

moledcule

your future friendly community based programmable led controller



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moledcule
your future friendly community based programmable led controller

moledcule



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welcome

your future friendly community based programmable led controller

specifically design for the fighting game community, modders and fightstick enthusiasts.

control your LEDs (button, balltop, plate) right from molecule itself.



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introduction

hi, my name is eugene andruszczenko*

i am a full stack developer at 

* a.k.a 32teeth *true fact, google it



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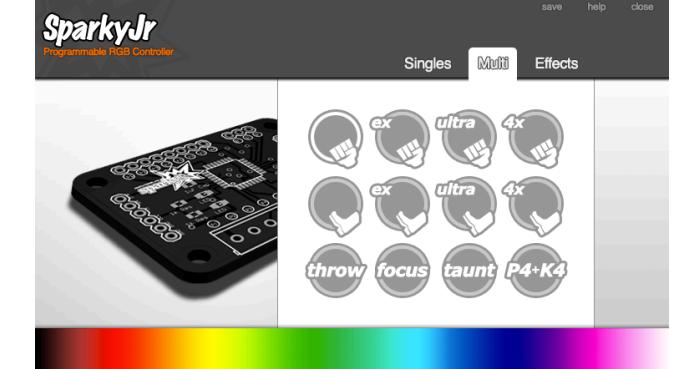
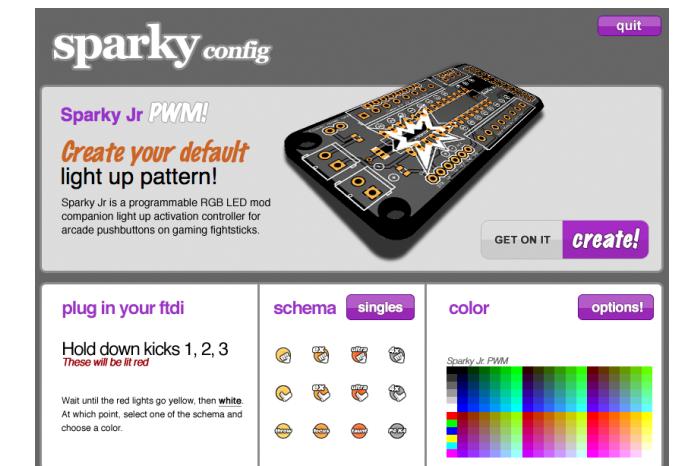
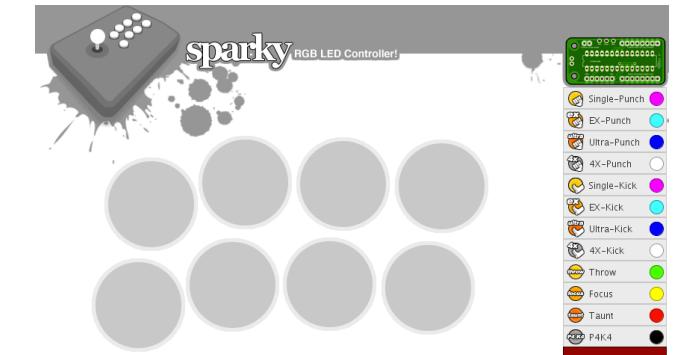
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thanks

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introduction

i created the the original **Sparky Jr** RGB LED ecosystem with the intent to enable users with the hardware solution to drive their arcade fightstick customization needs





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introduction

i am here to talk about **moledcule**

moledcule was built to:

- enable non technical users to leverage programmable RGB LEDs.
- connect to your AVR microcontroller such as Arduino
- compile and flash 'sketches' to the microcontroller
- configure your devices
- program without writing a line of code



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background

this year (2016), i turned **40!** and i had realized that i had been fortunate enough to be gainfully employed, in an industry sector i love, where hobby, became job, became career... ...for 21 years. that was more than half my life, doing what i love, and getting paid.

and then i got laid off.

