



Keep in Touch!!!



li.mikael@gmail.com



facebook.com/ubudmakerspace

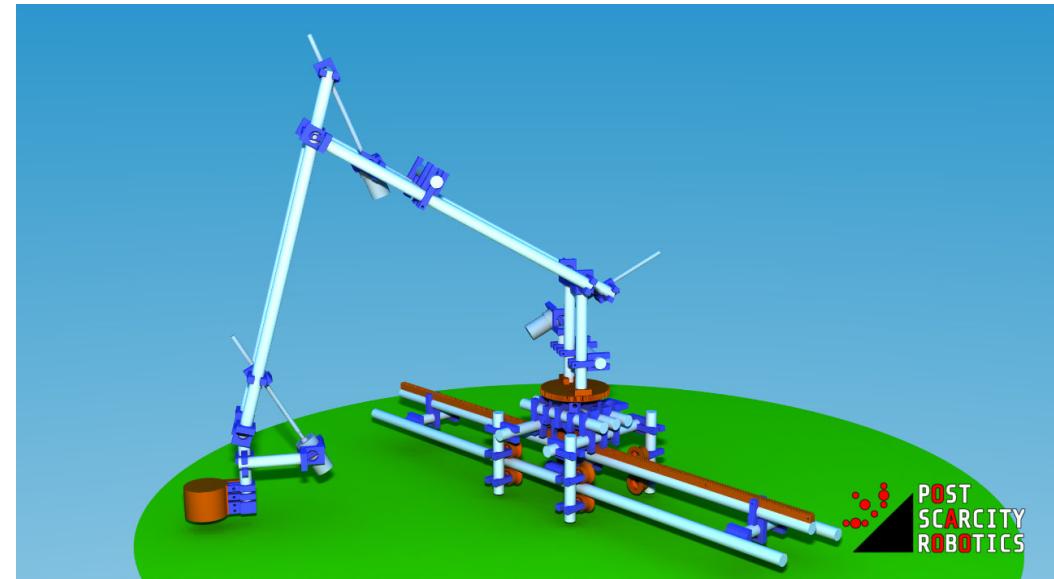


Post Scarcity Robotics



github.com/lmikael/mavis

Mavis



A Robot For Automatic Gardening

Mikael Lindqvist
Post Scarcity Robotics

Enabling A Post Scarcity Society

It is interesting that as technology gets more and more efficient, we still spend as much time or more going to work every day. Technology has a great potential to create individual freedom and empowerment. However, it seems that technology is used instead to enrich those who own and control the technology. In the past, scarcity was something that people had to endure. Contemporary authors and philosophical thinkers have noted that that today it is rather something that is enforced.

“Our entire system, in an economic sense, is based on restriction. Scarcity and inefficiency are the movers of money...”

-- Peter Joseph, *Zeitgeist Addendum*, 2008

“The great growling engine of change - technology.”

-- Alvin Toffler, *The Third Wave*, 1980

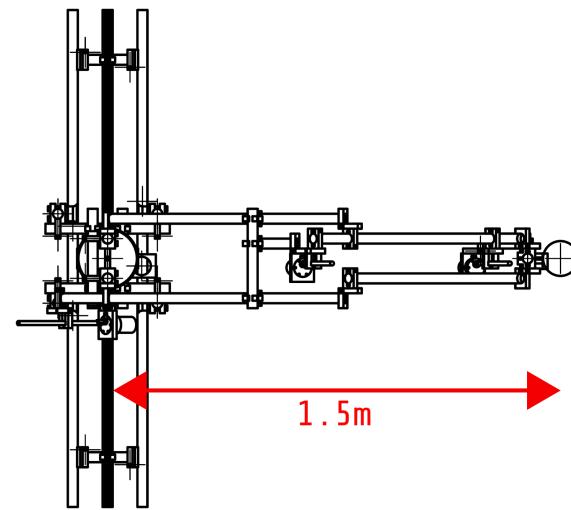
“This technological revolution, culminating in cybernation, has created the objective, quantitative basis for a world without class rule, exploitation, toil or material want”. -- “If it is true that technological progress enlarges the historical potentiality for freedom, it is also true that the bourgeois control of technology reinforces the established organization of society and everyday life.”

-- Murray Bookchin, *Post Scarcity Anarchism*, 1971

The solution to this problem is technology that we can all build and own together. This comes through the use of, and dedication to, open source software and hardware. Projects like Wikipedia, Wordpress and The Internet itself, are all examples of open source projects that has had the effect of enabling free access to information for everyone.

Imagine that we can one day use open source software and hardware in the same way to release the control of the food we need to eat in order to survive.

