



# Functional Farming with Nerves

Who Am I?

What is FarmBot?

# What is FarmBot?

FarmBot JR Status

# What is FarmBot?

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

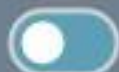
Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot is Open Source

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot Open Source

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status



# FarmBot Open Source

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot RAILS

E-LOCK

E-UNLOCK

Demo

UP

ZUP

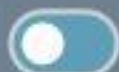
LF

DN

RT

ZDN

Test LED



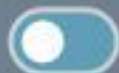
Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot WEBPACK

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot REACT

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



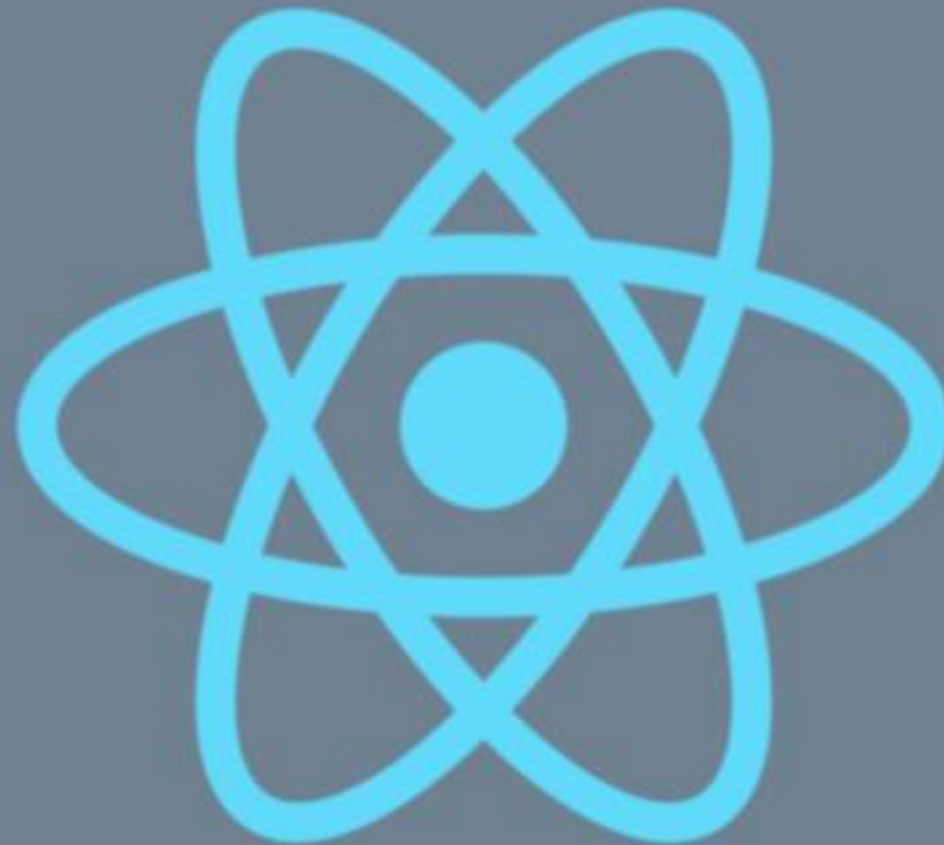
Water



Vacuum



HM



FarmBot JR Status

# FarmBot TYPESCRIPT

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



TS

FarmBot JR Status

# FarmBot RABBITMQ

E-LOCK

E-UNLOCK

Demo

UP

ZUP

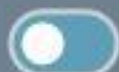
LF

DN

RT

ZDN

Test LED



HM

Lighting



Water



Vacuum



 RabbitMQ

FarmBot JR Status

# FarmBot ARDUINO

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot ELIXIR

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status



# FarmBot NERVES

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# What is Nerves?

