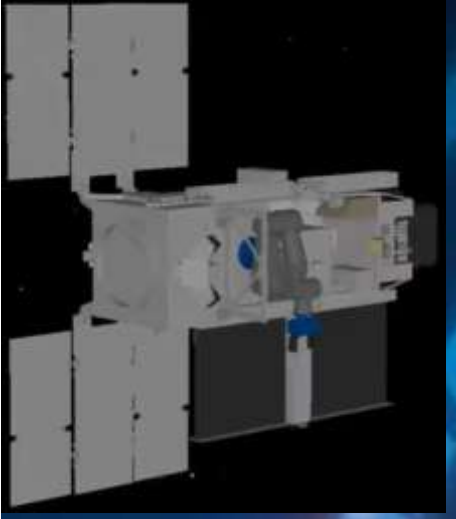


Forth, AI, Robotics

and the future...

MADE IN SPACE
BUILD ABOVE

About Capabilities & Tech

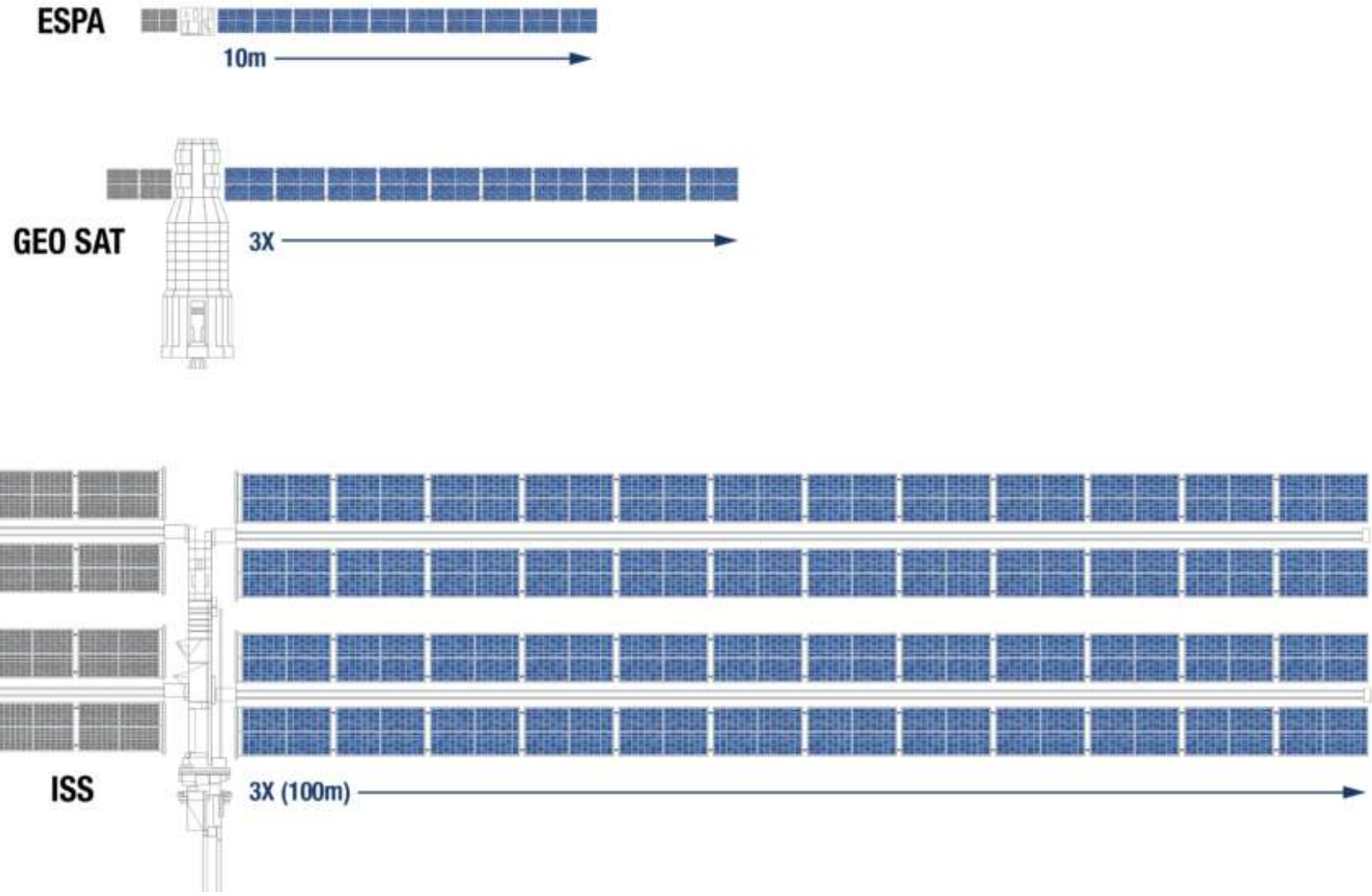
THE SPACE MANUFACTURING COMPANY

Plastic Recycler Will Turn Space Station Trash into 3D Printing Stock

Archinaut One

CURRENT

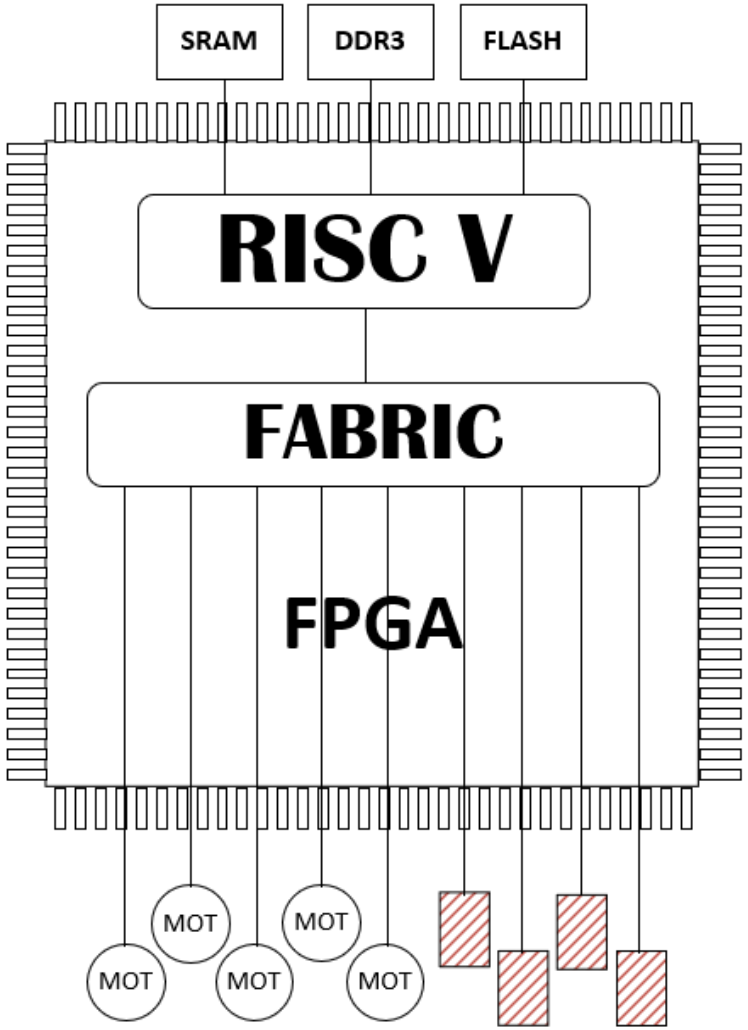