as an active member of the **FGC, OSH** and **OSS** communities, and with much deserved rest and time on my hand, i started playing again, and reading the forums, and catching up on new hardware, but still i noticed that support for the third party hardware distributors was still a major headache. being one who does not sit idly by,

i decided that i can contribute to the community by giving back

thanks

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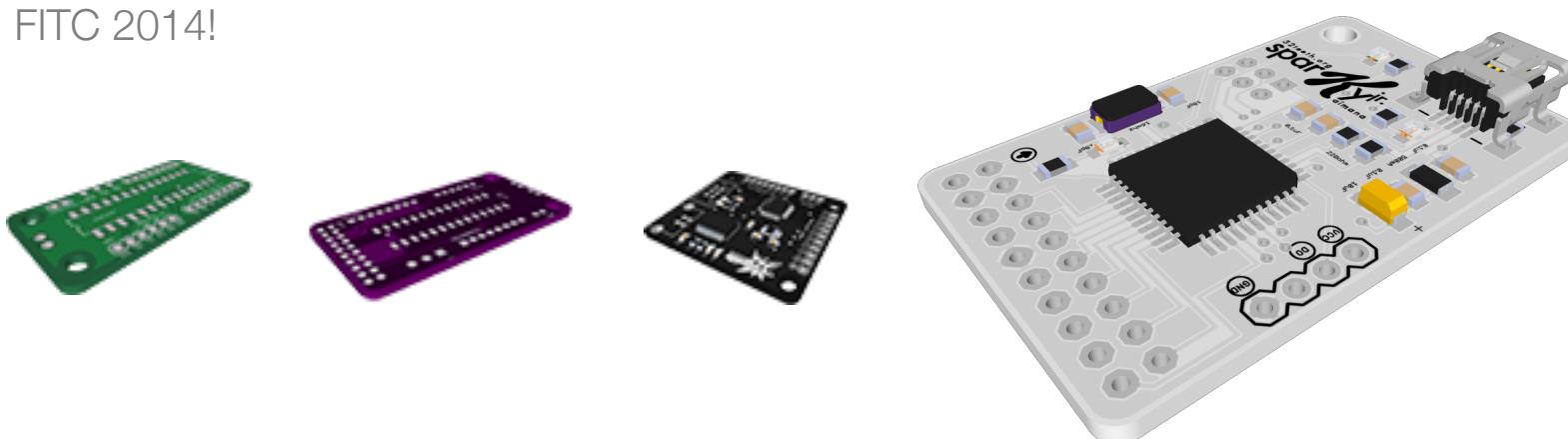
thanks

Ta

Sparky Jr

a little over 8 year ago, **Sparky Jr** was unleashed on the *FGC* modding hubs

- an AVR hardware based modular controller for RGB LED (both CA/CC)
- saw 4 major releases
- 3 major arcade shop distribution
- Introduced programmable hardware from Java app
- configurator saw 4 major releases, and one Chrome App (still available)
- helped and lead a standardized 20 pin breakout for all FGC based products
- demonstrated at CreateInTO back in 2013!
- FITC 2014!





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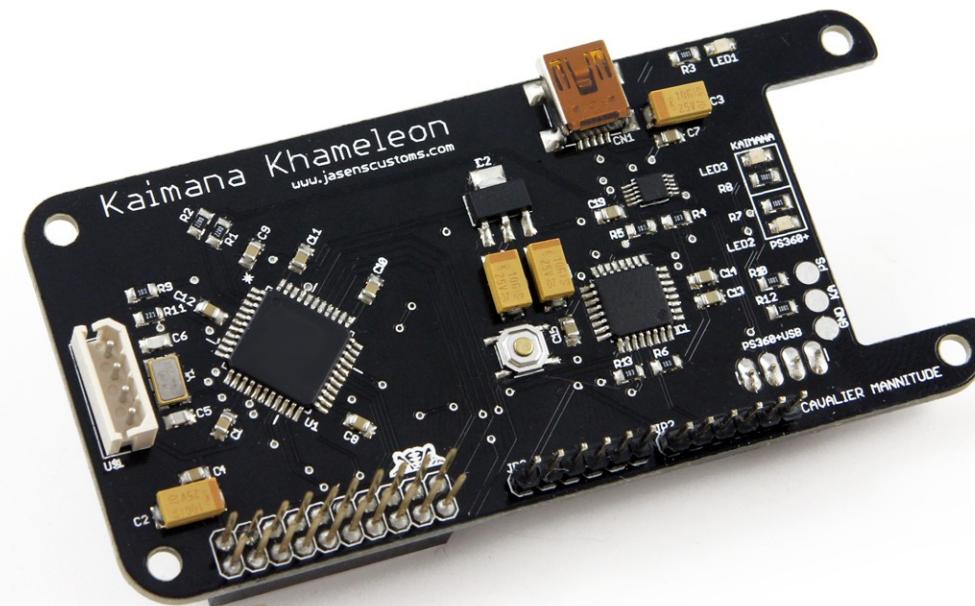
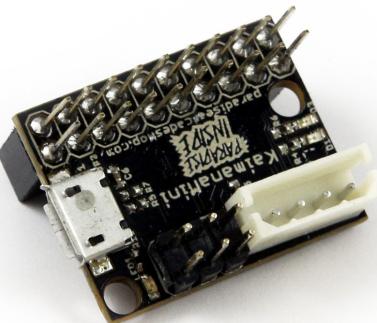
thanks

