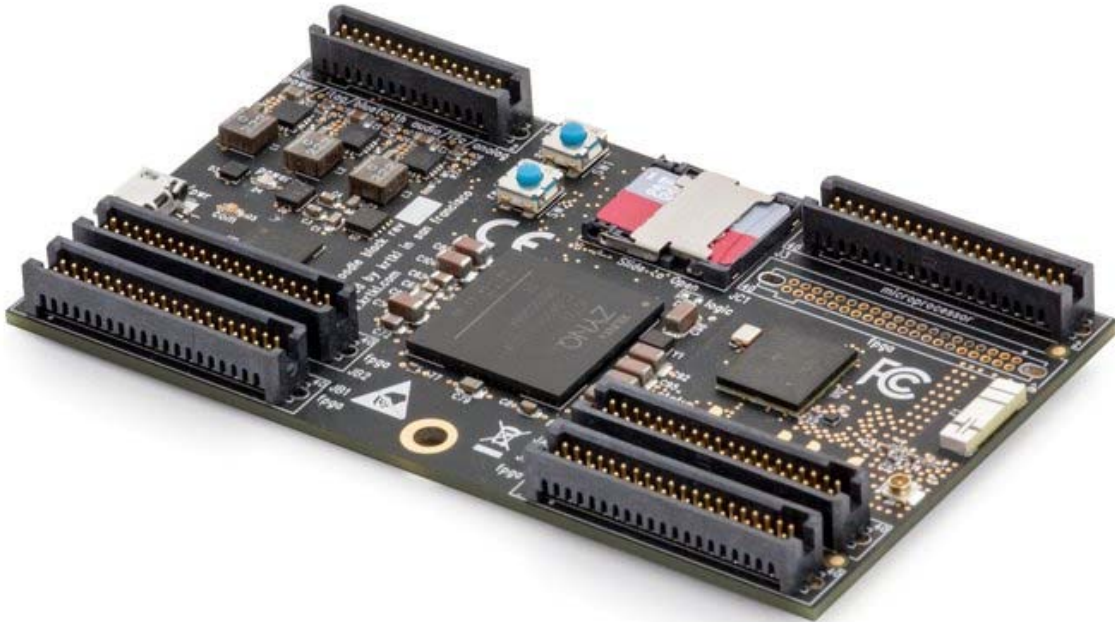


A tiny wireless computer for creating something truly different.



snickerdoodle is a tool for dreamers and creators to build, make, invent, and do things they've always been told weren't possible. It's for people willing to explore new horizons and challenge themselves to learn, grow, and handcraft great, new things - not because it's easy, but because it's worth doing.

Why Do I Need snickerdoodle?

If you are satisfied with what existing low-cost platforms have to offer because they're "good enough," or you see no reason to dare to branch out and try something new, or you have never been left thinking "I love [fill in the blank maker / development board], but I really wish it could do [this]," then read no further. snickerdoodle isn't for you.

We love what Raspberry Pi and Arduino have done for education and the impact they've had on the growth of the maker community. We also realize that what fundamentally makes these platforms powerful is what limits them: they are intended to help you take the first step, to get you thinking, to get you writing those first lines of code, to foster confidence and hope and curiosity.

The question is: now what? What if I want to do more? To grow? To create something different? Why is there nothing out there that I can afford and use that lets me make what I want to make?

That is why you need snickerdoodle. To create something different. To make what you want to make. To take back control of your projects. To invent something you will be proud to show your friends, your family, your colleagues. Put another way: snickerdoodle takes all the things that Raspberry Pi, Arduino, and BeagleBone prevent you from doing and allows you to do them.

Open Source Software

snickerdoodle includes support for Ubuntu Linux, ROS, and FreeRTOS so you can take advantage of powerful communities and code bases and quickly port over your own existing projects.

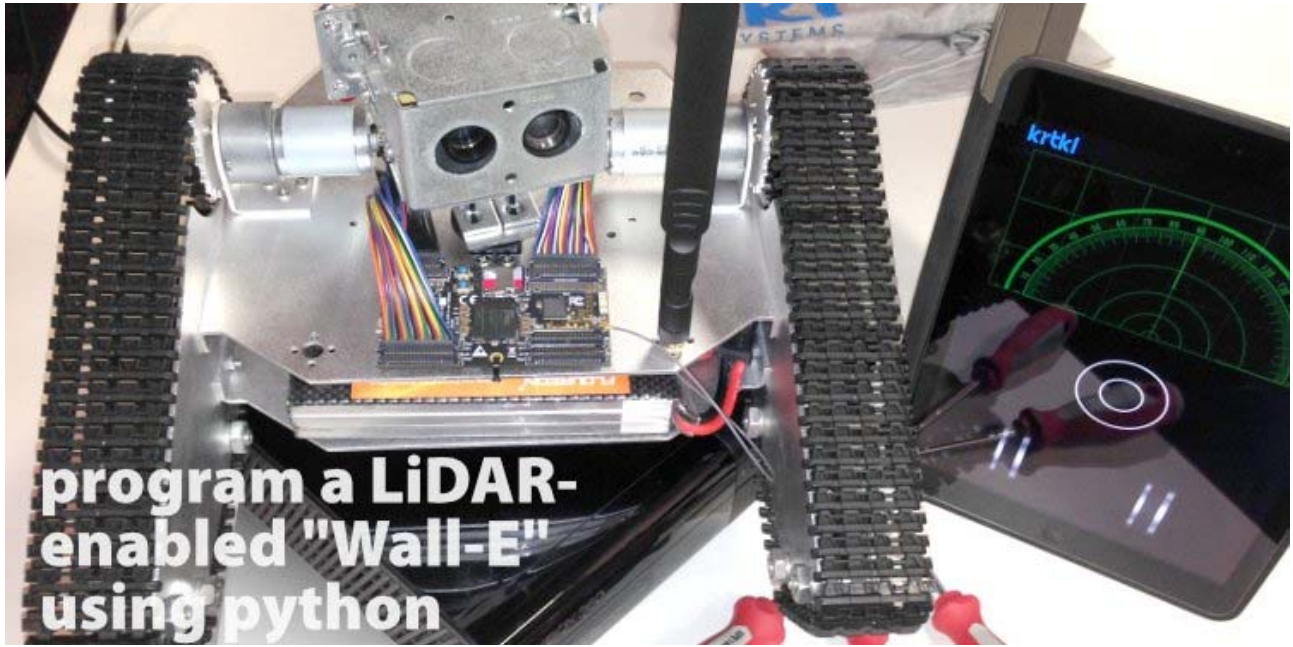


snickerdoodle uses an Eclipse-based development environment for programming in Python, Java, and C/C++. With loads of reference designs and pre-built applications, building and learning are actually fun again.



What Can I Do With snickerdoodle?