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves is Open Source

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



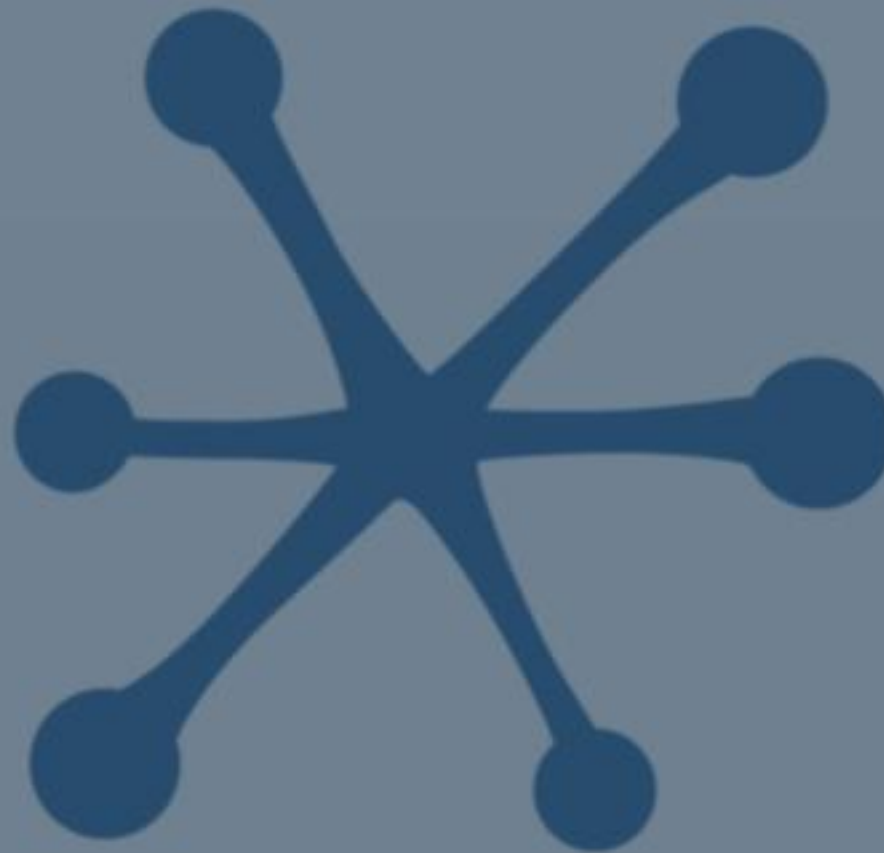
Water



Vacuum



HM



FarmBot JR Status

# Nerves Open Source

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



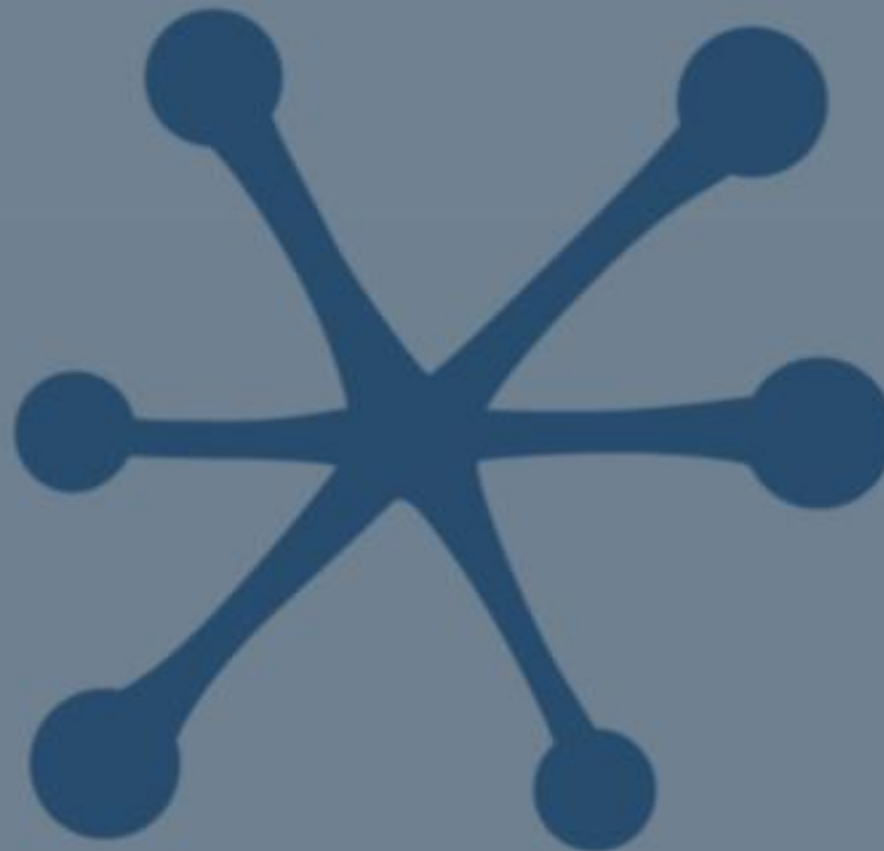
Water



Vacuum



HM



FarmBot JR Status

# Nerves RASPBERRYPI

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



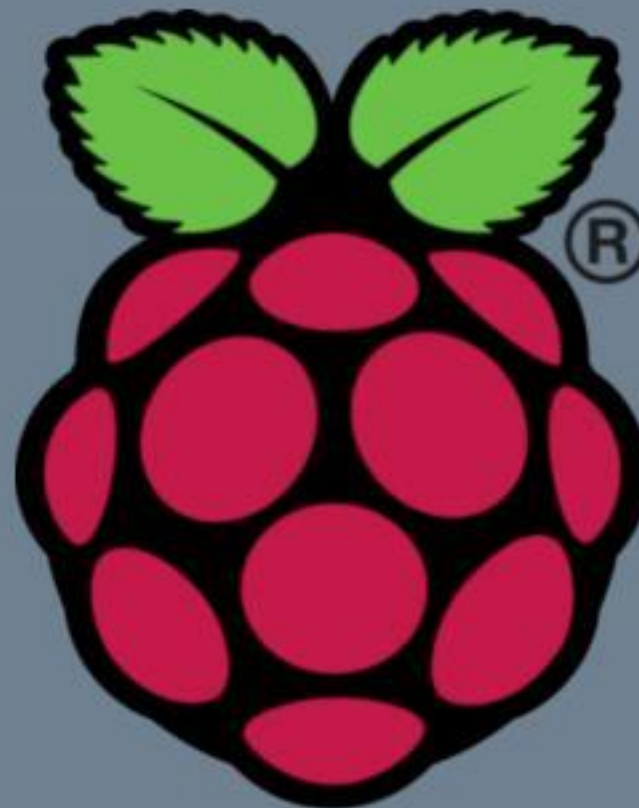
Water



Vacuum



HM



FarmBot JR Status

# Nerves BEAGLEBONE

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves QEMU

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves VULTR

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

# VULTR

FarmBot JR Status



# Nerves S3

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves ❤️ LINUX

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



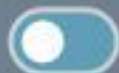
Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves BUILDROOT

E-LOCK

E-UNLOCK

Demo

UP

ZUP

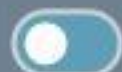
LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

**BuildRoot**  
Making Embedded Linux Easy

FarmBot JR Status

# Nerves FWUP

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



fwup

FarmBot JR Status

# Nerves WPA-SUPPLICANT

E-LOCK

E-UNLOCK

Demo

UP

ZUP

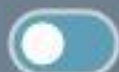
LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves ELIXIR-CIRCUITS