Ta

kaimana

a 3rd party offshoot of Sparky Jr by

- released 2014
- two versions (mini and khameleon)
- khameleon featured advanced soft switch between config and soft usb passthrough





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the kaimana modules became widely popular but:

- user wanted customization
- required install of Arduino IDE
- not everyone is a C/C++ developer
- growing community support (over 1000 post on one thread on SRK alone)
- **NONE OF THESE PROBLEMS WHERE MINE**

Sparky Jr was



the intent was to build out a native solution that anyone can use



which actually became...



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solve the hardware issue using software
create a community where users can:

- create themes
 - manage themes
 - share themes
 - vote / rank themes
-
- fork themes
 - clone themes
 - copy themes
 - think GitHub
-
- flash / upload any public theme to their avr device
 - remove the IDE / download / C++ / avr toolchain barriers



by enabling a community to do all the above, gain trust, establish reputation, reputable software / configurator choice for 3rd party products



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the 7 layer ~~bean dip~~ mean stack



~~bean dip~~ mean stack

mongo

express

angular

node

avrgirl

codebender

amazon



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the 7 layer ~~bean dip~~ mean stack



mongo

storage for users, profiles, themes

express

web app framework, middleware everything

angular

well, you know, it's not MERN

node

runtime ftw

avrgirl

AVR JavaScript helpers

codebender

Compiler as a Service

amazon

Where else you gonna put it



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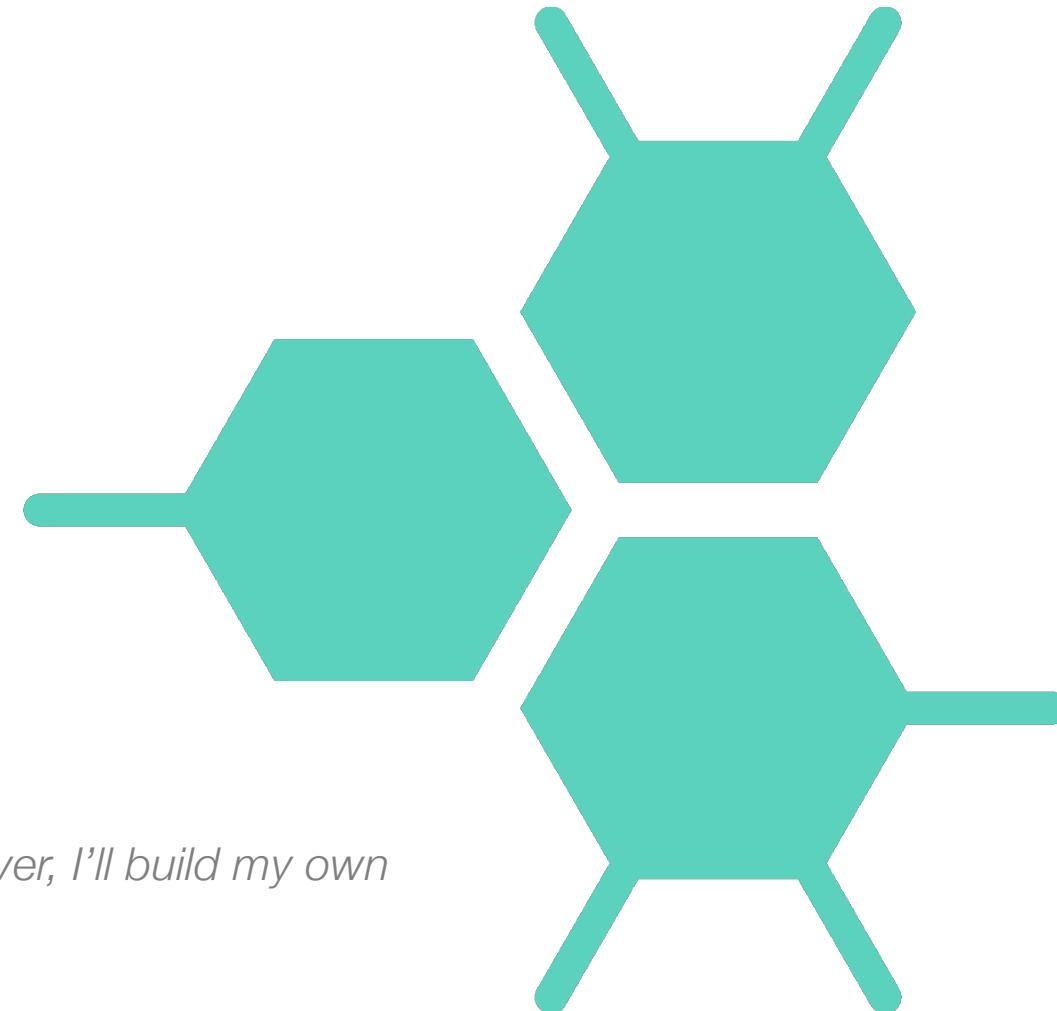
node