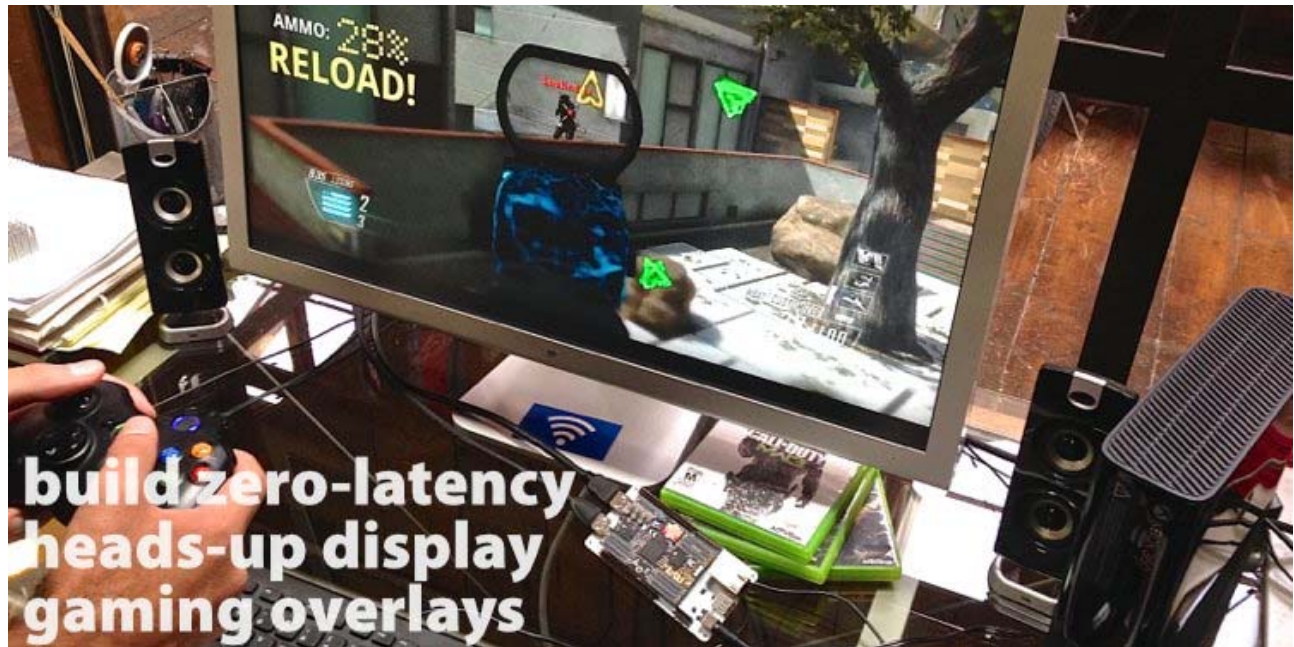
With **Wi-Fi**, **Bluetooth Classic**, **Bluetooth Low Energy**, a **dual-core ARM processor**, and **155 user-customizable I/O** (yes, 155 I/O...across **230 pins**...including **76 grounds**), snickerdoodle is more than "just another cheap Linux computer." snickerdoodle gives you the freedom to...



program a LiDAR-enabled "Wall-E" using python



develop cryptocurrencies and mine bitcoins



and for the truly ambitious, build things like

- **RADAR-enabled, self-navigating terrestrial robots**
- **unmanned aircraft with heads up displays and collision avoidance**
- **wireless facial-recognition security systems**
- **6-axis robots and 3D printers**



- **gigabit networking and high-frequency trading**
- **computer vision systems for 3D mapping and object recognition**

- **autonomous underwater rovers**
- **remote weather stations and sensor clouds**

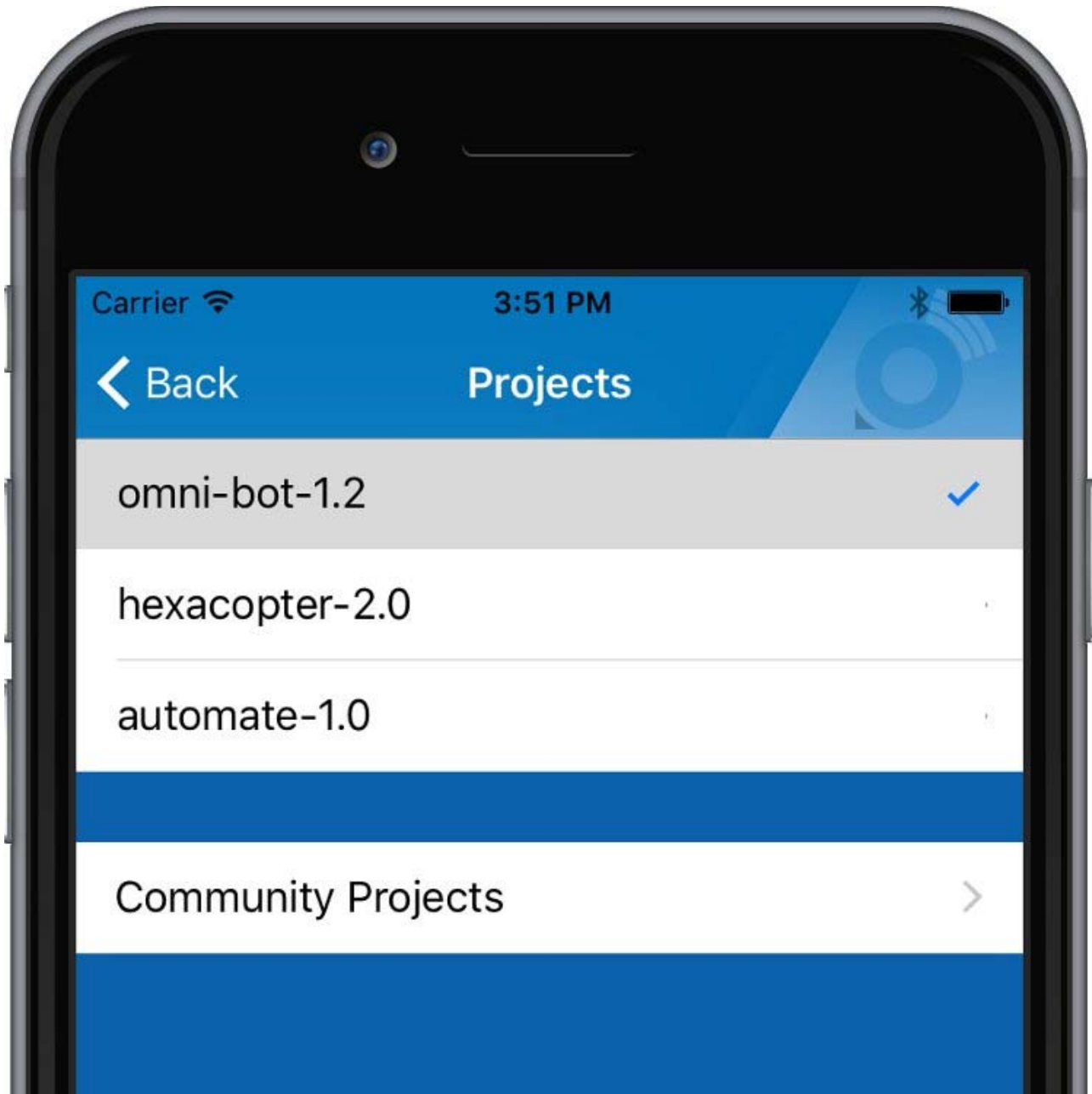
You get the idea...

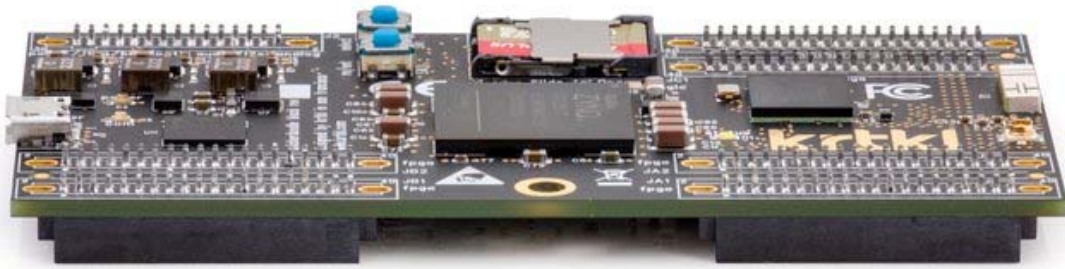
But How?

snickerdoodle has built-in Wi-Fi and Bluetooth and uses a special ARM processor with software-reconfigurable peripherals and I/O. Think of it as a 3D printer for digital hardware. So whether it's PWMs, or SPIs, or regular old GPIO, you'll no longer be held back by the chip or board maker telling you what pins you get, how many, and where - you will *always* have the pins you need, *when* and *where* you need them.




And with the paired mobile app (iOS and Android), you'll be able to wirelessly upload your projects and hardware configurations on the go. So even if you've never worked with reconfigurable hardware before, you can take advantage of dozens of pre-built, open-source peripheral libraries, providing unique, freely selectable "personalities" for your snickerdoodle - all from the friendly confines of your phone/tablet. Just scroll, find, and tap.