ARCHINAUT ENABLED



ANIMATION COURTESY OF MADE IN SPACE, INC.
MADE IN SPACE

RISC V Core in FPGA

Radiation Tolerant
FPGA: Microsemi RTG4

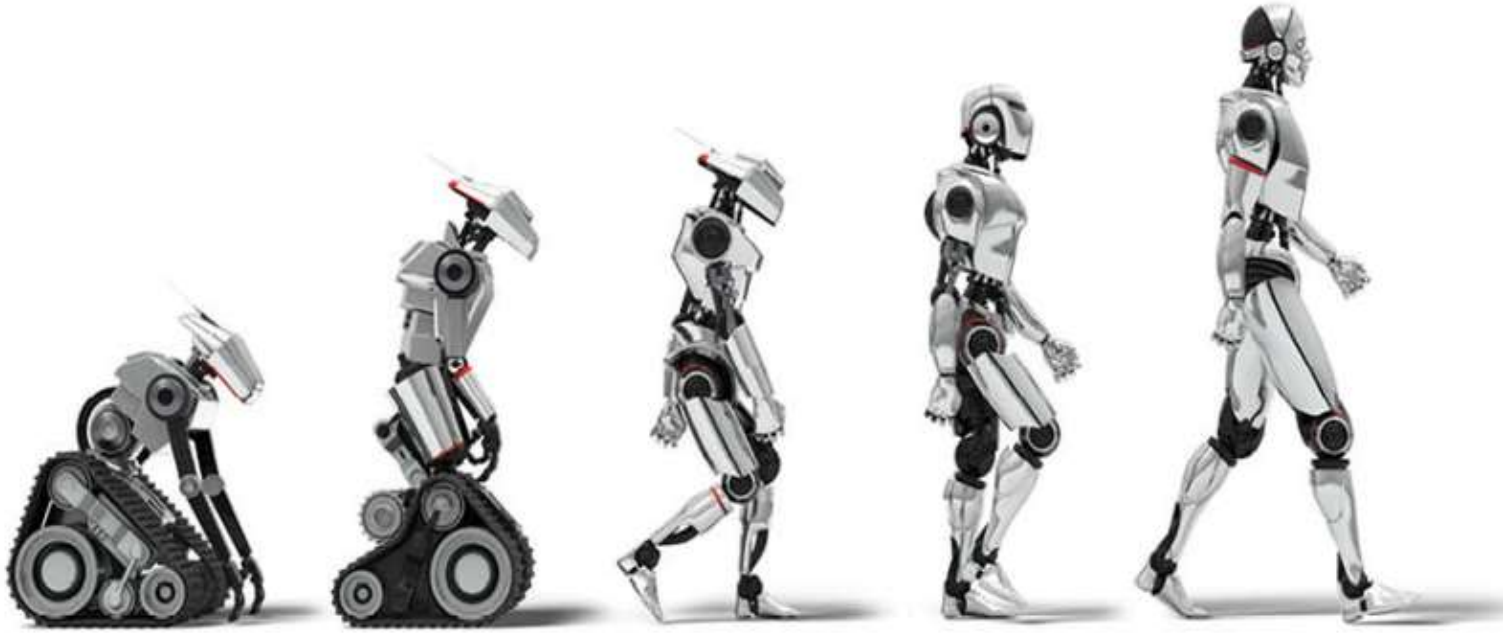


GCC With Source Level Debugging
Eclipse IDE

System Verilog 2017

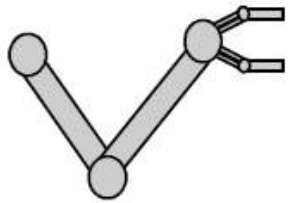
AIBOTS.ORG

AI Based Forth Robot - *the beginning*

