

Realization of Common Platform Technology, Facilities, and Equipment that creates Innovative Knowledge and Products

Accelerating Life Sciences by Robotic Biology

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Summary :

Laboratory automation is a key to solving a multitude of problems that today's life sciences are facing, including poor reproducibility, inefficient operations of expensive laboratory equipment, research misconducts, and labor-intensive working style. Although laboratory automation itself is not new and an increasing number of automation apparatuses are becoming commercially available, most of those products are specialized to executing some specific experimental or measurement procedures, still requiring human operators who work as 'glues' between machines, conveying samples and reagents between them, or reading and interpreting measurements. Therefore, the total efficacy of automated experiments facilities are still bound by accuracy and labor of humans.

In this project, we will develop a package of technologies including a formal experimental protocol description language, IoT systems architectures and their implementations to enable coordinated operations of various robots and machinery, and demonstrate their performance in several important applications areas including proteomics, genome editing, and stem cell culture.

Robotic Biology Center

- Working Style
- Inefficient Operation
- High BSL Experiments
- Research Misconduct
- Human Error Sunk Cost

- Researchers design experiments remotely
- Robots perform experiments collaborate with other robots
- Data are automatically uploaded to the cloud

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