Getting Started With snickerdoodle

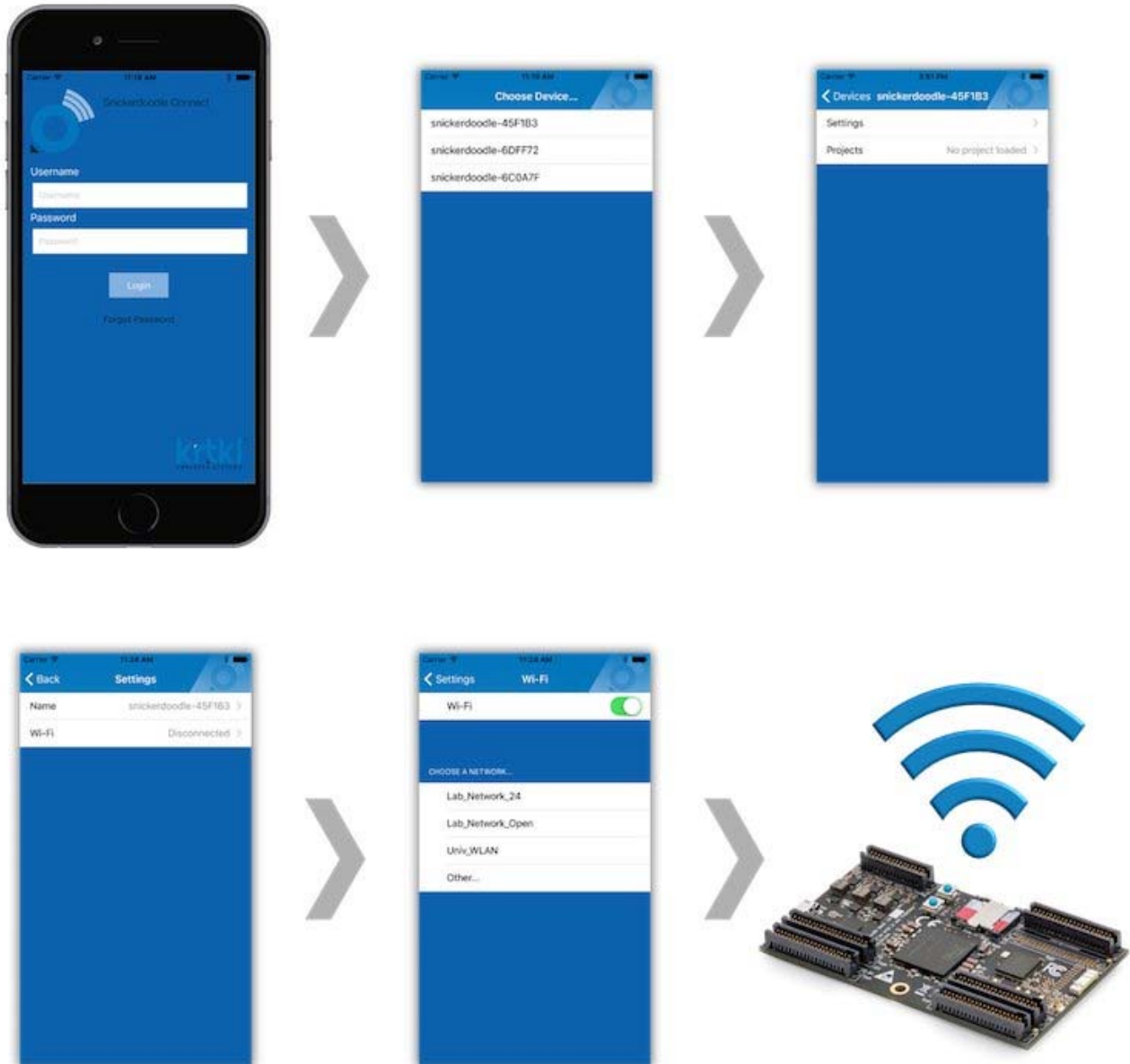
Paired with a free mobile app and an Eclipse-based development environment, you'll be able to get from opening the box to running an application in **under 15 minutes**.

iOS + Android +  eclipse

Step One: Connecting to snickerdoodle

If you've ever logged onto a Wi-Fi network or paired with a Bluetooth device using your phone or tablet, you already know how to connect to your snickerdoodle and how to connect your snickerdoodle to the 'net.

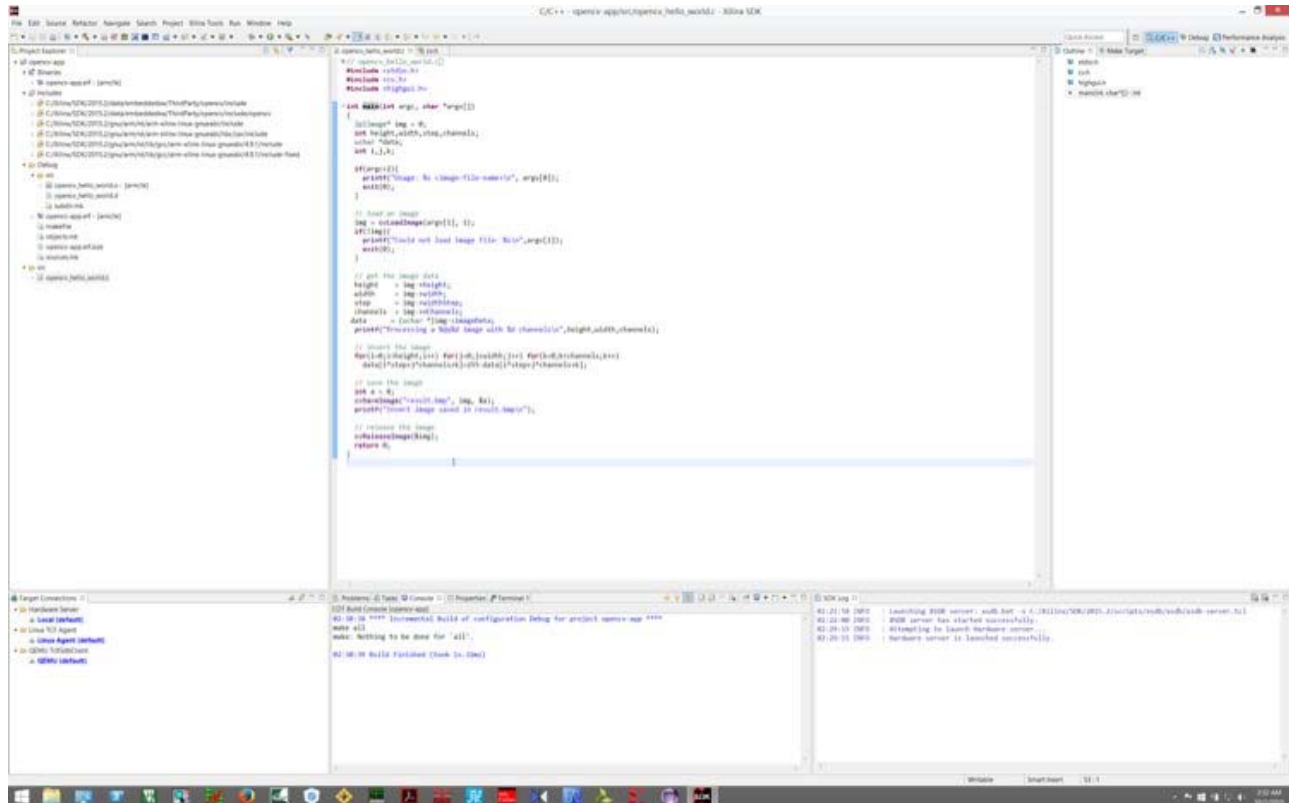
Ready?



And that's it! Yes, seriously - we told you it'd be easy. Next up?

Step Two: Using the IDE (i.e., the Hacker's Habitat)

snickerdoodle is programmed using a freely downloadable, Eclipse-based integrated development environment (available for Windows and Linux).