avrgirl

codebender

amazon

whatever, I'll build my own





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specifically design for the fighting game community, modders and fightstick enthusiasts. control your LEDs (button, balltop, plate) right from molecule itself.

The screenshot shows a user interface for managing themes. At the top, there's a navigation bar with a search bar labeled "Search themes..." and a user profile for "Eugene Andruszchenko". Below the search bar, a theme titled "All in everything" is displayed with a rating of 5 stars and various configuration options like "fade effect?". On the left, there are two sections: "FIGHTSTICK All in everything" and "FIGHTSTICK Sparky Jr - 8 Button". Each section includes a preview of the button layout, a color palette, and configuration details like "buttons 8", "alts 3", "balltop NO", "plate YES", and "neoring NO". At the bottom, there are navigation arrows and a page number "1".



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solving one problem at a time

the biggest gripe users had with their hardware was wiring order usually didn't vibe with default provided by kaimana hardware

moledcule solved this by introducing a unique *drag an drop* wire order systems

Theme Configuration

Device Configuration All in everything

Platform Fightstick	Device Kaimana	Punch Buttons 4 Buttons	Kick Buttons 4 Buttons	Alt Buttons 3 Buttons	Ballop LED Not Installed	Plate LED Installed	Neopixel RING Not Installed
------------------------	-------------------	----------------------------	---------------------------	--------------------------	-----------------------------	------------------------	--------------------------------

Wiring Order for All in everything





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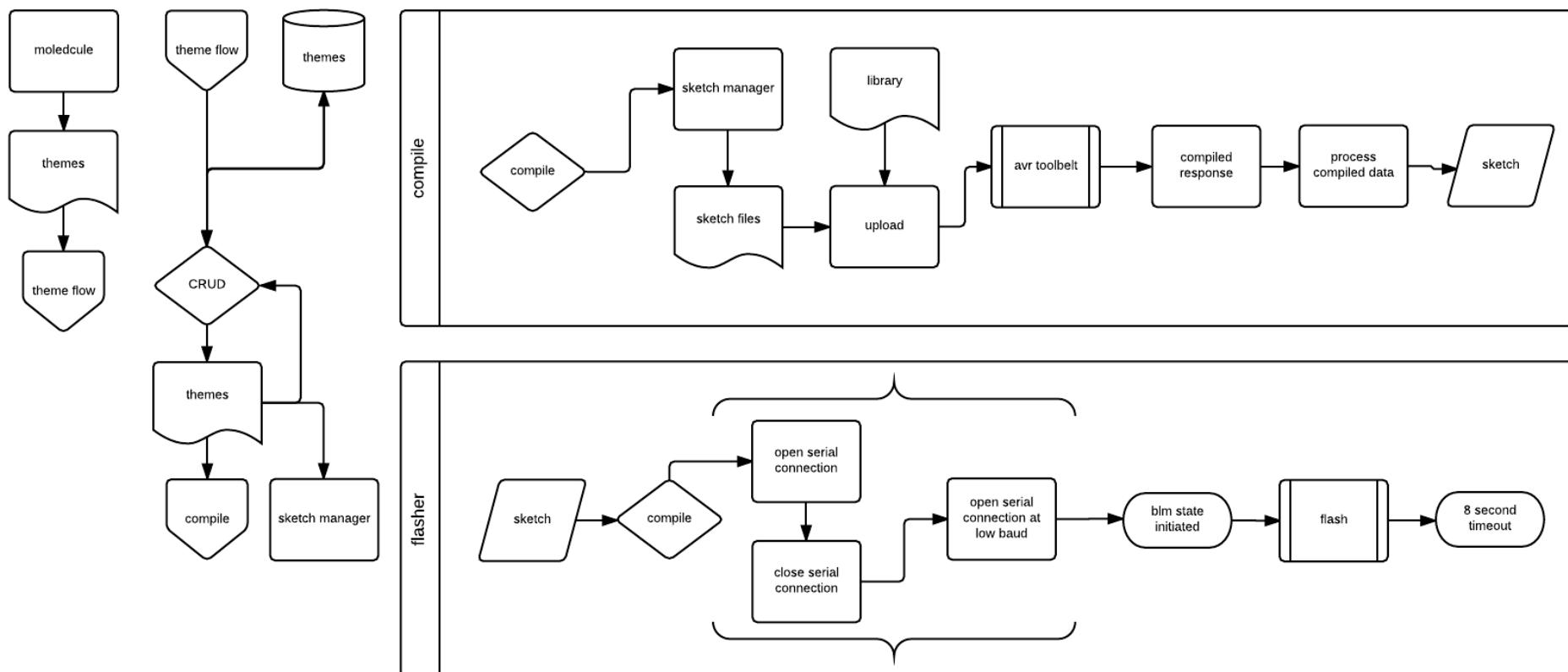
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application flow



