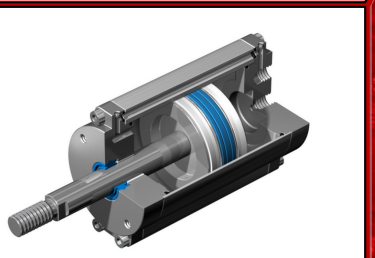
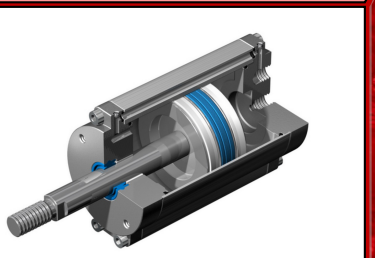
Flippers



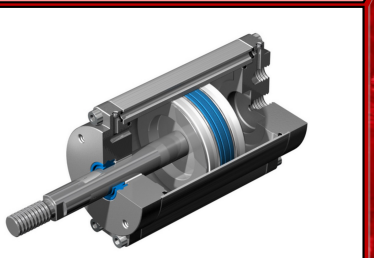
Actuation

One segway base



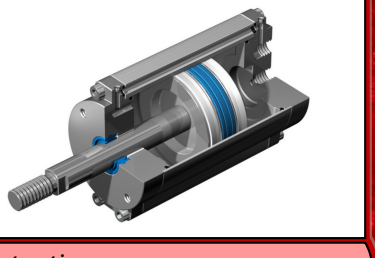
Actuation

RC Car



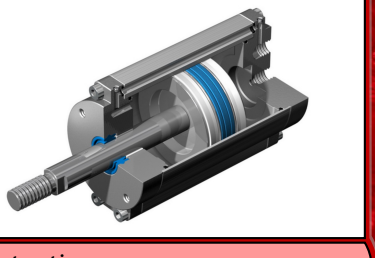
Actuation

1 Leg Hopper



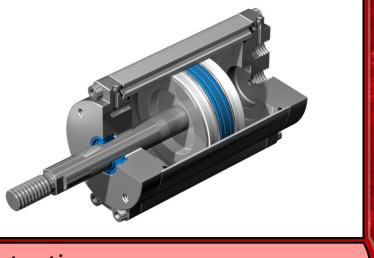
Actuation

LED



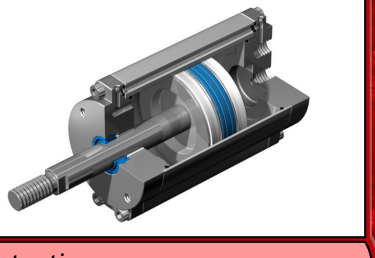
Actuation

Vacuum Gripper



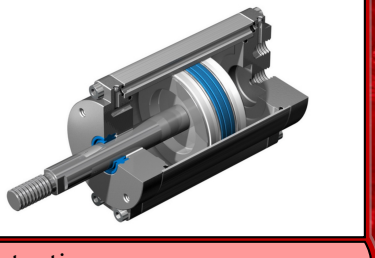
Actuation

Shovel



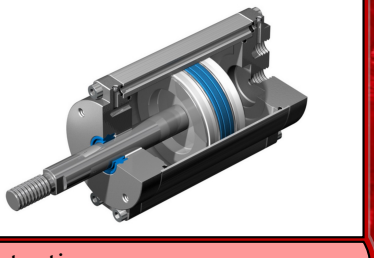
Actuation

DDR



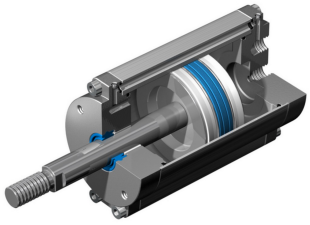
Actuation

Cyber-Cockroach



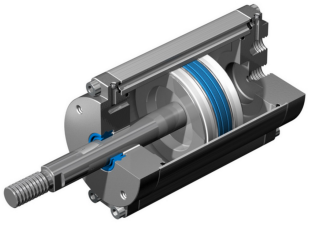
Actuation

One tentacle



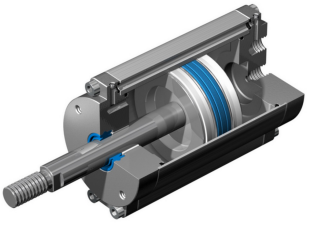
Actuation

Puppetry Wires



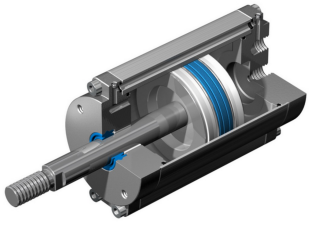
Actuation

2 Propeller



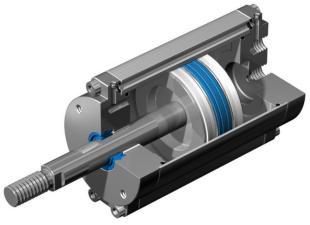
Actuation

Tracks



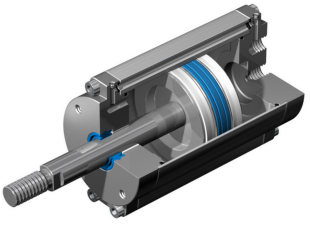
Actuation

2 Legs



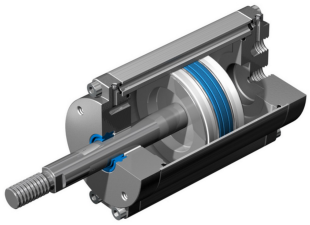
Actuation

Steerable Needle



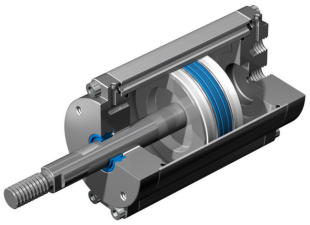
Actuation

Weasel ball



Actuation

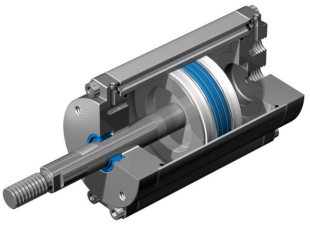
One robotic finger



Actuation

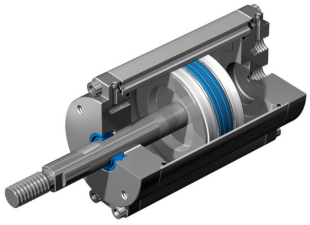
"When the finger points to the moon, the student looks at the finger."