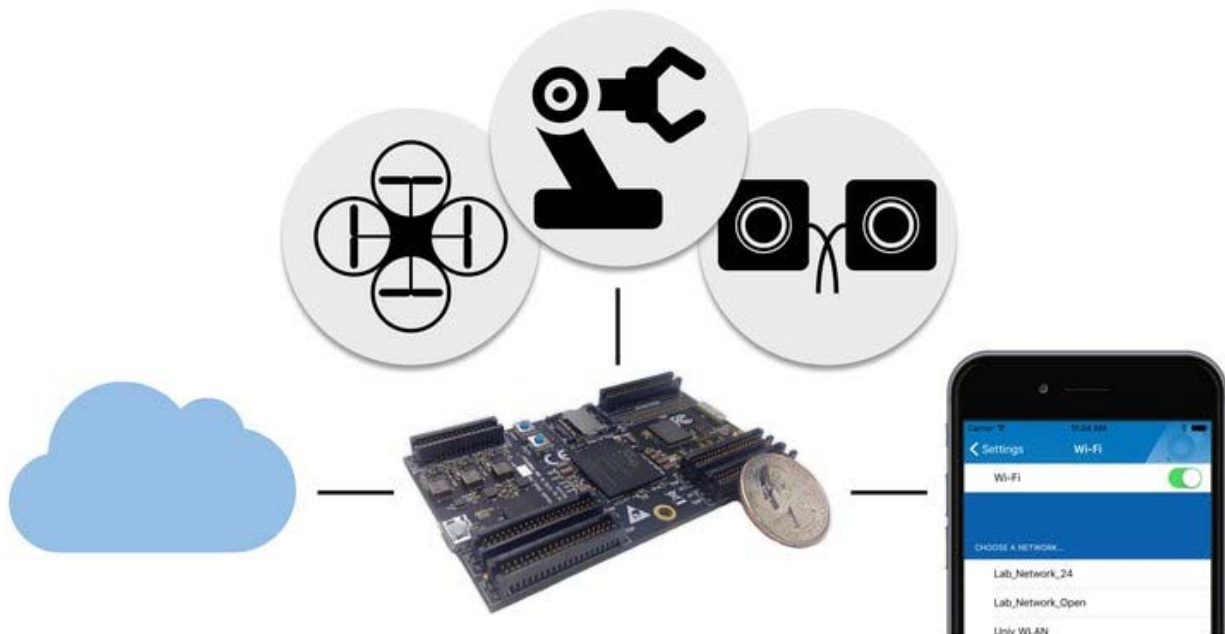
So whether you're working in Python, Java, or C/C++, you'll be right at home.

You'll also be able to download all the board support packages (BSPs) and reference designs you need for your application straight from the krtkl and snickerdoodle websites. With everything from pre-built hardware configurations to open source projects, operating systems, and libraries, snickerdoodle starts your project off on the right foot.

*Note: interested in learning more about the IDE? Check out our YouTube channel for tutorials and demos as well as the links provided in the FAQs below.

Who Needs Wires?

Why clutter your desk with more wires when you don't need to? snickerdoodle can be configured wirelessly so once you're connected to your snickerdoodle, you'll be able to load projects, hardware configurations, and reference designs straight from your mobile device.



Off-the-Grid

Of course, wireless isn't for everybody. Maybe you don't want your data leaving your bedside. Maybe you're worried the government is watching your every move. Or maybe you're stuck inside a Faraday cage in Bermuda. Whatever the reason, fear not...because you can still program your snickerdoodle the "old-school way" - with no wireless connection OR mobile device.

You can:

- jack right into the microUSB and use the serial console
- load everything onto a microSD card and install it directly into the on-board, locking "captive" microSD card cage
- or even set up snickerdoodle to be recognized as a "mass storage device" and "drag and drop" applications right into flash

And for more advanced embedded development, there are dedicated pins (on J2) for debugging via JTAG.

Wait, Where Are the Connectors?

snickerdoodle has seven physical connectors (eight if you opt for the upgraded processor).



Connector	Manufacturer Part Number	Description
J1	FCI 10103594-0001LF	USB and Power Input
J2	Samtec TFM/SFM-115-01-F-D-A	Power, JTAG, Bluetooth Audio, I2C, Analog
J3	Samtec TFM/SFM-120-01-F-D-A	Microprocessor Subsystem
JA1, JA2, JB1, JB2	Samtec TFM/SFM-120-01-F-D-A	Reconfigurable I/O
JC1	Samtec TFM/SFM-120-01-F-D-A	(Zynq-7020 only)



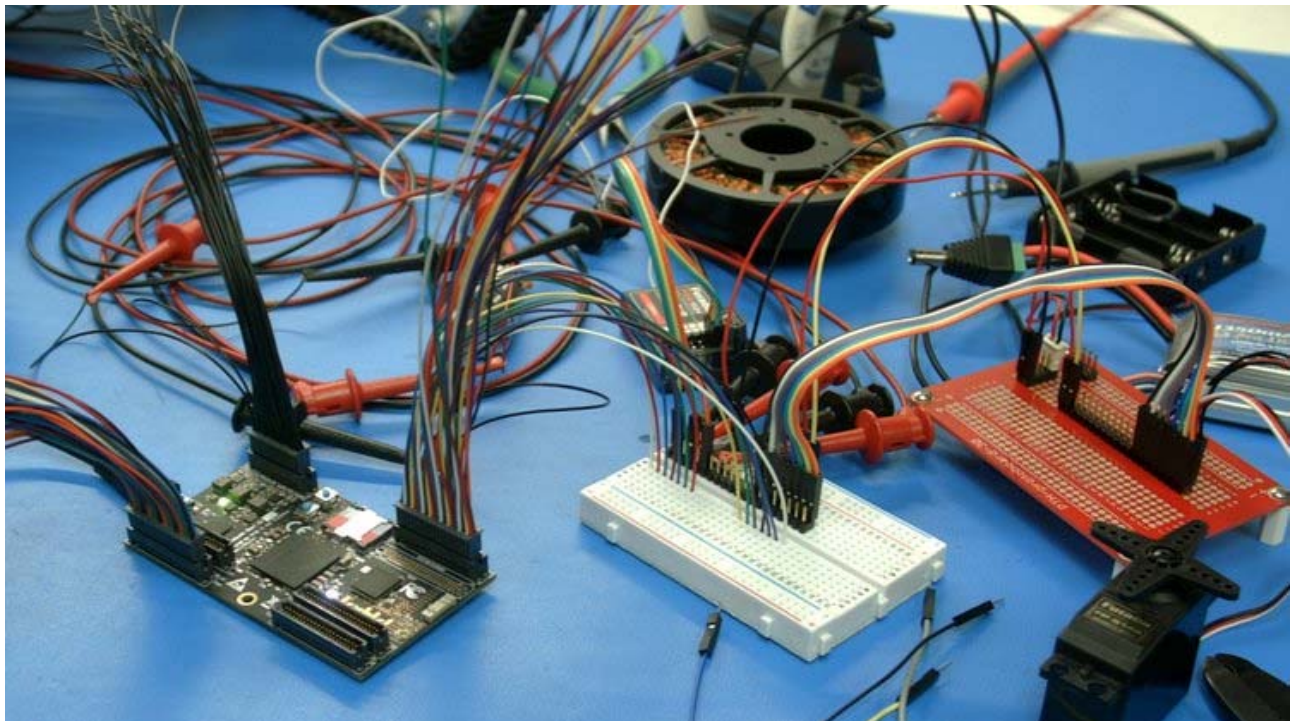
In order to keep snickerdoodle small enough to use in mobile robots, drones, and other size- and weight-sensitive applications - but not so small that you:

- can't practically hook anything up out of the box or
- are forced to buy an expensive baseboard just to get to pins you can actually use

The 0.05" pitch, upright headers can be plugged into directly using a housing+jumper pack, providing 0.1" "maker-friendly" female jumpers for quick prototyping right out of the box.