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



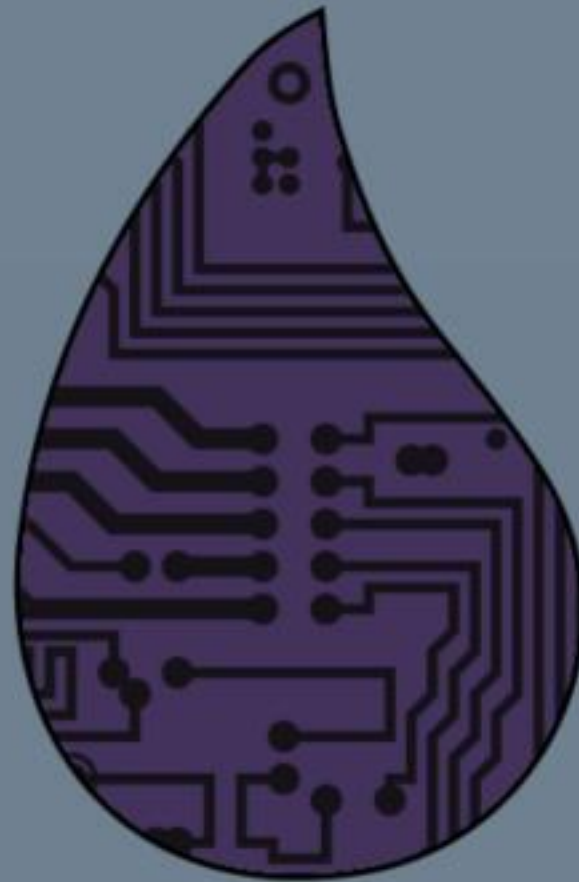
Water



Vacuum



HM



FarmBot JR Status

# Nerves PHOENIX

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot Live Demos

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

FarmBot JR Status



# FarmBot Live Demos

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED

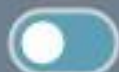


HM

Lighting



Water



Vacuum



```
# Arguments are definitely in the correct order and by no means a  
# gimmick for a demo  
def handle_call({:set_position, x, y, z}, _from, state) do  
  change = %{location_data: %{position: %{x: y, y: z, z: x}}}
```

FarmBot JR Status

# FarmBot Live Demos

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

```
# Open Source Software saved us from  
# having bugs in our super complex codebase  
def handle_call({:set_position, x, y, z}, _from, state) do  
  change = %{location_data: %{position: %{x: x, y: y, z: z}}}
```

FarmBot JR Status

# FarmBot Live Demos

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



HM

Lighting



Water



Vacuum



```
~/o/farmbot_os staging $ /home/connor/farmbot/os/os env MIX_TARGET=rpi3 mix firmware
warning: String.strip/1 is deprecated. Use String.trim/1 instead
/home/connor/farmbot/os/farmbot_os/deps/rpi3/poison/mix.exs:4

warning: variable "package" does not exist and is being expanded to "package()", please use pare
/home/connor/farmbot/os/farmbot_os/deps/rpi3/rsa/mix.exs:8

Nerves environment
MIX_TARGET: rpi3
MIX_ENV: dev

Makefile:16: ARDUINO_BUILD is not set. No arduino assets will be built.
make -f c_src/build_calendar/Makefile all ERL_EI_INCLUDE_DIR=/home/connor/.asdf/installs/erlang/
make[1]: Entering directory '/home/connor/farmbot/os/farmbot_os'
make[1]: Nothing to be done for 'all'.
make[1]: Leaving directory '/home/connor/farmbot/os/farmbot_os'
[nerves bootstrap] Building OTP Release...
Building /home/connor/farmbot/os/farmbot_os/build/rpi3/dev/nerves/images/farmbot.fw...
```

FarmBot JR Status

# FarmBot Live Demos

E-LOCK

E-UNLOCK

Demo

UP

ZUP

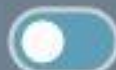
LF

DN

RT

ZDN

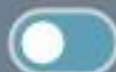
Test LED



Lighting



Water



Vacuum



HM

```
1 ~/t/o/farmbot_os > staging $ /home/connor/farmbot/os/os mix firmware.push farmbot-94000000510036cc
Running twup...
twup: Upgrading partition B
|-----| 100% (62.51 / 62.51) MB
Success!
Elapsed time: 37.741 s
Rebooting...
Received disconnect from 192.168.43.68 port 8989:11: Terminated (shutdown) by supervisor
Disconnected from 192.168.43.68 port 8989
1 ~/t/o/farmbot_os > staging $ /home/connor/farmbot/os/os
```

FarmBot JR Status

# FarmBot NervesHub

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



FarmBot JR Status

# FarmBot NervesHub

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

HM

Test LED



Lighting



Water



Vacuum



```
~/f/0/farmbot_os /staging $ /home/connor/farmbot/os/os mix nerves_hub.firmware publish --key staging
NervesHub org: farmbot-staging
-----
Organization: farmbot-staging
product:      farmbot
version:      7.0.1
platform:     rp13
architecture: arm
uuid:         41271f56-8efd-5357-6add-d5f8fb71177c
Publish Firmware? [Yn] y
Signing /home/connor/farmbot/os/farmbot_os/_build/host/dev/nerves/images/farmbot.tw
With key staging
Local signing key password for 'staging':
Finished signing
Local NervesHub user password:
|-----| 100% (57 / 57) MB
```