Loudspeaker



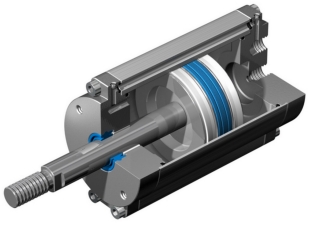
Actuation

One hand



Actuation

Balloon



Actuation

$ 1

Budget

“Mo’ money less problems.”

$ 100

Budget

“Mo’ money less problems.”

Acoustic modem

Communication

10 bit/s

The Ansible

Communication

You have an infinite communication channel at zero power consumption

Communication tether

Communication

WiFi 802.11 NIC

Communication

Carrier Pigeon

Communication

Smoke signals

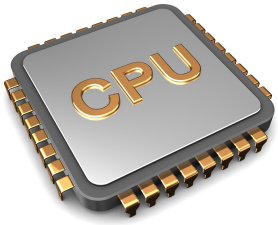
Communication

The cloud

Computation

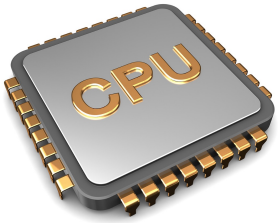
You have infinite computation (if you have the bandwidth)
"Somewhere, over the rainbow!"

100-state DFA



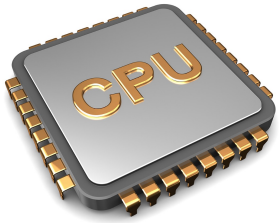
Computation

Arduino



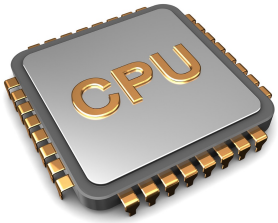
Computation

Tensorflow



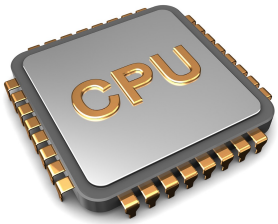
Computation

FPGA



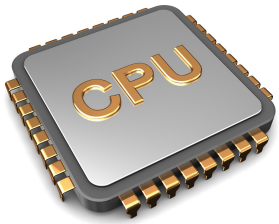
Computation

1 transistor



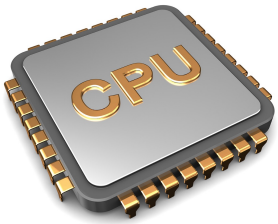
Computation

Random Number Generator



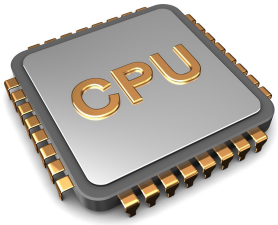
Computation

Macbook Pro



Computation

Raspberry PI 2



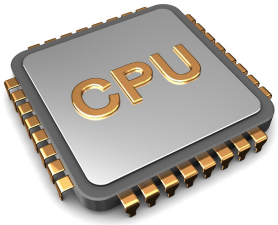
Computation

Oracle

Computation

This oracle answers one 1 bit question per second.