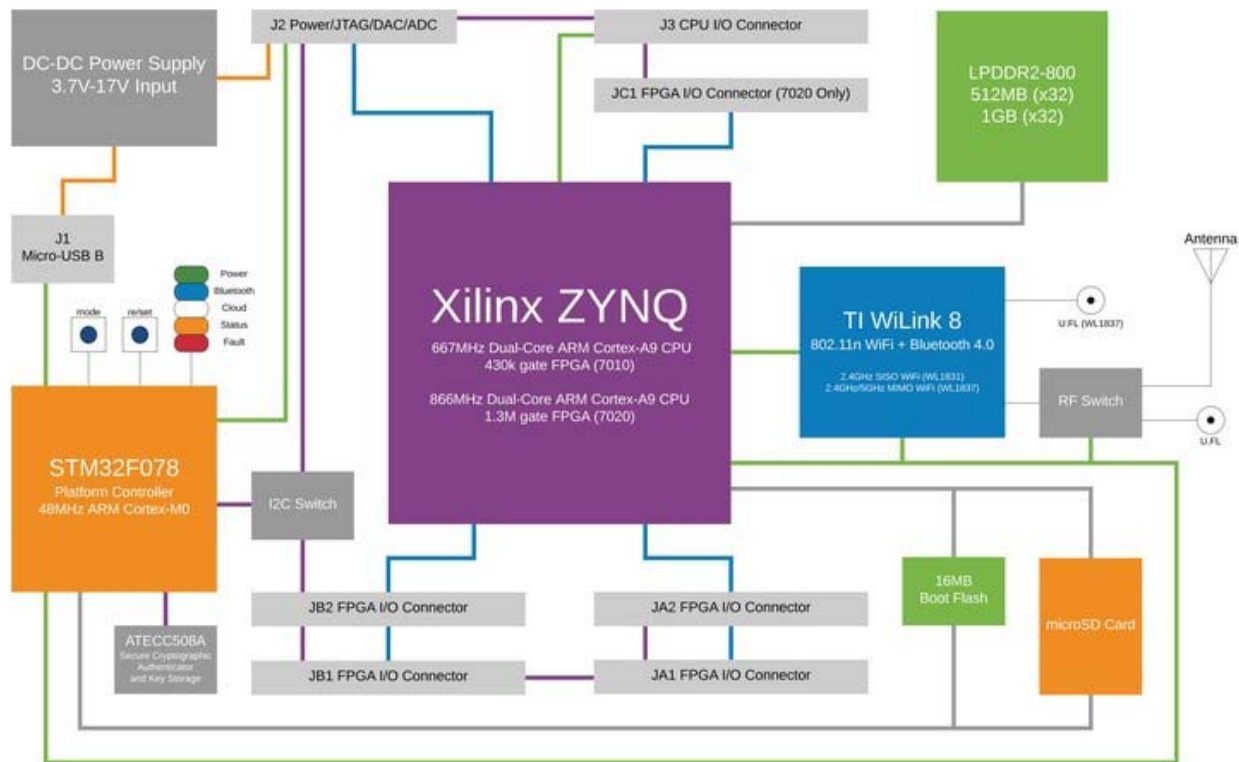


This is the perfect solution if you neither need nor want any bulky USB, Ethernet, or HDMI jacks in your system, or you're just looking to hook something up on the workbench and start creating your own gloriously 'frankensteined' contraption...



But don't worry - if it's more single-board-computer-style connectors or 0.1" headers you're looking for, we have a solution for that too! Just head on down to our "baseboards" section below...

snickerdoodle: Inside & Out



Below are the high-level technical specifications for snickerdoodle (items in **bold** are configuration specific):

- Dual-Core **667MHz** or **866MHz** ARM Cortex-A9 processor w/**430K** or **1.3M** reconfigurable gates
- **155-180 I/O (100 or 125 reconfigurable)**
- **512MB** or **1GB LPDDR2 RAM**
- **2.4GHz 802.11n SISO Wi-Fi** or **2.4 & 5GHz 802.11n 2x2 MIMO Wi-Fi**
- **Bluetooth Classic**
- **Bluetooth Low Energy**
- 3.7 - 17V input
- locking "captive" microSD card cage
- microUSB 2.0 (w/ serial console and mass storage device)
- programmable user interface: 5x LEDs & 2x sealed buttons
- 2" x 3.5" (50.8mm x 88.9mm)

- iOS & Android apps

A microprocessor you can customize!

The workhorse behind snickerdoodle is an ARM-based System on Chip (SoC) from Xilinx called "Zynq."

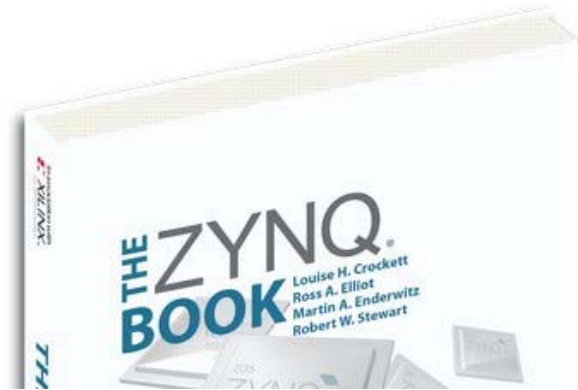


These powerful little chips - which have roots in industrial, aerospace, and defense applications - allow hardware to be reconfigured with software, freeing you to accomplish things that simply aren't possible with regular microprocessors (like those in the Raspberry Pi and Beaglebone - which have roots in DVRs and cell phones).



Unlike a lot of more complicated reconfigurable hardware, the Zynq SoC inside snickerdoodle has a full-blown ARM microprocessor inside meaning you are able to treat it (and program it) as if it were "just another microprocessor" ...with a ton of really fast, reconfigurable I/O.

In other words, the development process and tools are very similar to what you're used to using with other systems like Raspberry Pi.



If you're interested in learning more about Zynq, check out the free e-book at ZynqBook.com.

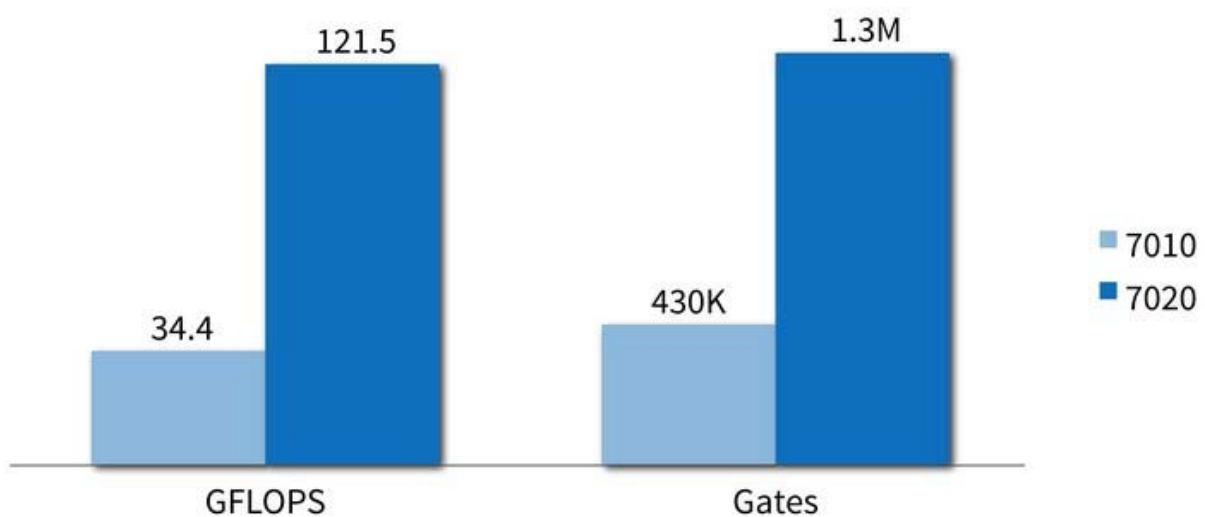
One Chip, Two Delicious Flavors

With snickerdoodle, you have three flavors to choose from:

snickerdoodle one comes with a **667MHz Dual-Core ARM Cortex-A9** processor and **430K reconfigurable gates** (Zynq-7010) to give you 155 I/O (100 reconfigurable) and everything you need to get started.

If you need more I/O and 3x the configurability, snickerdoodle prime bumps up to **1.3M reconfigurable gates** (Zynq-7020) and 180 I/O (125 reconfigurable).

And finally, if you're looking for even more horsepower, snickerdoodle black packs a punch with an **866MHz Dual-Core ARM Cortex-A9** and reconfigurable gates that are **30% faster than snickerdoodle prime** (Zynq-7020).



See our FAQs at the bottom of the page for additional hardcore technical details on the exact

part numbers, I/O performance, documentation, and more.

Wireless: Can You Hear Me Now?

Sick of putting up with poorly performing dongles or endlessly wrestling with dysfunctional drivers just to get your projects connected to the Internet or your mobile device? snickerdoodle has the cure.



With Wi-Fi and Bluetooth on board and equipped with fully functional networking stacks right out of the box, wireless is no longer an afterthought. Using your iOS or Android device, you and your snickerdoodle will be online faster than you can say, "I love my snickerdoodle."



