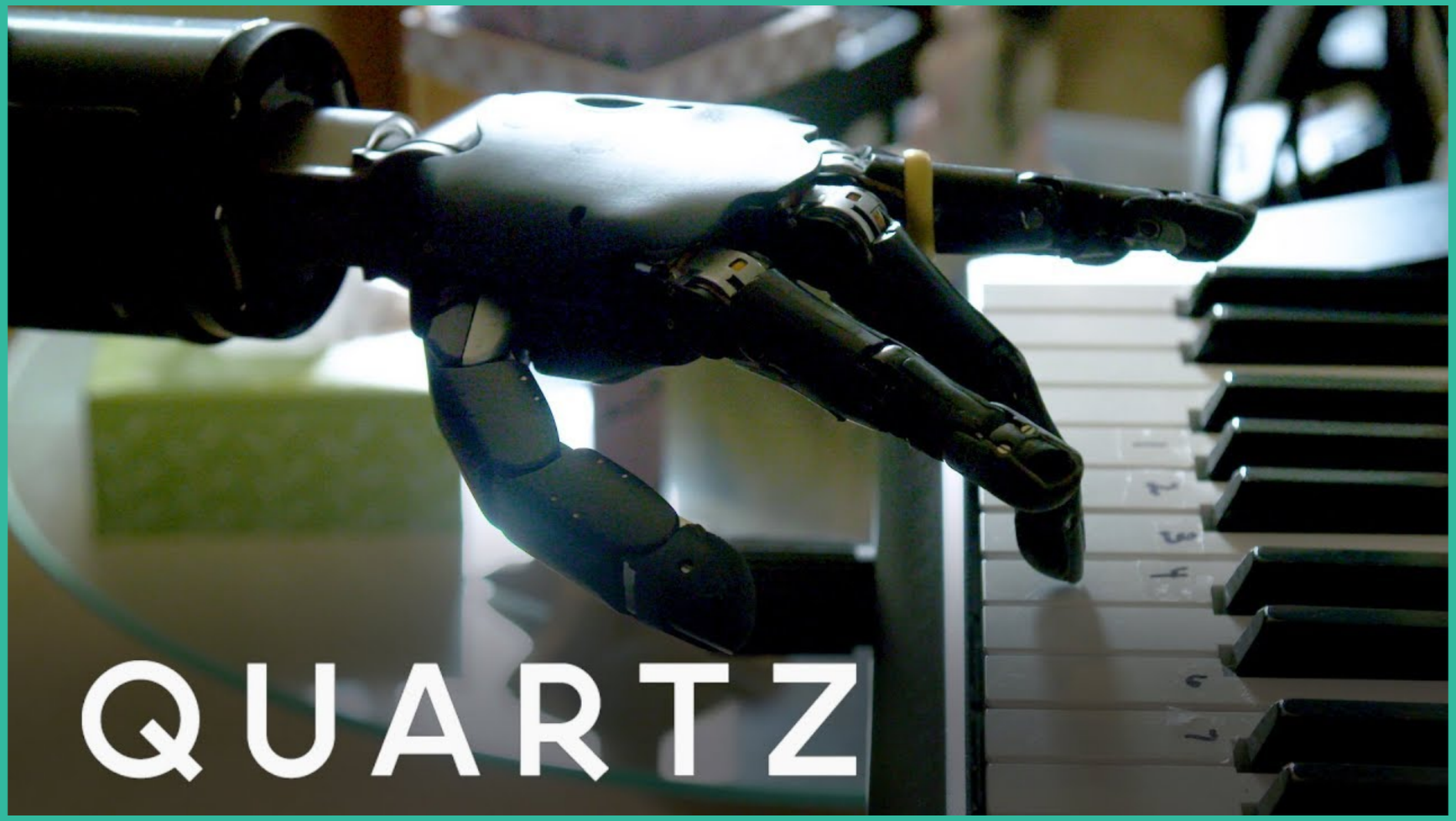
Surgical Robots



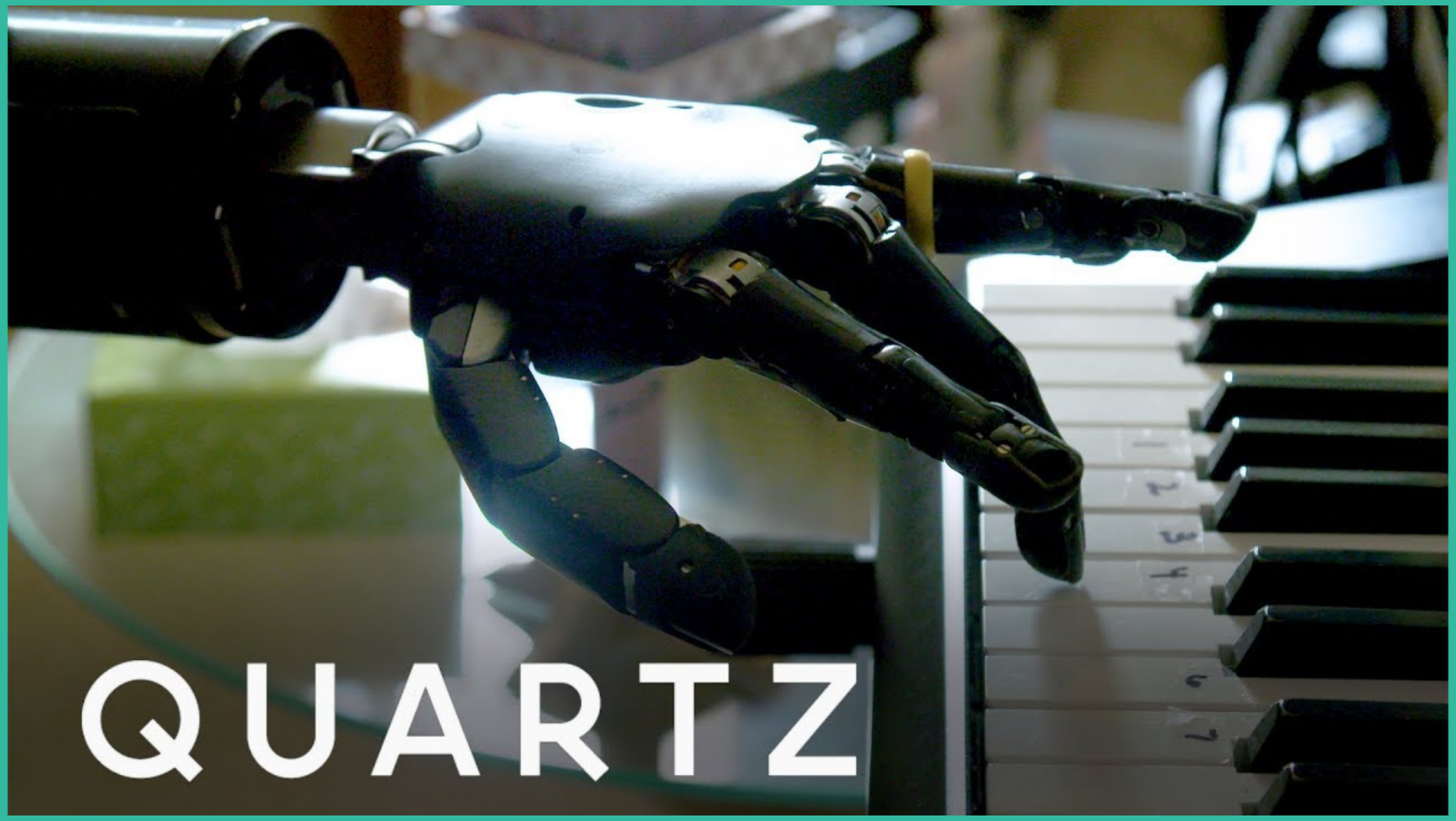
Hospital and ambulatory care



Prosthetics and rehabilitation

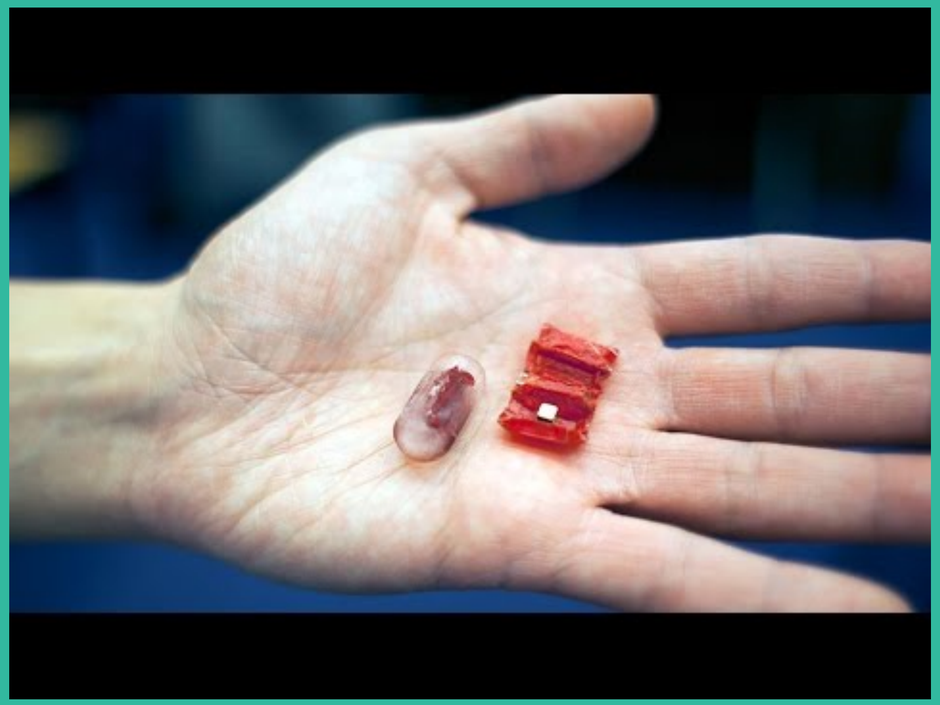


Prosthetics and rehabilitation



Nanorobots

- nanorobots / nanobots
- 50–100 nm wide
- drug delivery
- remove foreign objects



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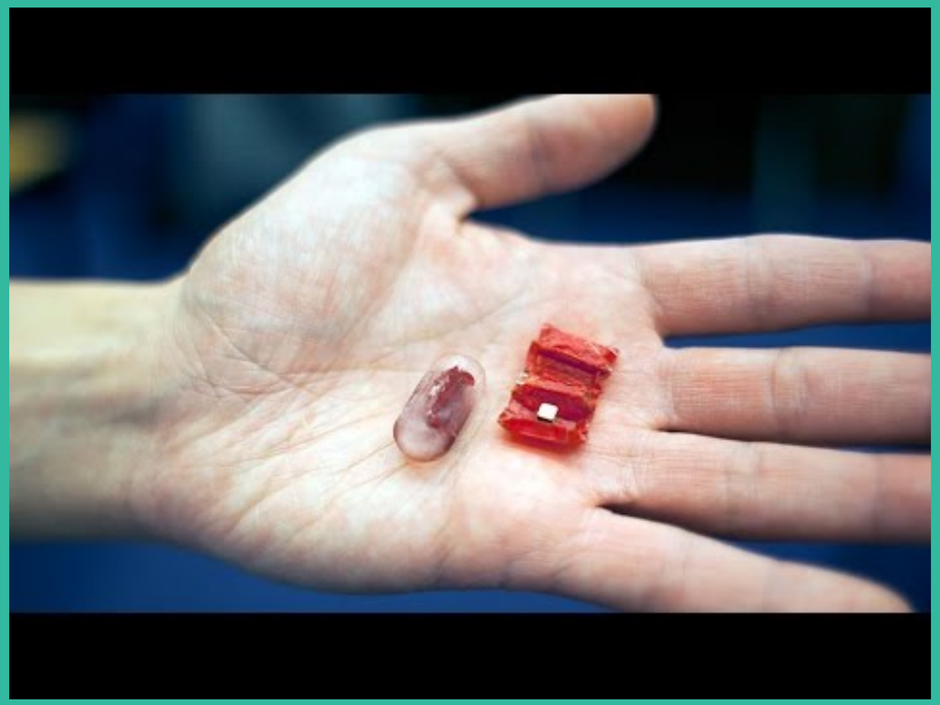

Advantages

- don’t need breaks / days of
- don’t judge / have prejudices
- don’t complain
- could take over administrative and monotonous tasks
- are reliable
- not unfocused / distracted

- work more precisely / exact
  - less risk of infection
  - less blood loss, less pain
  - faster recovery
    - less staff needed → lowered costs

Disadvantages

- higher costs
- latency
- delayed execution of human instructions
- surgeons have to learn how to use the machines
- can be dysfunctional

Ethical Aspects

- social poverty and dying alone
- experimenting with the ill and vulnerable
- dual-use of technology
- human enhancement technology
- affordability

Visions of the future

Sources

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