Infinite Computation



Computation

Theory of Everything

Special

A reviewer can use this card to dismiss the paper as over-reaching.
The results should be more concrete.

Fundamental Theorem (2006)

Special

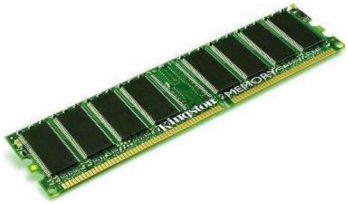
Allows a reviewer to reject a paper without explanation. It is neutralized by (Egerstedt, 2001).
The Fundamental Theorem of Robotics (O'Kane, 2006) subsumes all subsequent results.

Fundamental Theorem (2001)

Special

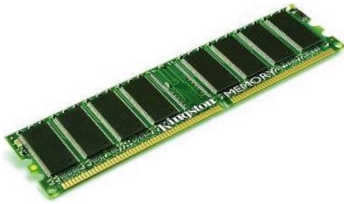
This card can be played at any time in response to a paper. The effect is that the paper is rejected.
The Fundamental Theorem of Robotics (Egerstedt, 2001) subsumes all subsequent results.

One pebble



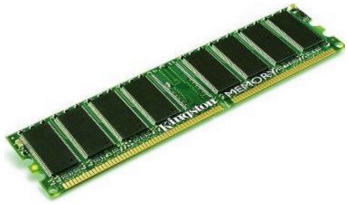
Memory

Infinite memory



Memory

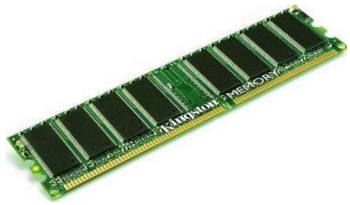
640 KB



Memory

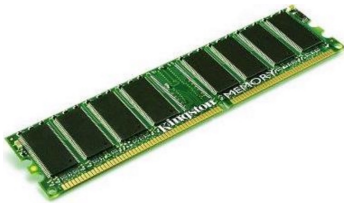
640 KB should be enough for everybody.

1 bit



Memory

Ideal Stack



Memory

2x multiplier

Special

A chosen resource can be multiplied by 2.

2x multiplier

Special

A chosen resource can be multiplied by 2.

2x multiplier

Special

A chosen resource can be multiplied by 2.

5x multiplier

Special

A chosen resource can be multiplied by 5.

5x multiplier

Special

A chosen resource can be multiplied by 5.

5x multiplier

Special

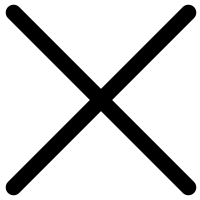
A chosen resource can be multiplied by 5.

10x multiplier

Special

A chosen resource can be multiplied by 10.

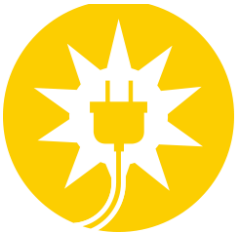
10x multiplier



Special

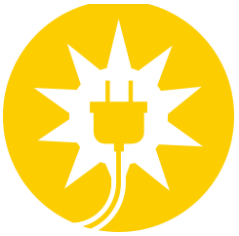
A chosen resource can be multiplied by 10.

AA Battery



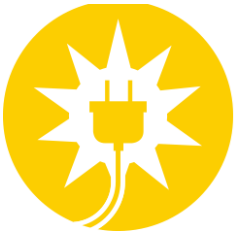
Power

Power Tether



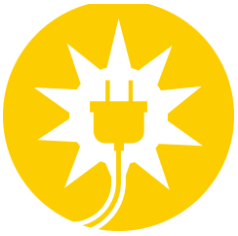
Power

Infinite battery



Power

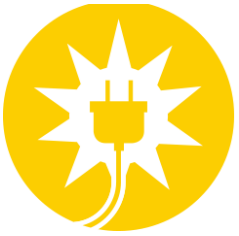
1 megawatt



Power

1 megawatt will keep you warm

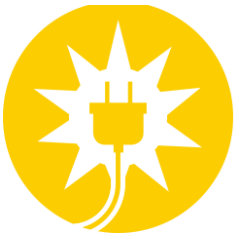
1 milliwatt



Power

1 milliwatt should be plenty for everybody

1 watt



Power

1 watt is plenty for everything

Bitterness

Rewards

Your opinion as a reviewer counts double.