thanks



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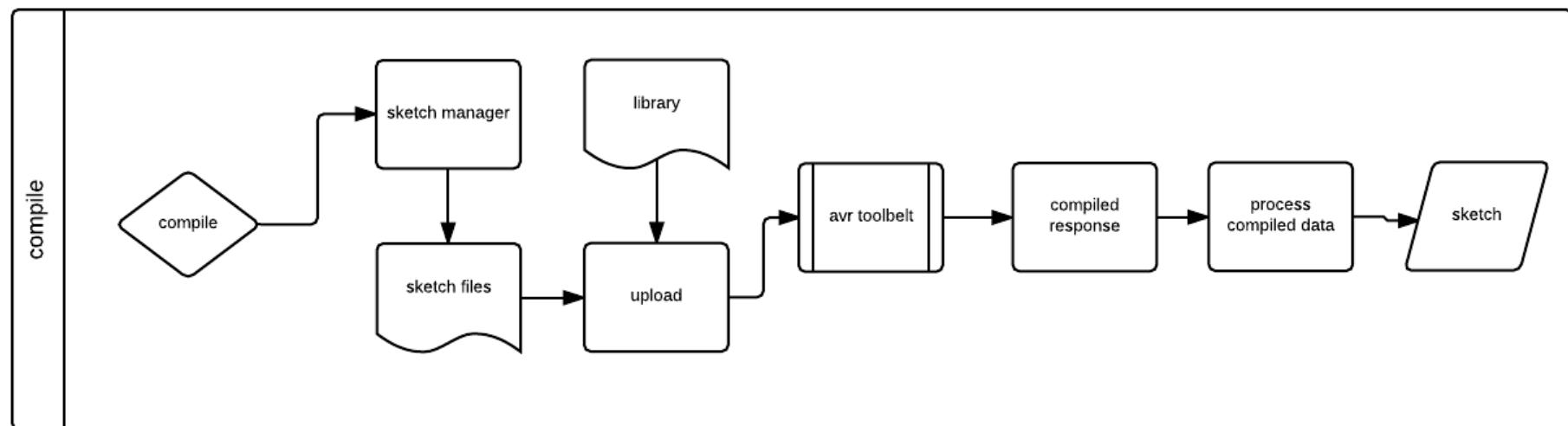
Ta

moledcule

compilier as a service

an exclusively unique feature of the **moledcule** ecosystem, was the introduction of a compiler as a service (*Compaas*), code named '*richard*'!

