Embedded Linux Conference 2017:
Google Summer of Code and BeagleBoard.org

Google
Summer of Code

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What is Google Summer of Code?

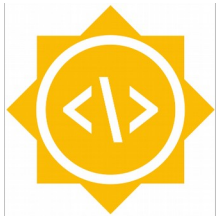
"**Google Summer of Code** is a global program that offers **students** stipends to write code for **open source projects**"

What is Google Summer of Code?

- 12 years
- 104 countries
- 567 open source projects
- 12,000+ students
- Over 30 million lines of code

Google Summer of Code 2016

- 178 open source projects
- 1,206 university students
- 67 countries
- 1,032 students (85.6%) completed
- **$5,500** to each successful student



2016 GSoC Timeline

- **Feb:** organizations apply, recruit mentos
- **March:** students propose projects
- **April:** students accepted
- *Community Bonding Period* *for students and mentors*
- **May:** students begin coding
- **June:** mid-term evaluations
- **August:** final evaluations and project submissions
- **October:** Mentor Summit at Google

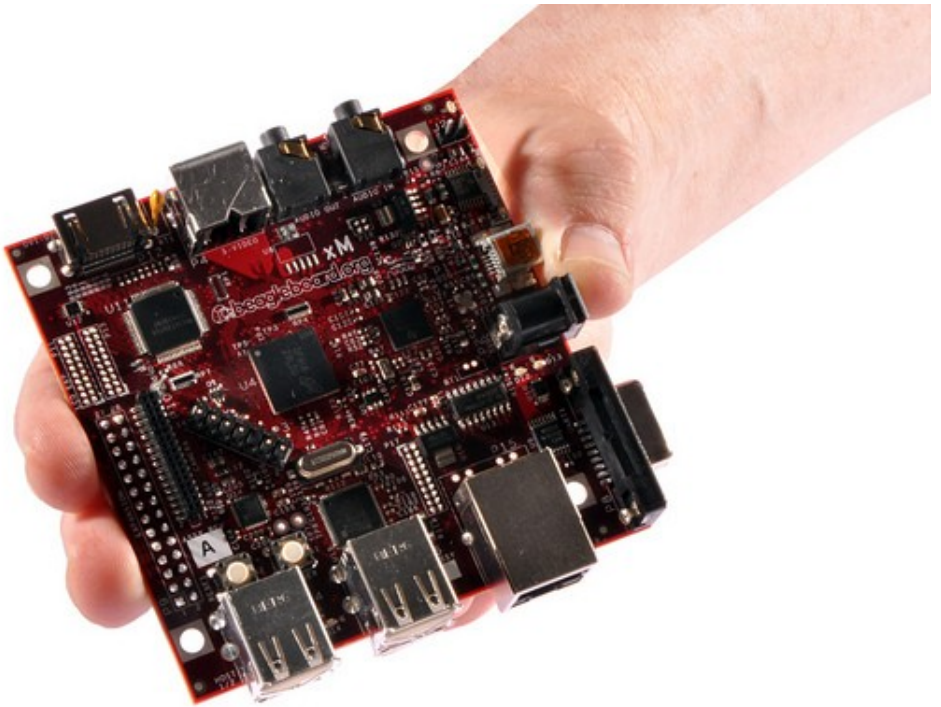
Open Source Hardware computing

for

Makers, Educators & Professionals

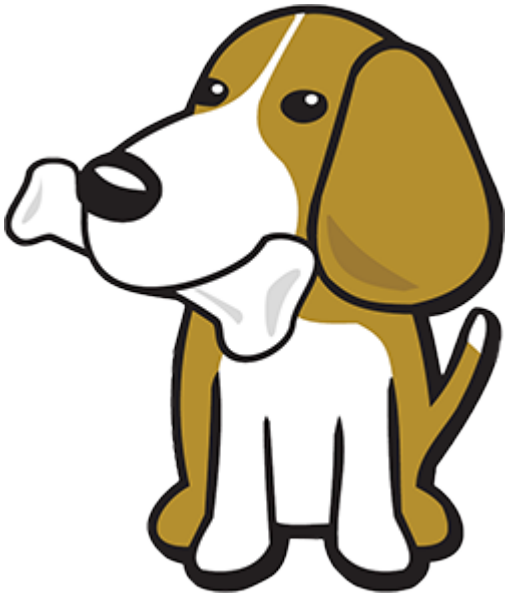
beagleboard.org

BeagleBoard.org released the first **BeagleBoard**, an affordable, open hardware computer in **2008**