Bitterness

Rewards

Your opinion as a reviewer counts double.

Bitterness

Rewards

Your opinion as a reviewer counts double.

Bitterness

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Your opinion as a reviewer counts double.

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Bitterness

Rewards

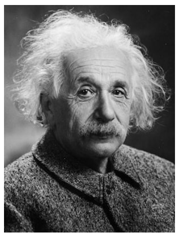
Your opinion as a reviewer counts double.

Bitterness

Rewards

Your opinion as a reviewer counts double.

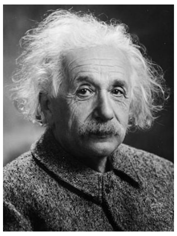
Name recognition



Rewards

Each of these cards count as a positive reviewer.

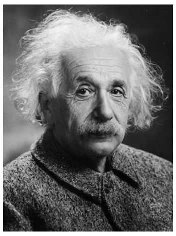
Name recognition



Rewards

Each of these cards count as a positive reviewer.

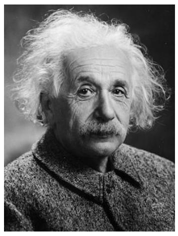
Name recognition



Rewards

Each of these cards count as a positive reviewer.

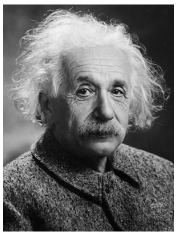
Name recognition



Rewards

Each of these cards count as a positive reviewer.

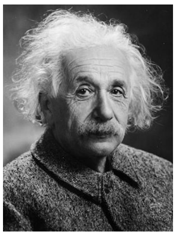
Name recognition



Rewards

Each of these cards count as a positive reviewer.

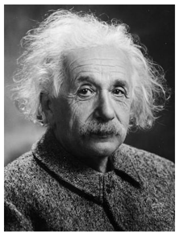
Name recognition



Rewards

Each of these cards count as a positive reviewer.

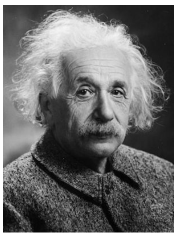
Name recognition



Rewards

Each of these cards count as a positive reviewer.

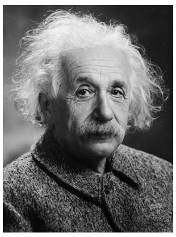
Name recognition



Rewards

Each of these cards count as a positive reviewer.

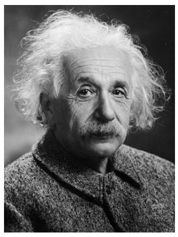
Name recognition



Rewards

Each of these cards count as a positive reviewer.

Name recognition



Rewards

Each of these cards count as a positive reviewer.

Linear Odometer — ? W

?

Sensing

? USD

1-point Range Finder — ? W

?

Sensing

? USD

Microphone — ? W

?

Sensing

? USD

Bump Sensor — ? W

?

Sensing

? USD

Hokuyo range-finder — 5 W

Sensing

A reliable sensor. Maximum range is 8m.

2000 USD

Camera — ? W

?

Sensing

? USD

Parabolic mirror — ? W

?

Sensing

Turns a camera into an omnidirectional camera.

? USD

Earth GPS Receiver — ? W

?

Sensing

? USD

Pressure Sensor — ? W

?

Sensing

? USD

Compass ? W

Sensing

? USD

Photoreceptor

Sensing

Goal posts have moved

Special

You can slightly change the current task.

IRB Approval

Special

The IRB will approve your project in spite of its questionable ethics.

3D printer

Special

You can 3D print a piece for your robot.

The Power of Friendship

Special

Use a card belonging to somebody else.

Very dedicated grad student

Special

???

Rod Brooks

Special

???

A Russian did it in the 1960s

Special

???

Steve Lavalle

Special

The computation requirements of the proposed solution are divided by 10.

1 day

?

Time

1 day to perform the task

Infinite training data

?

Training Data

You have infinite training data.

8000 robot-hours of training da

?

Training Data

Perfect parameter tuning

?

Training Data

Lazy graduate student

?

Training Data

The lazy graduate student will only collect 2 hours of training data.