'richard' is simply a federated avr toolbelt and build system, think avrdude in the cloud.



thanks



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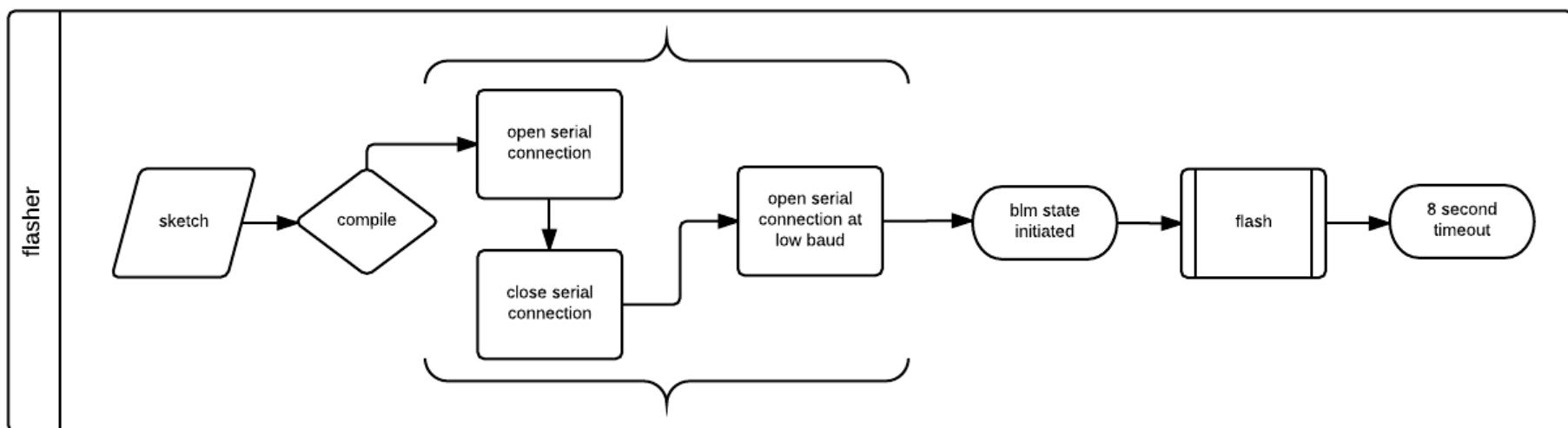
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flasher

in previous iterations (Sparky Jr), the installed firmware contained extensive serial commands for on chip programming. moledcule removed this dependency, and freed up close to 6,000 bytes of program space and 800 bytes of dynamic memory... ...this was huge! meet '*genya*'

with '*genya*' we can overwrite the existing sketch, with the newly compiled one '*richard*' provided us with. HUGE!



thanks



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demo

a simple presentation of

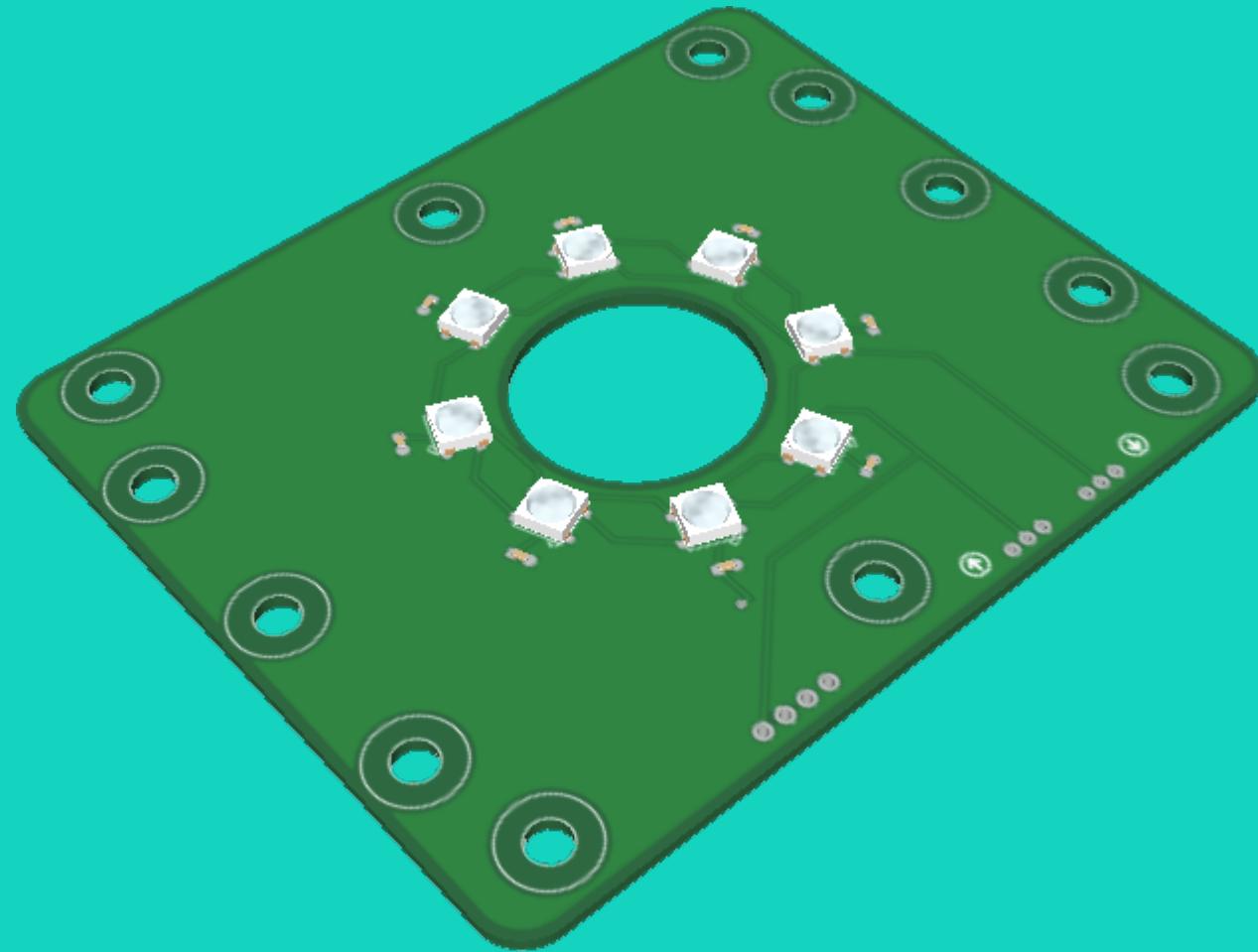
- theme creation
- theme color selection
- wire management