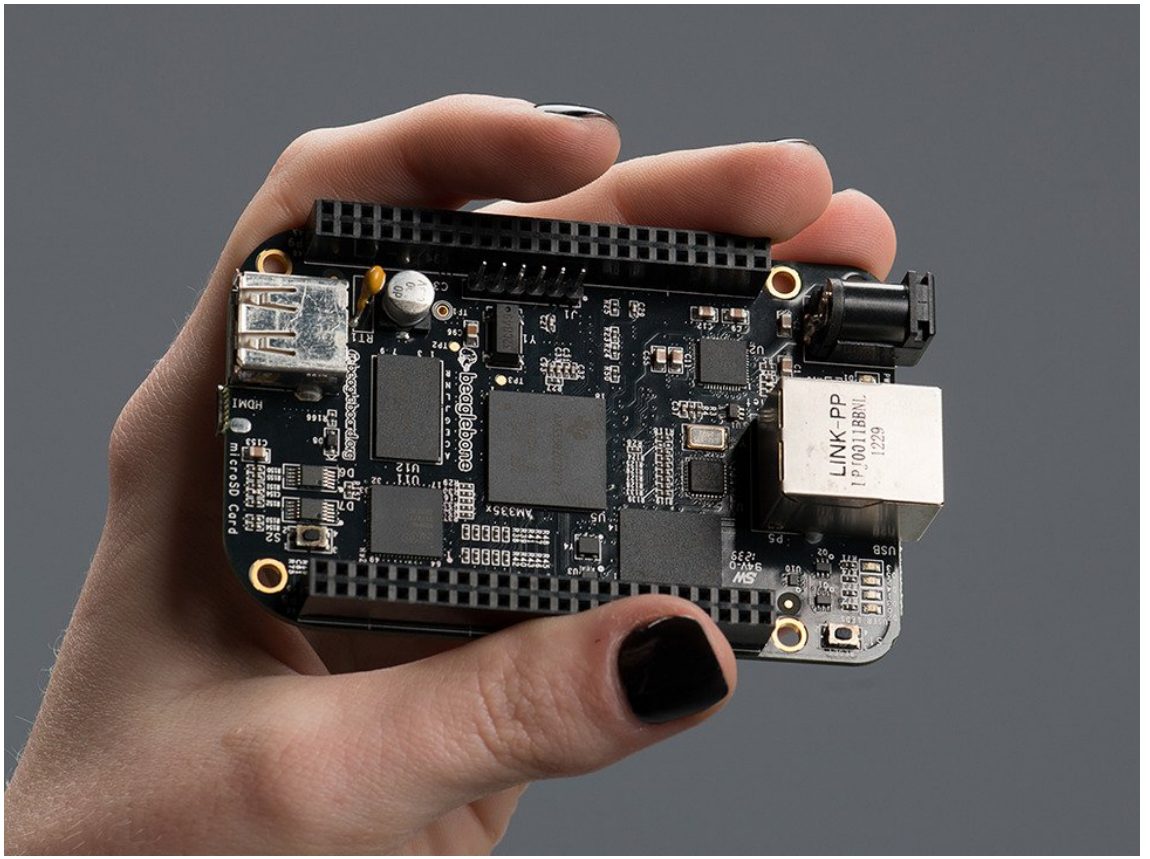
beagleboard.org

Maker focused, Altoids tin sized
BeagleBone introduced in **2011**



beagleboard.org

More affordable, more powerful **BeagleBone Black** in **2013**



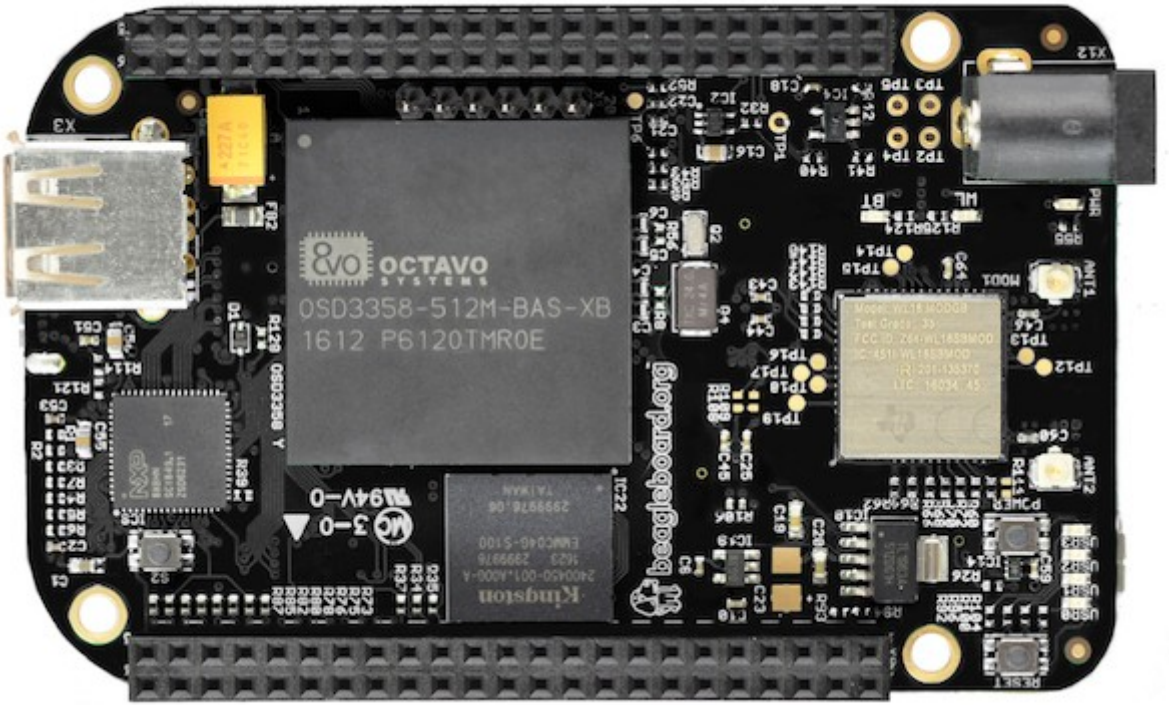
Open Source Hardware
BeagleBone derivatives

	Capes	HDMI	Flash	Special
BeagleBoard.org BeagleBone	Y	N	N	JTAG
BeagleBoard.org BeagleBone Black	Y	Y	Y	-
Arrow BeagleBone Black Industrial	Y	Y	Y	Industrial
