

# Introduction to Computer Science

## Lecture 2

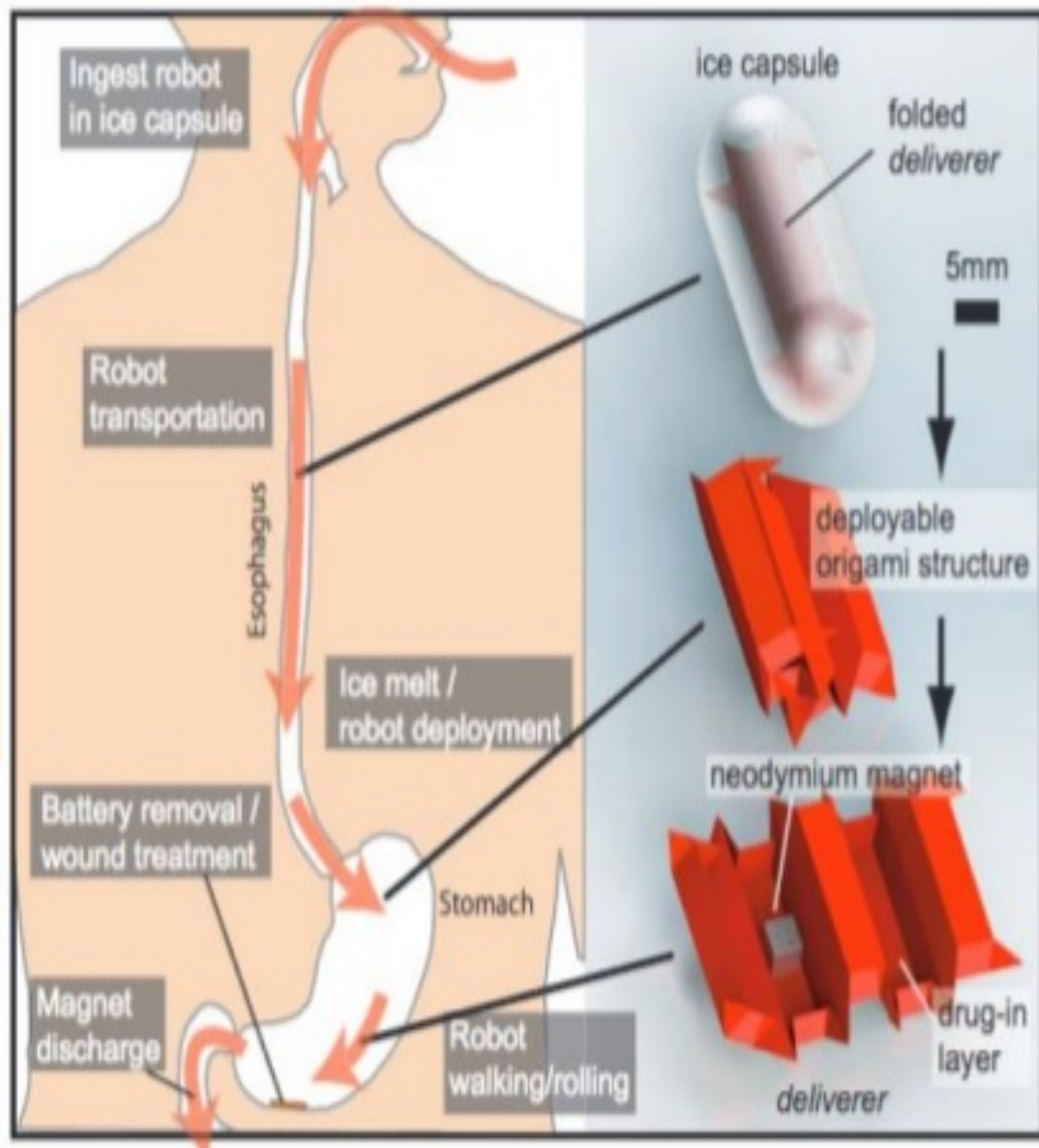
# **BREAKTHROUGH FUTURE TECHNOLOGIES**

# Ingestible Robots

2024



# Ingestible Robots





The image features two mannequins wearing smart clothing. The mannequin on the left is wearing a dark grey tank top with a glowing circular sensor on the chest. The mannequin on the right is wearing a black tank top with three glowing orange circular sensors: one on the upper chest, one on the lower chest, and one on the waist. To the right of the mannequins, there are three rectangular icons connected by yellow lines to the sensors. The top icon shows a white heart and a blue ECG line, connected to the upper chest sensor. The middle icon shows a white silhouette of a person running and a green ECG line, connected to the lower chest sensor. The bottom icon shows a white silhouette of lungs and a purple ECG line, connected to the waist sensor. The background is dark with some faint, glowing lines and numbers like '742274', '402', and '81'.

# Smart Clothing

## 2026



# Smart Clothing

- Smart clothing is still to go mainstream after first popping to the surface in 2015.
- Electronic textiles, also known as smart garments, smart clothing, smart textiles, or smart fabrics, are fabrics that enable digital components such as a battery and a light (including small computers), and electronics to be embedded in them.
- Smart textiles can be broken into two different categories: aesthetic and performance enhancing.
- Aesthetic examples include fabrics that light up and fabrics that can change color.
- Performance enhancing smart textiles are intended for use in athletic, extreme sports and military applications.



# The Next Evolution of A.I.

2036

Big data analytics and predictive AI come of age—from weather, to elections, to geopolitics, evolution, and much else, the future has become almost disappointingly predictable.

# Computer Science

- The scope of computer science contains mathematics, engineering, psychology, biology, business administration, and linguistics.
- Research for computers :
  - Hardware
  - Algorithm
  - Programming



# **THE SCIENCE OF ABSTRACTION**

# Envision Computer Systems

- Today's computer systems are extremely **complex** and can be overwhelming when viewed in all their detail.
- We envision the computer in terms of component
  - ignore the internal details of components
  - concentrate on how components interact with other components

# Abstraction

- Abstraction is a simplification technique.
  - extract the external properties for components
  - ignore the internal details
- Use abstract modules to construct more complex function