Wireless connectivity is provided via a Texas Instruments WiLink 8 Wi-Fi + Bluetooth pre-certified module.



snickerdoodle one uses the **WL1801** radio to provide single-band **2.4GHz 802.11n SISO Wi-Fi**.

snickerdoodle prime utilizes the **WL1831** for **2.4GHz 802.11n SISO Wi-Fi** and **dual-mode Bluetooth 4.0**. **Note: snickerdoodle prime LE does not include Bluetooth.**

Finally, snickerdoodle black comes equipped with the **WL1837** and bumps you up to dual-band **2.4GHz & 5GHz 802.11n 2x2 MIMO Wi-Fi** to go along with **dual-mode Bluetooth 4.0**.

Model: WL18 MODGB

Test Grade: 35

FCC ID: Z64-WL18SBMOD

IC: 4511-WL18SBMOD

 201-135370

LTC: 13490 35



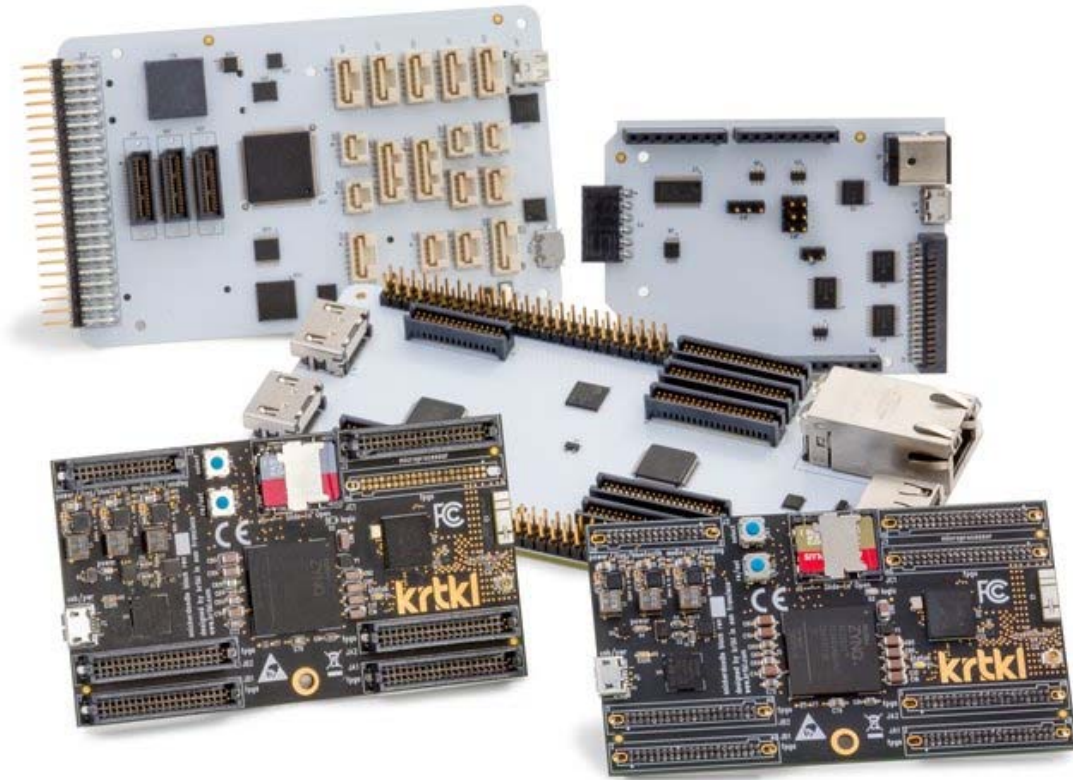
snickerdoodle prime and snickerdoodle black modules come equipped with Bluetooth 4.0, which means they provide both Bluetooth Classic and Bluetooth Low Energy. Having both options really opens up communication and control possibilities, simplifies device pairing, and allows for very low-energy data transfers and device interaction – a must for mobile, battery-powered systems.



See our FAQs at the bottom of the page for additional hardcore technical details on the exact part numbers, wireless performance, documentation, and more.

Baseboards

Have a specific application in mind and want a little help getting started? snickerdoodle can be paired with several pre-configured baseboards with no need to hassle with configuration or setup.



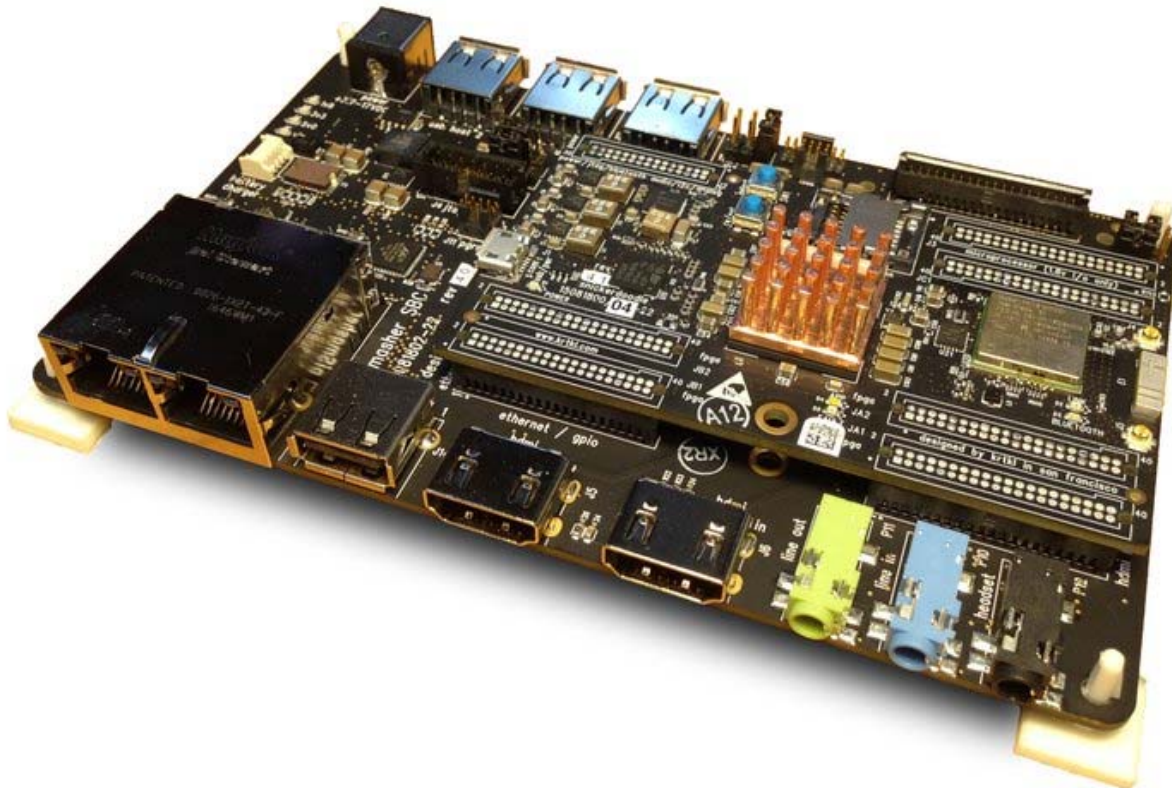
Each baseboard has its own on-board memory/identification chip that tells your snickerdoodle what's plugged in and automatically loads the right package to get all your peripherals working without you lifting a finger.

breakyBreaky Breakout

- one male 30-pin TFM mating header for snickerdoodle
- six male 40-pin TFM mating headers for snickerdoodle
- includes: four adhesive-base locking PCB supports
- dimensions: 125mm x 100mm

Note: requires snickerdoodle with connectors "down" configuration; not included.

piSmasher Single-board Computer



Or maybe what you're looking for is gigabit Ethernet, high-speed USB, a bunch of reconfigurable I/O, and...simultaneous HDMI output AND input? Enter: piSmasher... Named "piSmasher" for a reason, you'll get everything Raspberry Pi provides and more - you can kind of think of it as a Raspberry Pi on steroids.

piSmasher gives you:

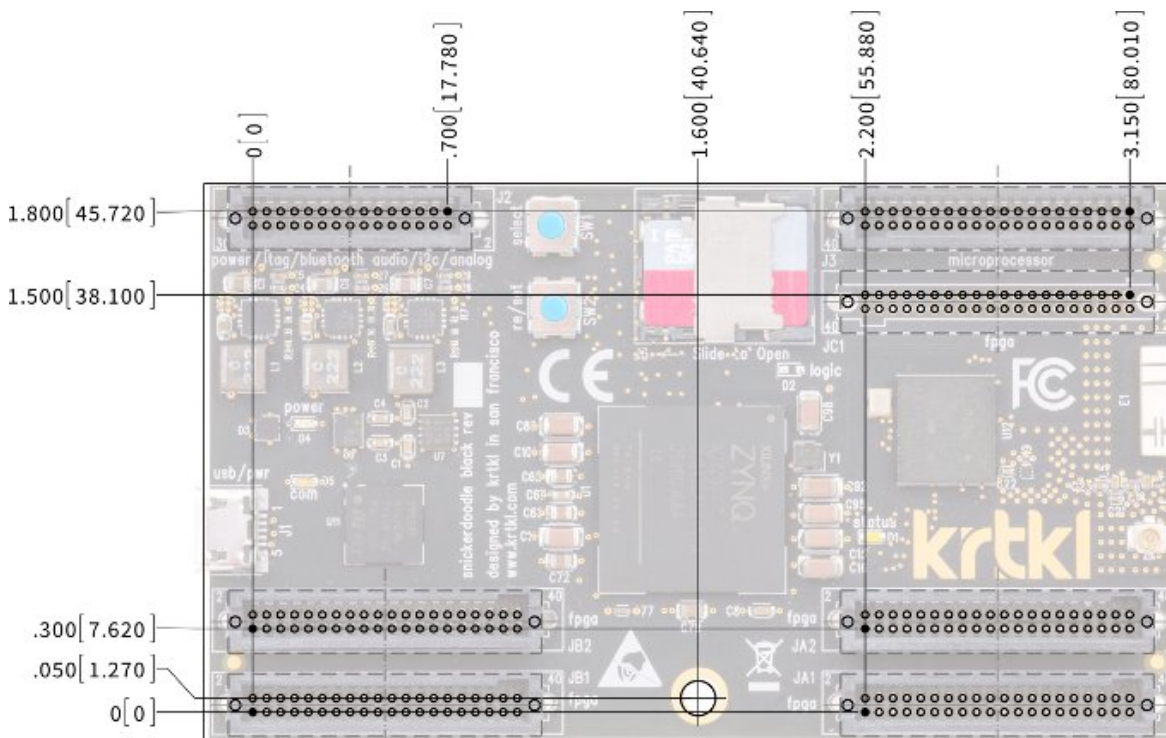
- 2.5 mm x 5.5 mm DC power jack
- one standard HDMI Type A receptacle supporting 1080p60 3D video output
- one standard HDMI Type A receptacle supporting 1080p60 3D video input
- two RJ45 1000Base-T gigabit Ethernet jacks (routed through programmable logic)

- four USB 2.0 hi-speed standard-A host receptacles
- one 3.5 mm stereo audio line-in
- one 3.5 mm stereo audio line-out
- one 3.5 mm headset jack (stereo audio, mono microphone)
- one male 40-pin TFM header for access to 25 snickerdoodle JC1 reconfigurable I/O with supply (1.8 V / 3.3 V / 5 V) and I/O (1.8 V / 3.3 V) voltage selection jumpers
- one male 16-pin "expansion" I/O header
- one 2-cell LiPo battery charging circuit
- one 14-pin 2mm Xilinx JTAG header
- I2C Identification and configuration EEPROM
- includes: four adhesive-base locking PCB supports
- dimensions: 3.5" x 5.663" (88.9 mm x 143.8 mm)

Note: requires snickerdoodle with connectors "down" configuration; not included.

snickerdoodle at Scale (and DIY Baseboards)

One of the beauties of snickerdoodle is that it's architected, built, and priced in a way that makes it incredibly easy and practical to go from proof-of-concept to production. The minute you're done prototyping, simply take the snickerdoodle you spent all those hours in the lab with and plug it right into your production system.



Have a killer idea for a baseboard or shield you don't see? Just follow our baseboard design guide and you can build your own micro shields, breakout boards, interfaces, or whatever you can dream up. And with reconfigurable I/O, the possibilities are practically endless.

Note: for more information on connectors, footprints, and pin-outs, be sure to check out our User Manual linked in the FAQs.

Accessories

Finally, snickerdoodle has a bunch of optional accessories to make your development experience even more awesome...

12V/36W International Wall Wart



Power all your snickerdoodle baseboards with this internationally universal 'wall-mount' power supply.

The specs:

- Voltage Input: 90 ~ 264VAC
- Voltage Output: 12V
- Current Output: 3A (max)
- Power: 36W (max)
- No-load power consumption: 100mW

- Cord length: 1.5m (59")
- Includes blades for:
 - North America
 - Europe
 - United Kingdom
 - Australia
 - China

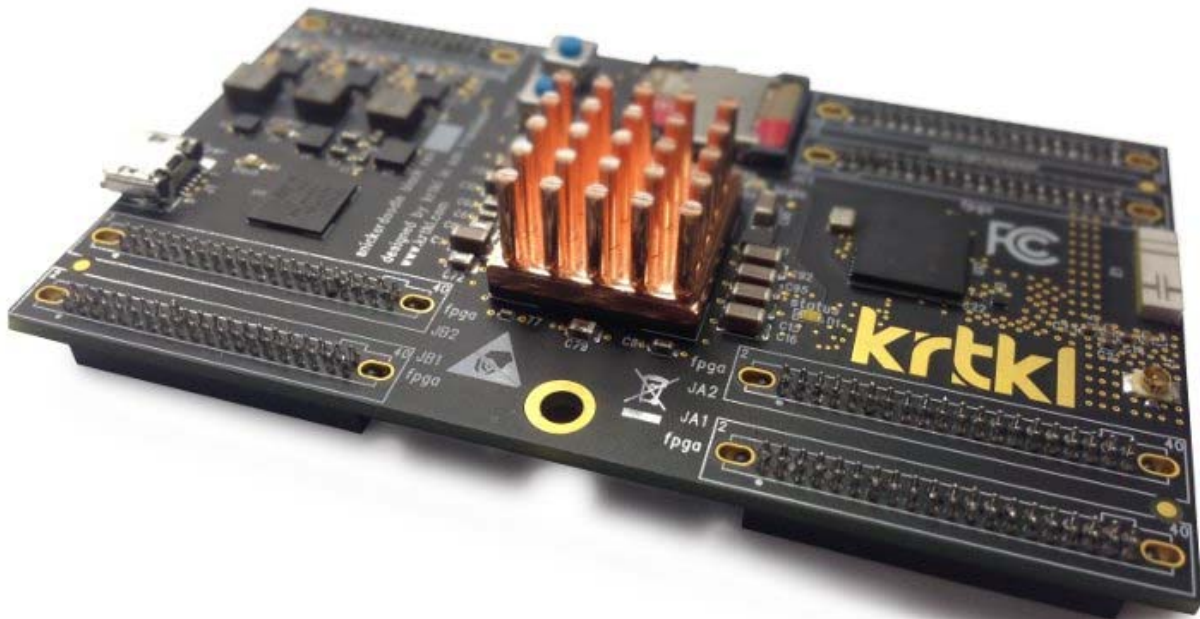
cookieJar Enclosure



Don't let your cookies get stale... keeps your snickerdoodle safe, clean, cool, and securely mounted in your autonomous cat-herding robot. cookieJar's are machined out of 6061 aluminum, bead blasted, anodized, and laser engraved. They've got an internal boss + thermal pad so the enclosure will act as the heat sink! There are four countersunk mounting holes in the base if you want to strap this thing to whatever you're driving/flying around... We'll provide the screws.