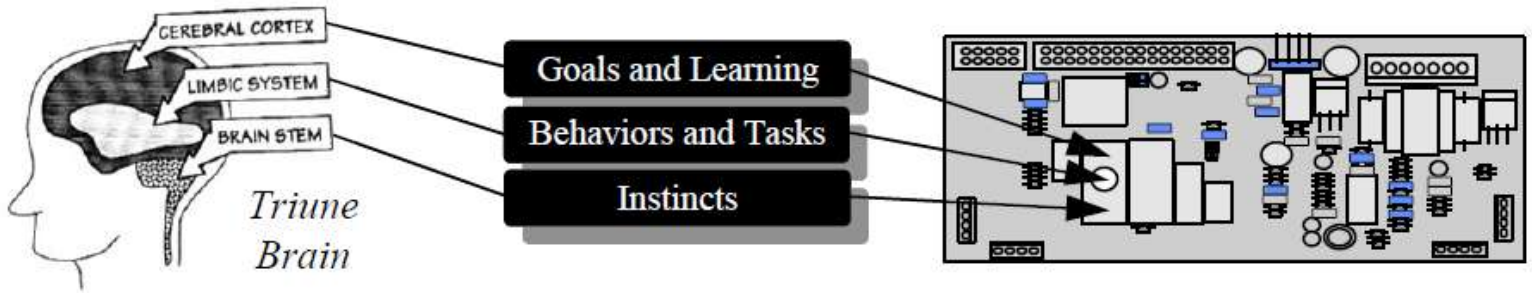


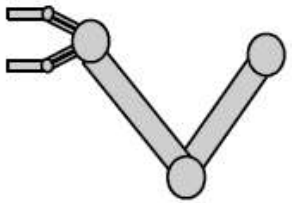
From Angelus Research Corp.

Artificial Intelligence Breakthrough!



New Intelligent Controllers based on the Triune Brain





Applications Include:

- Industrial Automation
- Automated Guided Vehicles
- Autonomous Mobile Robots
- Intelligent Arms/End Effectors
- Closed Loop Servo Control