BONUS ROUND

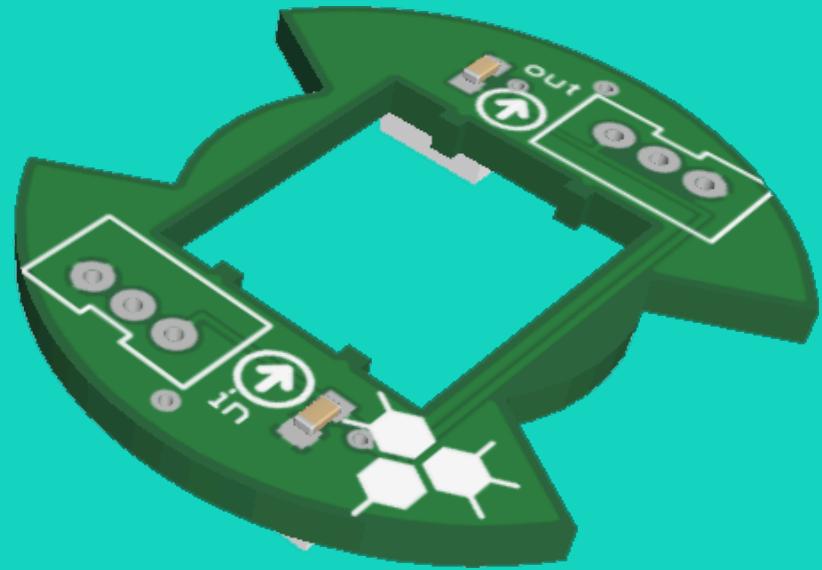
I GOT FIRST

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introducing a first in the market joystick plate