Element14 BeagleBone Black Industrial	Y	Y	Y	Industrial
SeeedStudio BeagleBone Green	Y	N	Y	Grove
SanCloud BeagleBone Enhanced	Y	Y	Y	1GB, 1Gbit, wireless
BeagleBoard.org BeagleBone Blue	N	N	Y	Robotics
BeagleBoard.org BeagleBoard-X15	N	Y	N	Big jump in CPUs and I/O

beagleboard.org

Newest board:

BeagleBone Black Wireless



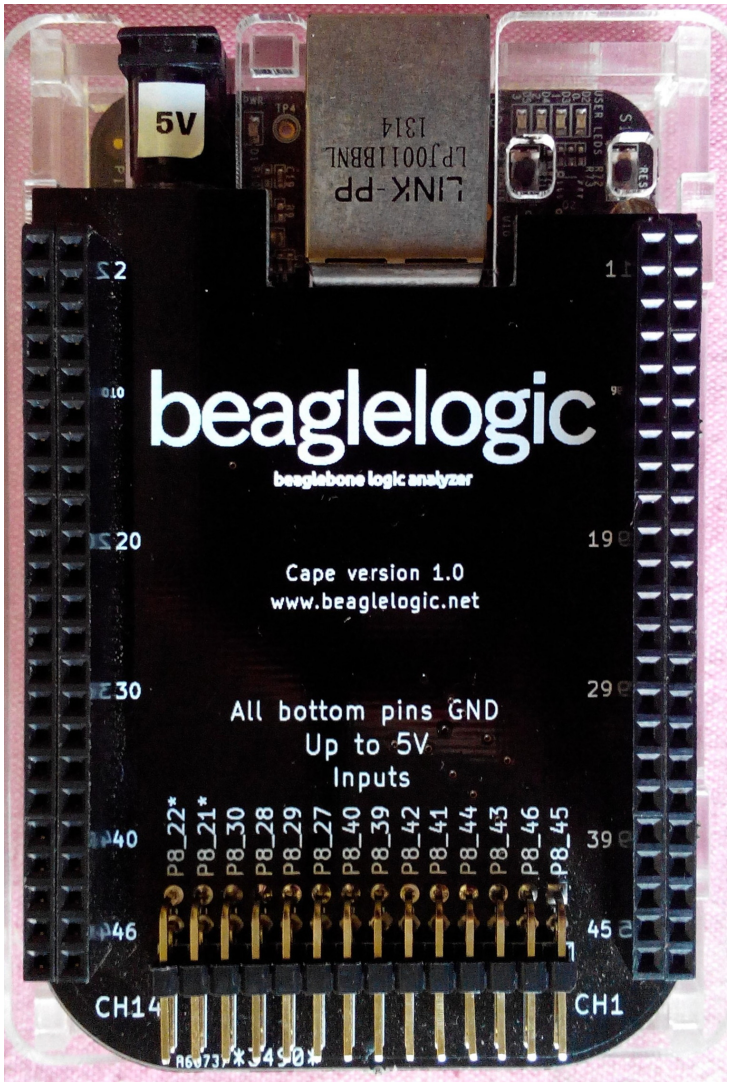
- **WiFi (802.11 b/g/n)**
- **Bluetooth 4.1 with Bluetooth Low-energy**

