

# Promoting 3D printing of Food, The design of the fully automated robotic Mutter Gottlich Kitchen

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## *Abstract*

*This paper describes the design of the robotic kitchen of Mutter Gottlich, a non-profit nature spirituality organization. The kitchen is designed as an open space architecture under the Banyan Canopy[1](“Website” n.d.).*

*The use of 3D printers for the production of pancakes, pancake pizzas, Dosas, Dosa Pizzas, vegetable, and vegan meat substrates and chocolate and cakes is described.*

*Robots, namely the Loomo and the R1D2 are mentioned. The detailed design of these robots is mentioned elsewhere. These robots are fully automated to run the facility.*

*The facility along with a spiritual sculpture garden, succulent garden for meditation and a sacred tree for worship and a sacred fireplace, provide for an open-air church/temple.*

*The facility serves as a meeting place for aspirants to meet to compose and sing music and group meditate. It unifies diverse cultures, promotes ecological sustainability and serves as a food pantry for low-income families serving the Freemium business model.*

*Keywords: Robotics, Automation, 3D printing, Food Printers.*

## **Introduction**

3D printing of food has come to vogue in the recent past [1-4](“Website” n.d.)(“Website” n.d.) , it is more efficient, less wasteful and

probably the solution to the food crisis[19](“Vegan Pages” n.d.).

In an effort to promote the 3D printing of food, the Mutter Gottlich kitchen is being set up to

promote ecological sustainability and food for low-income families.

The ecological sustainability of food production is a much-researched topic[5-6](“Website” n.d.)(“Website” n.d.). Solutions include substitutes for land and water-intensive crops[8](“What Is Sustainable Agriculture?” 2016), synthetic food substitutes like Soylent[7](“Soylent.com - Let Us Take a Few Things off Your Plate” n.d.) and many more solutions[19].

The provision of food by nature spirituality and intentional living community is not new[9](“Website” n.d.). Ancient societies, which were Pagan, had no hunger or unemployment problems[10](“Website” n.d.). It is the effort of Mother divine to restore that intentional economy where hunger and unemployment in a limited scope are obsolete. We make use of the HSK or Human Survival Kit which is taught at this temple/church.[11](“Website” n.d.).

## **Automation and costs of food**

Automation greatly reduces the cost of production and the maintenance of facilities[12](“Website” n.d., “Website” n.d.). This is particularly important in food pantries, where we need to keep the costs of food production low so that the food is easily available at very low costs to low-income families. Besides this, the automation is a hobby to all and a source of creative intelligence. It is also a tourist attraction.

The automation at the Mother Divine kitchen involves the use of a vintage R1D2 robot inspired by the R2D2 of star wars, R1D2 is a management robot with a backup of all functionalities. It administers the facility, with the help of two Loomo robots that cook and serve food and two Loomos (“九号机器人 - 机器人事业部 - 创造AI运力” n.d.) as seating hosts and delivery hosts. The design of these robots

can be found in these patents.[13](“Website” n.d., “Website” n.d., “Website” n.d.)

## **3D printers.**

We use several 3D printers in the facility, namely.

1. Pancake Bot, used to make pancakes, dosas, pizzas from pancakes and dosas in any shape.[14](“Website” n.d.)
2. Chocolate Printer used to make chocolates in any shape.[15](*Hershey’s 3D Printer Prints Chocolate* 2015)
3. Cake printer used to print cakes in any 3D shape.[16](*3d Printer Printing a Cake, 3d Printed Cake* 2015)
4. Vegetable vegan and meat printer used to print vegetable and meat substrate from cultured vegetables.

Condensers, culturing vegetables for 3D printing – the Vegan Pages

The Vegan Pages[18] is our society for the promotion of Vegan food. We culture vegetable and fruit cells into printable mash in sealed culture media called condensers. This is similar to an algal solar cell[17](“Website” n.d.).

This is set up under the banyan canopy, as part of our organic gardening. It renders hybridization and genetic engineering obsolete. This conserves water and does not need the application of pesticides.

The natural and wild genome is conserved and used. Thus sustainability is achieved.

Proof of Concept and demonstration of the Robots.

The kitchen serves as a showcase of, Segway Synergy Robotics our research organization, showcasing our robots, our online showroom for the adoption of these robots for healthcare and education.

## Conclusions

Fully automated design for a kitchen pantry is described, and in the future, we intend creating

More such kitchens along trailheads for the benefit of the hiking and mountaineering community.

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