- Intelligent DC Motor Control

Features and Benefits

- Program in English
- Real-time Sensor/Motor Fusion
- Multitasking and Networkable
- Simultaneous Multi-Axis Control
- Narrow Beam Intelligent Sonar
- Low Power and Low Cost

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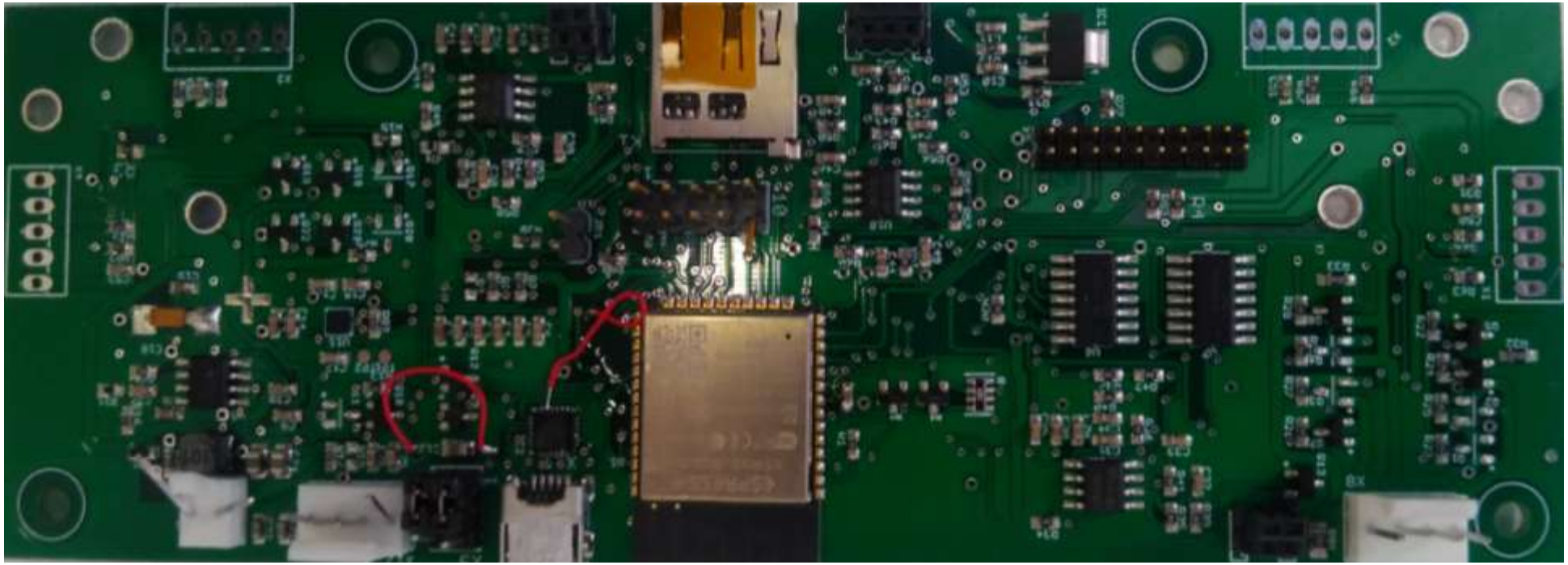
AIBOT Rev V1.0a PCB