- **BeagleBoard.org Foundation** is a US-based 501(c) non-profit corporation
- Provides education around the design and use of Open Source Software and Open Source Hardware
- Fosters communication between individuals interested in Open Source

beaglelogic

beaglebone logic analyzer

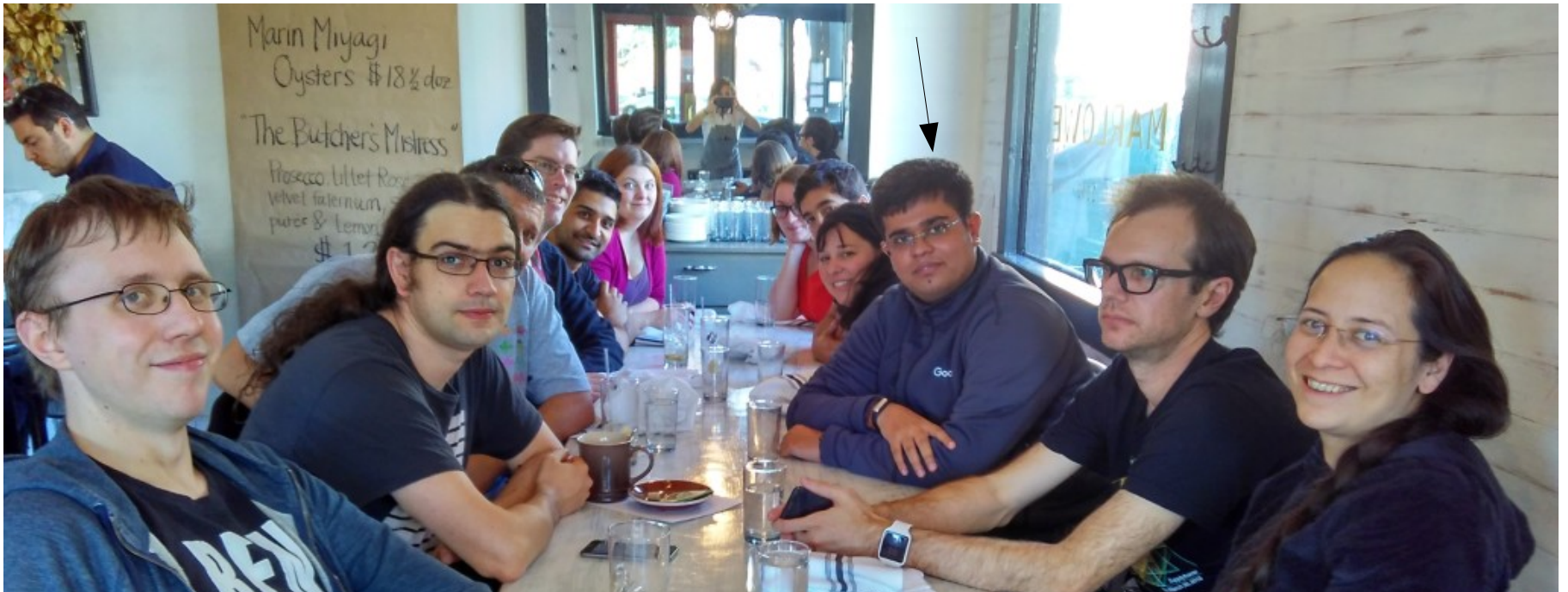
- **Kumar Abhishek** created BeagleLogic for GSoC 2014
- BeagleLogic turns BeagleBone into **Logic Analyzer**
- 14-channel, 100Msps
- Web browser user interface
- Video of final presentation