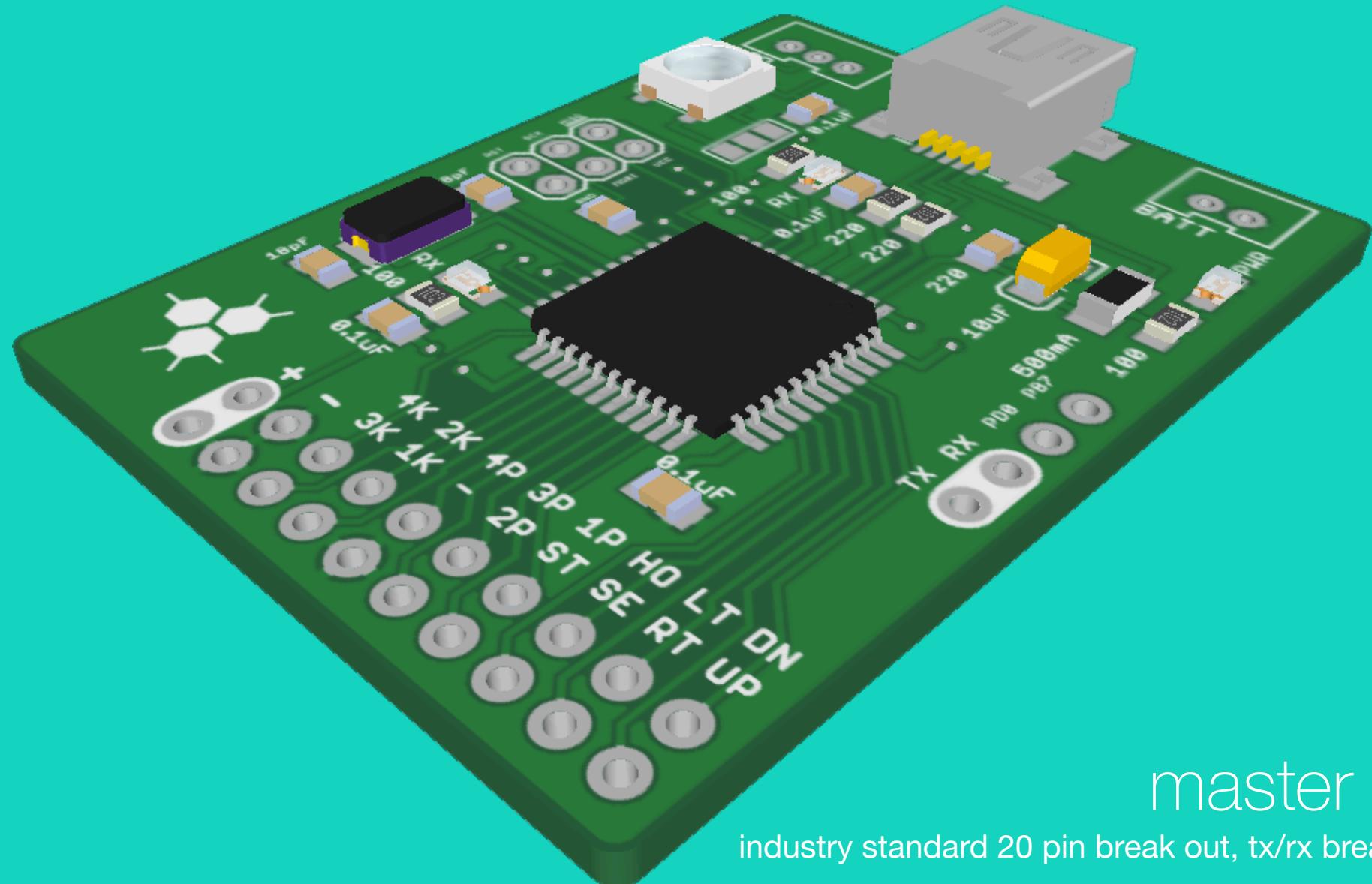


striker plate
eight ws2812b leds, daisy chain and kaimana ready



satellite

twows2812b leds, daisy chain ready



master control
industry standard 20 pin break out, tx/rx break out, battery



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demo

a simple presentation of

- drag and drop
- error messaging
- download capabilities

The screenshot displays the molecdule application's user interface. On the left, there is a sidebar with various navigation items: welcome, introduction, background, sparky jr., kaimana, opportunity, molecdule, demo, compiler, and thanks. Below these are smaller buttons labeled We, In, Ba, Sp, Ka, Op, Mo, De, Co, and Ta. The main content area is divided into two sections. The left section, titled "FAQ", includes a search bar, dropdown menus for "Board" (set to Leonardo) and "Version" (set to Ver 2.0), and a list of six items with file counts and control buttons. The right section, titled "GOOD MORNING", features a "Files" section with a list of steps: 1. Drag and drop your files below!, 2. Create a collection, and 3. Compile your collection. It includes a large "Drop files to upload" area and a "create collection" button at the bottom.

Item	Count	Actions
autodesk	1 file	trash, settings, download
basic	1 file	trash, settings, download
basic	5 files	settings, download
kaimana	6 files	settings, download
molecdule	15 files	trash, settings, download
particle	4 files	settings, download



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THANK YOU

&

QCF*P