Note: the above image is a rendering, final design subject to change. snickerdoodle not included. Production enclosure to be functionally equivalent.

copperHead High-performance Copper Heat Sink



Note: included with snickerdoodle prime and snickerdoodle black

32GB U3 Speed Class microSD Card (Pre-loaded With snickerdoodle Ubuntu Linux)



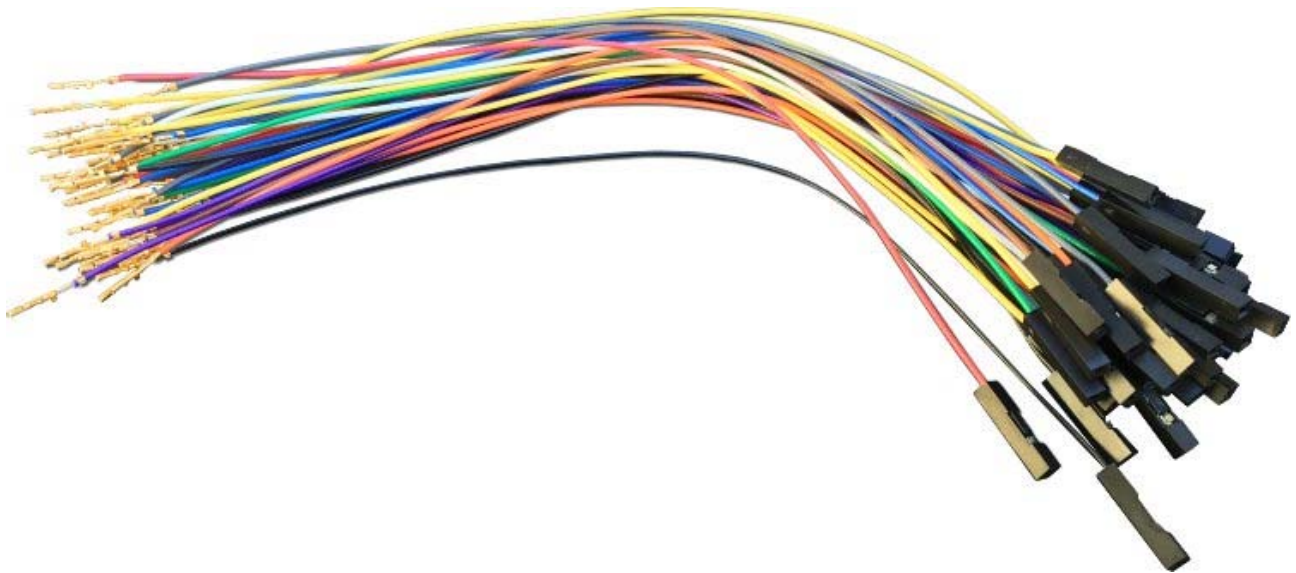
Note: microSD card manufacturer subject to change. Potential substitute shall be at least functionally equivalent.

Pin Housings + Jumpers



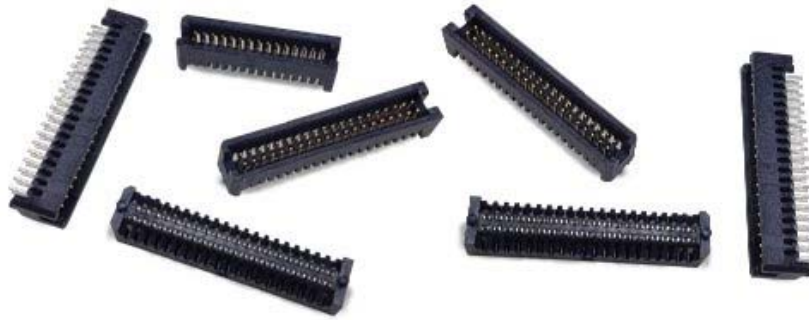
Note: All seven mating snickerdoodle connectors and a 50-pack of (loose) jumpers - see below for jumper description

Jumpers (Pack of 50)



Note: jumpers only. Wires are approximately 7.5" long (19cm), and come with 0.1" female pins & housings installed on one end and crimped pins for installation into mating Samtec housings on the other.

Baseboard Headers



Note: All seven mating snickerdoodle connectors

Who Are We?

We're a collection of electrical, mechanical, and software engineers based out of San Francisco. With decades of experience in embedded systems, real-time controls, and robotics, we've worked on everything from medical devices to consumer electronics. With the mindset that no detail is too fine and "good enough" never is, we live for building products people love and that will make a difference in the world. For more info on our founding team, please visit our website.

Why Are We Doing This?

After several years and thousands of hours developing custom mechatronic and embedded control systems for a range of medical, industrial, and consumer technology companies, we finally got so tired of the lack of an affordable and versatile tool for building robotic systems that we decided to just make one ourselves.

We started by envisioning something that we, as engineers, would actually want to use - something that would make our lives easier and would eliminate the design sacrifices we always found ourselves making as a result of using poorly conceived, underperforming, and overpriced tools. Then we iterated and iterated...and iterated until we landed upon (what we feel is) the perfect combination of functionality, usability, and affordability.

And so, out of a grueling and rewarding two-year "labor of love," snickerdoodle was born...

Inspired by the idea of what might be possible if the blossoming community of makers, hobbyists, and hardware enthusiasts could get their hands on advanced technologies that would normally be way out of their reach, we ultimately developed a combination of

hardware and software that truly levels the playing field. Bringing together professionals and hobbyists using one common platform has the unique potential to build a community of creators unlike any before it.

Why We Need Your Help

Simply put: without your help, this project would never be able to get off the ground. Sure, we could 'do what everyone else does:' just add a zero to the price tag and build something with this awesome technology...and effectively exclude everyone without a multi-million dollar R&D budget from using it. But we desperately wanted this to be a way for everyone to get their hands on affordable, professional-caliber tools.

So in order to hit our minimum order quantities with the various manufacturers and distributors, along with ensuring we reach the volumes that will enable us to keep prices as low as possible while sustaining the level of support necessary to make your user and development experience as pain-free as possible, we need your help as a customer, evangelist, and contributor to this amazing new community of creators.

And of course, every development platform is only as valuable as the community of developers behind it. We look forward to welcoming you with open arms to - what is about to be - a thriving community of snickerdoodlers. Ultimately, this is all about you - we're just here to make sure you receive the hardware and software support you need to continue experimenting, learning, building, and succeeding.

We really can't wait to see what you create.

Manufacturing Plan

We have spent the last nine months leading up to the campaign finalizing part selections, nailing down the supply chain, negotiating with vendors and distributors, evaluating contract manufacturers, and setting up for high-volume production and fulfillment. The minute we hit our goal, we will be placing orders for long-lead-time parts and wrapping up the final hardware details.

Pre-order snickerdoodle volumes will dictate where assembly ultimately takes place. We are planning (and hoping) to have boards (both snickerdoodles and baseboards) assembled by one of our partners in China, but only if volume warrants. Fabrication will take place either in SE Asia or in/near Shenzhen. Cable assemblies are scheduled to be assembled and packaged in China.

Crowd Supply has also offered to assist us with packaging requirements/sourcing as well as domestic and international logistics to ensure you receive the best and most reliable customer service and ordering experience possible.

Thank You!

We'd like to thank some of the people who helped 'keep the ship afloat' for the past two (loooong) years. A big, warm, heartfelt "thank you" to:

Bruce Hammond for the dozens of projects he's helped us with (including this one); Don and CADParts for their amazing work on the layouts...and for always standing by the Bat Phone; Romy for producing our killer video (and for putting up with us); fellow roboticists Leo & co. at SMP Robotics and Adam & Daniel at Modbot; Ryan & Jeff and all the folks at Tempo Automation for getting us out of (more than) a couple prototyping binds; Marie for being our bulldog; Josh & Darrell and the Crowd Supply team; Brad from TI, Justin & Bruce from Avnet, Jahanaarha, Elizabeth, & Kristin from Samtec, Ronald & Chris from Norcomp, and Douglas & Monica from Digi-Key for all their ongoing support.

Also, thank you to our investors - you know who you are - for taking a leap of faith and believing in us when we were just three guys in a 140 square foot office armed with nothing but a box of equipment and a dream. And to our friends and families for being there when we needed you most.

And finally, thanks to you, our backers and fans for sharing our enthusiasm for creating new things and for all the words of encouragement - every one of them meant something. This is for you.

Thank you.

Risks & Challenges

Producing hardware in volume carries with it many risks. Potential issues with supply chains, quality assurance, part shortages, and natural disasters are just a few of the obstacles that can get in the way of successful delivery of a hardware product.

Software also carries risks and requires a carefully architected and executable plan. Our first priority is ensuring the highest possible quality of snickerdoodle's fundamental software building blocks: wireless connectivity, board support packages, mobile applications, backend device management and data security, and baseboard functionality.

Wherever possible, we've taken care to allow time for delivery setbacks, quality issues, and other potential hiccups to be ironed out without causing delays in fulfillment. But no matter what, we will always be transparent, responsive, and quick to provide updates along the way so our backers will always know where we are, where we're going, any challenges we might come across, and how we are working to address them.