AIBOT V1.0a What Works / Doesn't

- Successfully Flashed EForth on a few boards
- Serial Port Works
- Switching Power Supply Works
- Flash programming is Intermittent
- Arduino IDE not Ready for ESP32 Solo SOC
- WiFi

AIBot Features

- 32bit Processor
- Xtensa® single-core 32-bit LX6 microprocessor
- 200 MIPS
- 448 KB ROM
- 520 KB SRAM
- 802.11 b/g/n – FCC Approved
- 802.11 n (2.4 GHz), up to 150 Mbps
- Bluetooth – FCC Approved

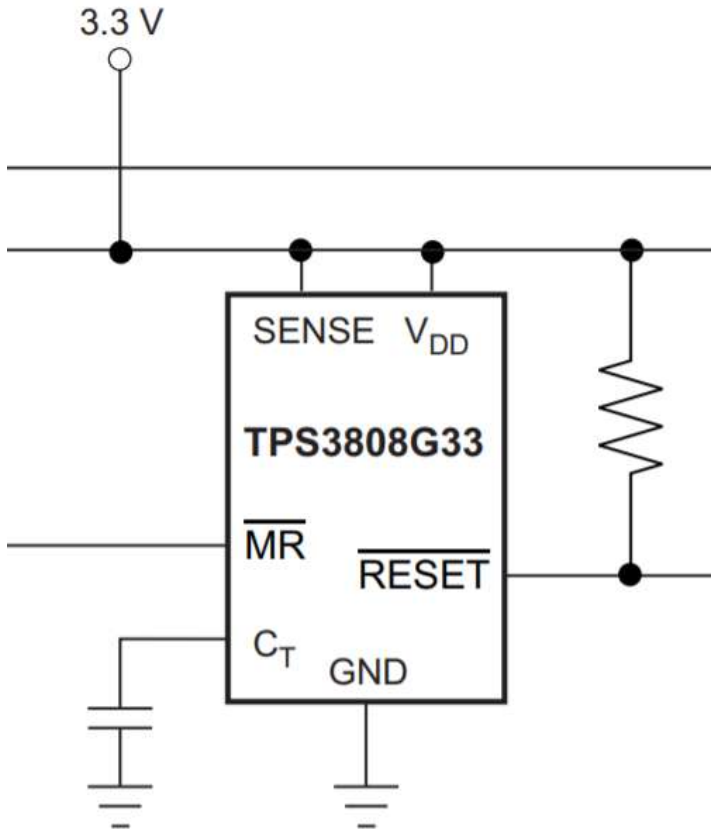
AIBot Features

- Dual Brush DC Motor Channels 12 volt, 2 amp, min. Motor Cur Mon
- Four LED Optical Sensors
- Two Whiskers
- Magnetometer, Inclinometer and Accelerometer
- Microphone
- Speaker
- Sonar
- Two Accessory Motor Channels – *Airplane Servo Motors?*

AIBOT V1.0b Changes

- I believe there is a serious Issue with the Simple RC Reset Circuit.
- Add: Pull Up Resistors on RS232 lines.
- Add: POR IC

Add POR IC



AI Robotics: Forth's Killer APP

Forth Features supporting AI Robotics

1. Incremental Compilation
2. Interpreter
3. Meta Language
4. No OS Required
5. Efficient Use of Resources

- C Supports #4: LOL
- Using C to create a new language with all of the features above would be quite a large program – Python derivative?

Funny Facts while Developing This Presentation

- While C/C++ is slow to write, error prone, and frequently unreadable, Python is known for its writability, error reduction, and readability.