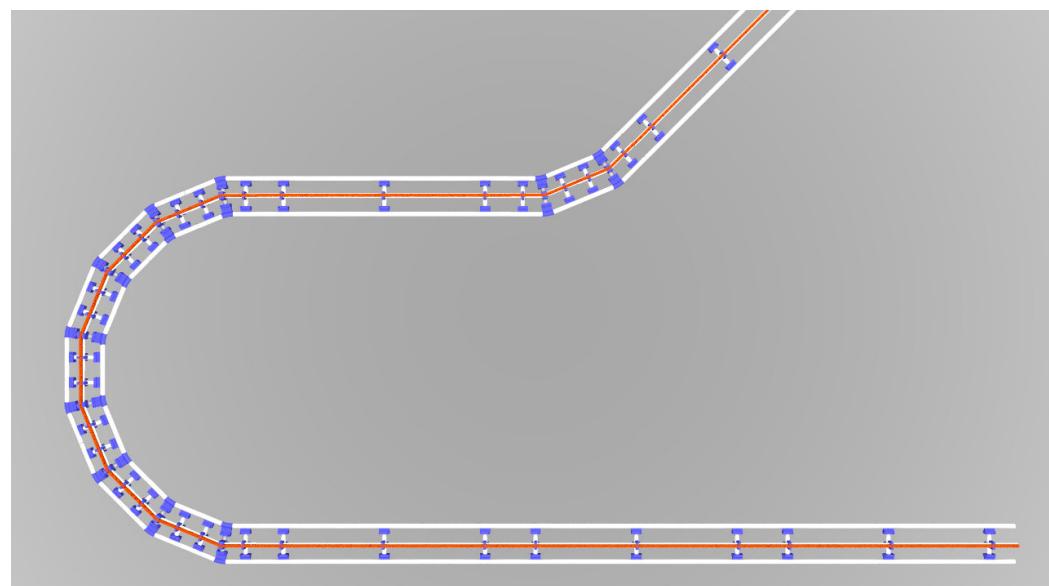
Extensible Like A Model Train



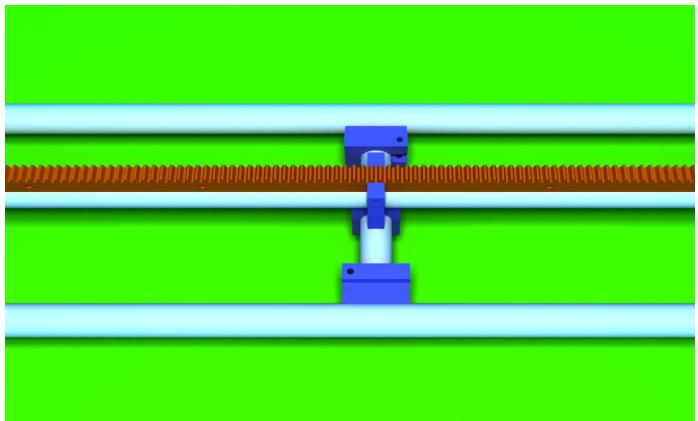
The arm can reach out 1.5m on each side of the rail.

The rail has straight pieces as well as curve pieces.

Combining the straight and curve pieces, the rail can be built to reach everywhere in any layout of garden or plot.

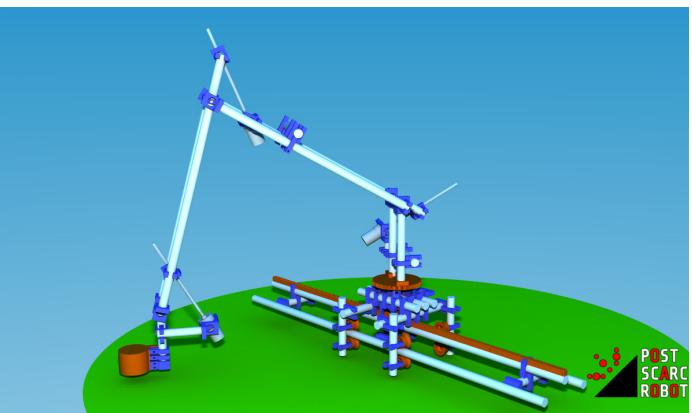
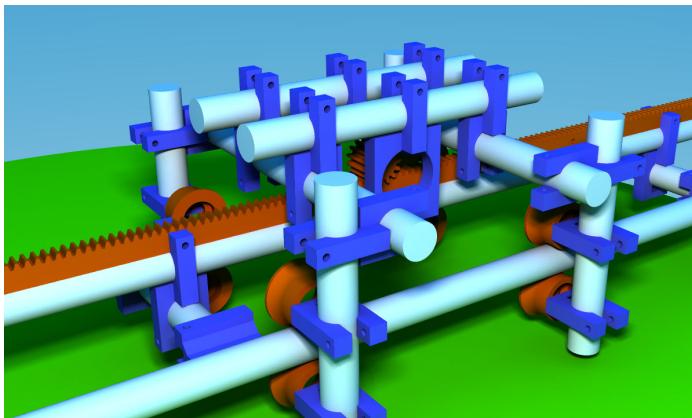


A Robot For Automatic Gardening



The base of the design is a rail. The rail is created using 3D printed parts and PVC pipes. The rail is a *rack-rail*, meaning it has teeth on it like a cogwheel.