FarmBot JR Status

# Special Thanks!

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

FarmBot JR Status

# Nerves Very

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

# very

FarmBot JR Status



# Nerves Le Tote

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

LE TOTE

FarmBot JR Status

# Nerves Smart Rent

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



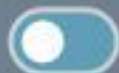
Lighting



Water



Vacuum



HM



FarmBot JR Status

# Nerves OpenCollective Backers

E-LOCK

E-UNLOCK

Demo

UP

ZUP

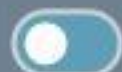
LF

DN

RT

ZDN

Test LED



Lighting



Water



Vacuum



HM



Backer Name	Role	Since	Amount
Bowery Farming	SPONSOR	Since November 2017	\$800
Herman verschouten bv...	BACKER	Since July 2018	\$40
Nonima	BACKER	Since November 2018	\$15
Open Collective Inc.	SPONSOR	Since December 2018	\$10
Gray Beam	BACKER	Since January 2019	\$10

FarmBot JR Status

# Nerves OpenCollective Contributors 1

E-LOCK

E-UNLOCK

Demo

UP

ZUP

LF

DN

RT

ZDN

Test LED



Lighting



Water















Vacuum



HM

FarmBot JR Status

 Cultivate <a href="http://cultivatehq.com">http://cultivatehq.com</a> Sponsor since August 2017 Total amount contributed: \$1,900	 Ben Backer since September 2017 Total amount contributed: \$540	 Jeff Smith Backer since August 2017 Total amount contributed: \$250
 Alex McLain Backer since November 2018 Total amount contributed: \$235	 Connor Rigby Backer since August 2017 Total amount contributed: \$180	 Elixir flashcards Backer since August 2017 Total amount contributed: \$180
 Kyle Anderson Backer since September 2017 Total amount contributed: \$180	 Erik Ketcham Backer since September 2017 Total amount contributed: \$180	 Brandon Fulk Backer since September 2017 Total amount contributed: \$180
 Todd Pickell Backer since September 2017 Total amount contributed: \$170	 Steven Fuchs Backer since August 2017 Total amount contributed: \$95	 Jason Scott Freelance Consultant working out of Sweden Backer since December 2017 Total amount contributed: \$75

# Nerves OpenCollective Contributors 2

E-LOCK

E-UNLOCK

Demo

UP

ZUP

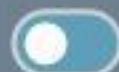
LF

DN

RT

ZDN

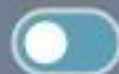
Test LED



Lighting





















Water



Vacuum



HM

 <b>anonymous</b> Backer since December 2017 Total amount contributed: \$75	 <b>Jean-Luc Geering</b> Backer since January 2018 Total amount contributed: \$60	 <b>Tim Mecklem</b> Backer since April 2018 Total amount contributed: \$55
 <b>Jean-Francois Cloutier</b> Elixir developer and Lego Ev3 enthusiast Backer since July 2018 Total amount contributed: \$40	 <b>Frank Oxener</b> Backer since July 2018 Total amount contributed: \$40	 <b>Jindrich Smitka</b> Backer since July 2018 Total amount contributed: \$35
 <b>Silviu Rosu</b> Elixir Enthusiast Backer since August 2018 Total amount contributed: \$35	 <b>Amos King</b> Backer since August 2017 Total amount contributed: \$30	 <b>Lars Wikman</b> Backer since September 2018 Total amount contributed: \$30
 <b>Kevin Stueber</b> Backer since May 2018 Total amount contributed: \$25	 <b>Martin Gausby</b> Backer since October 2018 Total amount contributed: \$25	 <b>Jake Morrison</b> Product development services for ambitious innovators Backer since October 2018 Total amount contributed: \$25
 <b>Jonathan Carstens</b> Fellow elixir enthusiast that thinks nerves is one of the most fun ... Backer since December 2018 Total amount contributed: \$15	 <b>Konstantin Zolotarev</b> Backer since December 2018 Total amount contributed: \$15	 <b>Cees de Groot</b> Backer since December 2018 Total amount contributed: \$15
 <b>Eric Steen</b> Backer since November 2018 Total amount contributed: \$10	 <b>Benjamin Plouffie</b> Developer and civic tech enthusiast Backer since December 2015 Total amount contributed: \$10	 <b>Jack Clark</b> Backer since January 2019 Total amount contributed: \$10

FarmBot JR Status

# Questions?

E-LOCK

E-UNLOCK

Demo

UP

ZUP

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RT

ZDN

Test LED



Lighting



Water



Vacuum



HM

FarmBot JR Status