

“Xenobots”

Computer
Designed Organisms
AY 2020-2021 Project

Background & Significance

Computer designed organisms, commonly known as Xenobots, are “living robots” designed and programmed by AI to perform a pre-specified task and built from the ground up using biological cells. Unlike traditional robots made of rigid materials such as metals and plastics, they possess unique characteristics due to their biological origin that make them promising candidates for various space exploration tasks. For example, CDOs are biodegradable, self-healing, and autonomous making them particularly suitable for sample-acquisition tasks on extraterrestrial bodies. Another potential use for CDOs is as a personalized, targeted drug delivery system that could better allow astronauts to combat spaceborne diseases

surface of the bot, and remove detached cells. The matrices are combined to produce a single matrix defining both the body and cilia. This matrix is then downscaled to a size that was determined to have the best trade-off between error in the cilia location and size of biobot