**Xenobots**

**Introduction:**

Robotics and biotechnology could see an innovation because of xenobots, synthetic living beings. By programming live cells to carry out particular activities, scientists can build these robots that perform many kinds of jobs. By developing new biological systems and changing old ones, synthetic biology has made it possible to create Xenobots. Sam Kriegman, et al.'s study "A Scalable Pipeline for Constructing Reconfigurable Organisms" describes a method for creating reconfigurable living things, which may adapt to various environments by modifying their body structure and function. This paper discusses the motivation, problem statement, related work, results, and conclusion of the development of Xenobots.

**Motivation:**

The motivation behind this paper is to showcase the possibilities of synthetic biology for producing new life forms with new purposes and behaviors. They are the first robots ever manufactured completely of living cells, making them unique when compared to more conventional robots made from materials like metal and plastic. We can learn more about the processes that make life possible and the potential uses for biological devices by studying xenobots. Learn more about how cells interact to generate complex structures and how they may be applied to real-world activities. They may be used to remove pollutants or carry out other duties that conventional robots cannot.

**Problem Statement:**

How might xenobots be made to do particular jobs better? How they will eventually interact with different animals and environments. What legal decisions needed to be made when using living things for robotics and other purposes? The authors aim to address these concerns and highlight the need for a foundation that ensures the creation of safe and ethical synthetic creatures.

**Related Work:**

In January 2020, the inaugural study on xenobots was released in the Proceedings of the National Academy of Sciences. An overview of the techniques used to produce these living things is given in the publication "A scalable pipeline for designing reconfigurable organisms," which also outlines their characteristics and prospective uses. Computer-based development models: Computer models are used to simulate the activity of cells in order to build xenobots. In order to better understand the mechanics behind xenobots, researchers have created a variety of models for cellular growth. One application of synthetic biology, which tries to design and build biological systems with particular functionalities, is the development of xenobots. For the study of these living things, an understanding of evolutionary biology's basic concepts may be useful.

**Results:**

Robots that can adapt to different environments by altering their body form and function can be made by using live cells that have been developed to do particular tasks. Using a modular architecture that includes numerous sensors, actuators, and control algorithms, the developers of the OpenWorm platform were able to design reconfigurable living things with varying shapes and abilities. The Xenobots could move, do simple tasks like moving tiny objects, and perform self-repair. The scientists also suggest a number of possible uses for Xenobots, such as drug delivery and cleaning up the environment. Although this technology presents exciting opportunities for invention, it also presents important legal issues that need to be resolved in order to ensure responsible usage of the xenobots. The OpenWorm platform and Xenobots 2.0 provide exciting opportunities for more research and creativity in the production of new life forms.

**Conclusion:**

The OpenWorm platform, according to the authors, provides a framework for the development of legally and safely synthetic animals. The Xenobots 2.0 platform builds on the first generation of these life forms by using frog skin and heart cells to create biological devices that are capable of performing particular tasks. While focusing on the need for appropriate usage and management of this technology, the authors suggest a number of possible uses for Xenobots. The Xenobots 2.0 platform represents a substantial advancement in this field and opens up an area of creative possibilities.

**References:**

*A Scalable Pipeline for Designing Reconfigurable Organisms* | PNAS. https://www.pnas.org/doi/10.1073/pnas.1910837117.

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