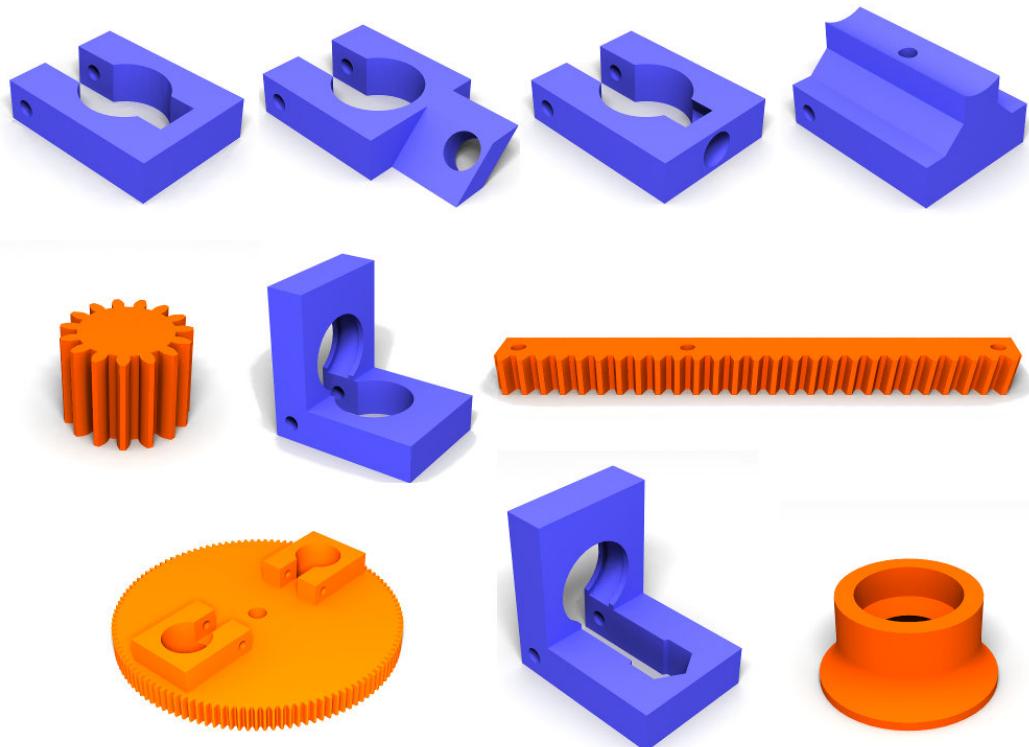
On the rail there is a moving base. This moving base has a cogwheel that engages the rack. The base has wheels both on top and on the bottom the rail in order to not fall off.



On the base, there is an arm mounted. The arm can pivot and reach out on each side.

At the tip of arm there is a tool mount for different tools.

A Lego Kit For Robotics



The Mavis design uses some twenty 3D printed parts. These are wheels, racks and fasteners for PVC pipes, screws, nuts and ball bearings. They have been designed to be generic.

The pieces can be used to build other projects than the design envisioned for this project. Like a lego kit, they can also be used as a basis for experimentation and to spark creativity.

This makes Mavis a useful tool in education!

Part Of A Thriving Ecosystem



Mavis uses many components from the open source project FarmBot. Actually, Mavis can be thought of as an extension or a modification of Farmbot, and as a part of the FarmBot ecosystem.

Mavis uses the Universal Tool Mount from FarmBot. The FarmBot community has designed a great number of automated gardening tools, and these can all be used together with Mavis.

Mavis can be controlled using the Farmbot software. This is an app as well as a web based interface.



Inexpensive And Available Materials

All mechanical structures are built using a combination of 3D prints and PVC pipes.

PVC pipes are used because they are cheap and locally available everywhere in the world.



The design is flexible in terms of its electrical parts. Mavis can be built using a variety of different DC motors that are widely available.

They can also easily be ordered online or salvaged from e-waste.



In order to control the electrical parts, Mavis uses the open source platform Arduino. It is cheap and widely available and provides wifi connectivity.