beaglelogic

beaglebone logic analyzer

- **Best Product finalist** in **2015 Hackaday Prize**
- Traveled to Google Summer of Code Mentor Summit and Hackaday SuperCon in California
- Blog post about his journey: *A day with Hackaday*

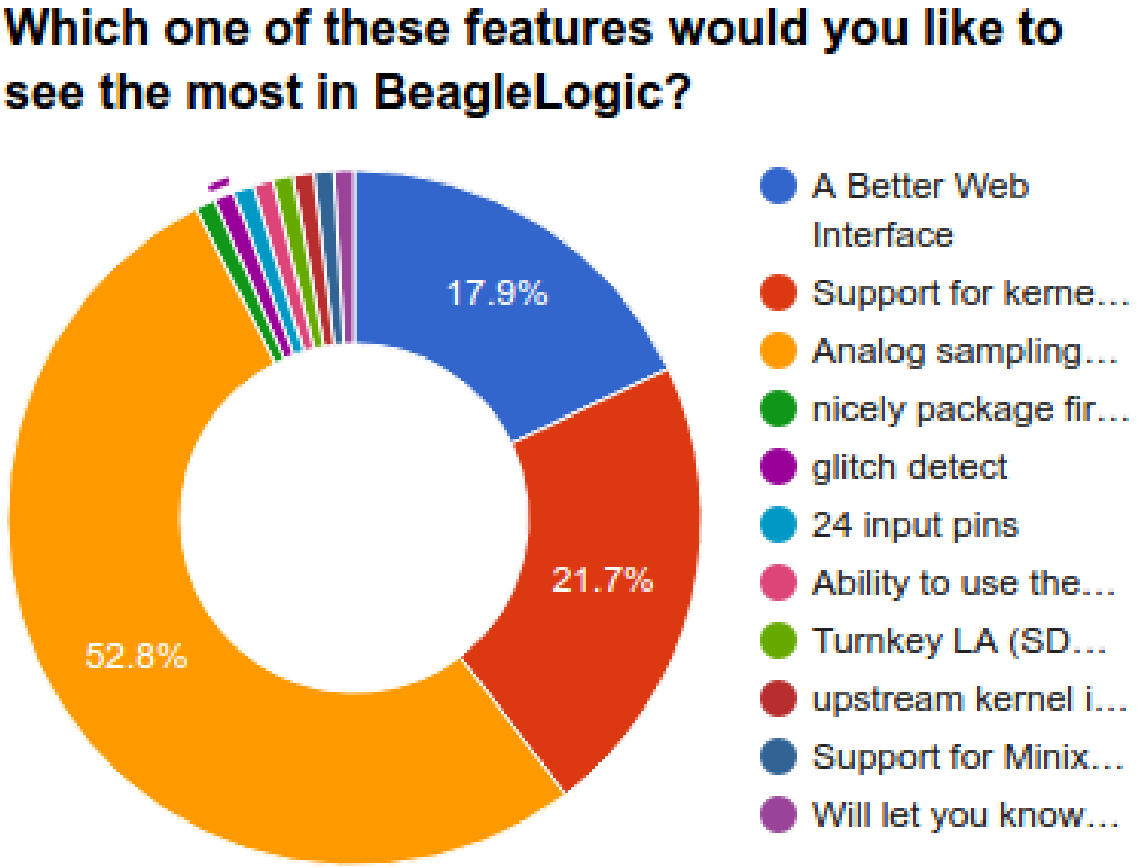


beaglelogic

beaglebone logic analyzer

- Summer 2016: Kumar is intern at Google HQ
- July 2016: **BeagleLogic: now also analog**

"Majority of prospective users wanted to be able to do analog sampling with BeagleLogic"



beaglelogic

beaglebone logic analyzer

- July 2016 - **Google Research** blog announced **PRUDAQ**, an ADC cape for BeagleBone:

Announcing an Open Source ADC board for BeagleBone

BeaglePilot

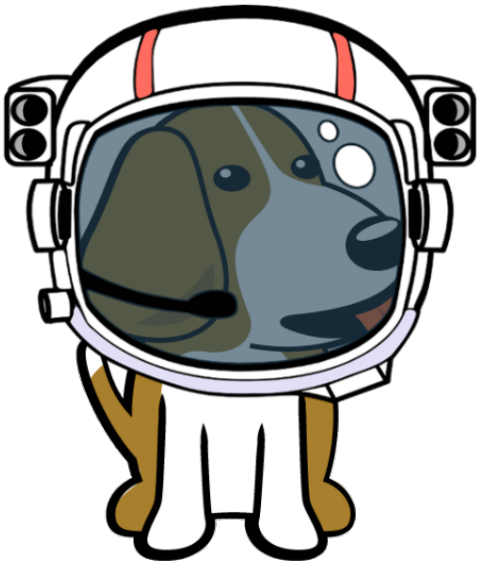
- **Víctor Mayoral Vilches** in Italy for GSoC 2014
- Linux-based autopilot for flying robots based on BeagleBone
- Introduction video
- BeaglePilot on GitHub
- *The Tale of BeaglePilot*

BeaglePilot

- **Victor** co-founded **Erle Robotics** to develop commercial products based on BeaglePilot
- **Erle-Brain**: “An artificial brain for making robots and drones”

BeagleSat

- **Niko Visnjic** for GSoC 2015
- **BeagleSat** is an open source **nano satellite platform** based on BeagleBone
- Framework & tool set for designing your very own CubeSat from ground up
- Project video

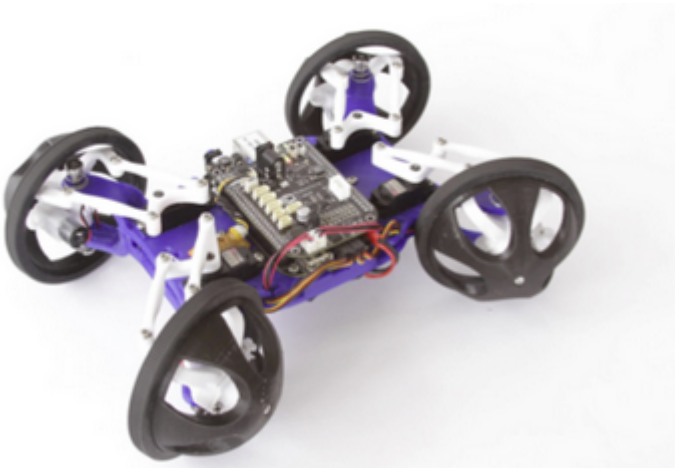


GSoC 2016 projects

- **BeagleScope**
- Student: **Zubeen Tolani**
- Mentors: SJLC, Abhishek Kumar, Michael Welling, Hunyue Yau

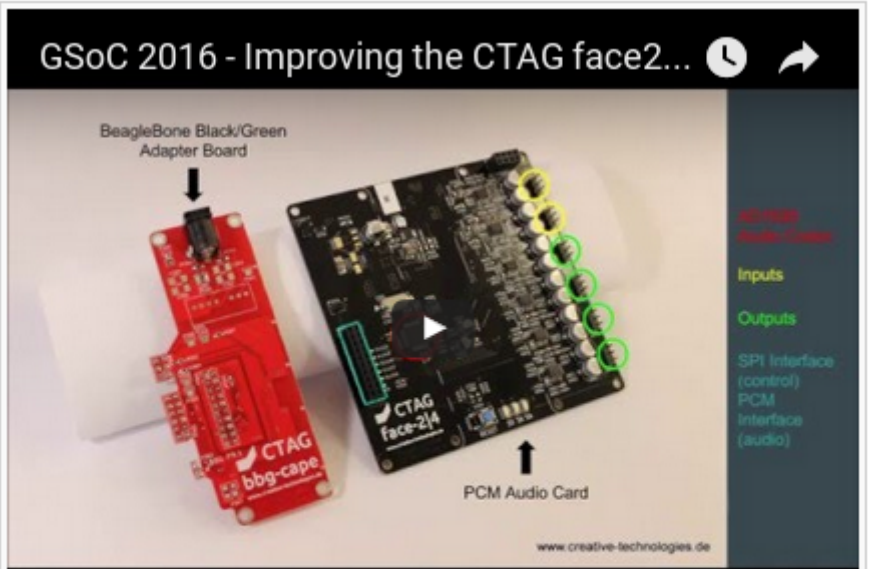
GSoC 2016 projects

- **API support for Beaglebone Blue**
- Student: **Kiran Kumar Lekkala**
- Mentors: Alex Hiam, Micheal Welling, Kumar Abhishek, Deepak Karki
- Website / Source Code / Wiki / Documentation



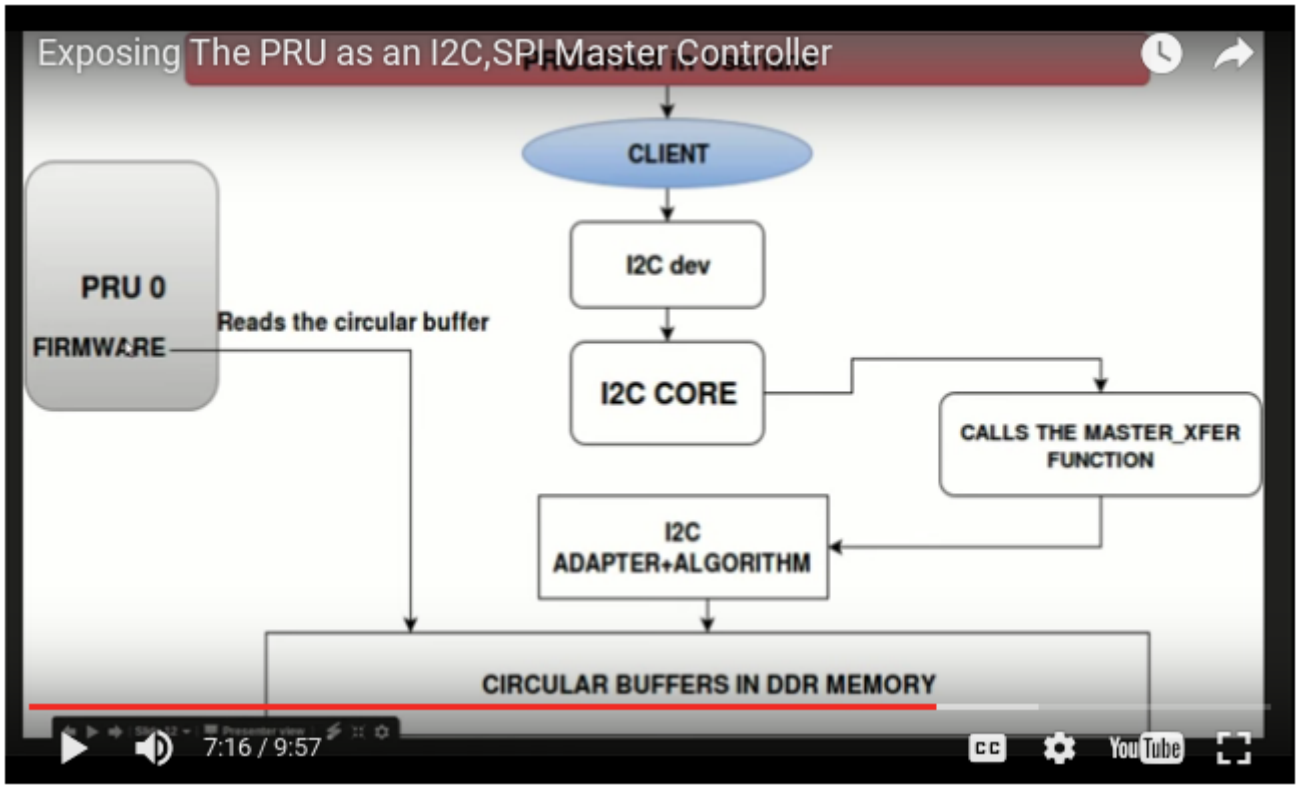
GSoC 2016 projects

- **BeagleBoard X15 multichannel sound driver**
- Student: **Henrik Langer**
- Mentors: Robert Manzke, Vladimir Pantelic
- Wiki for libdsp-x15
- Slides from project presentation



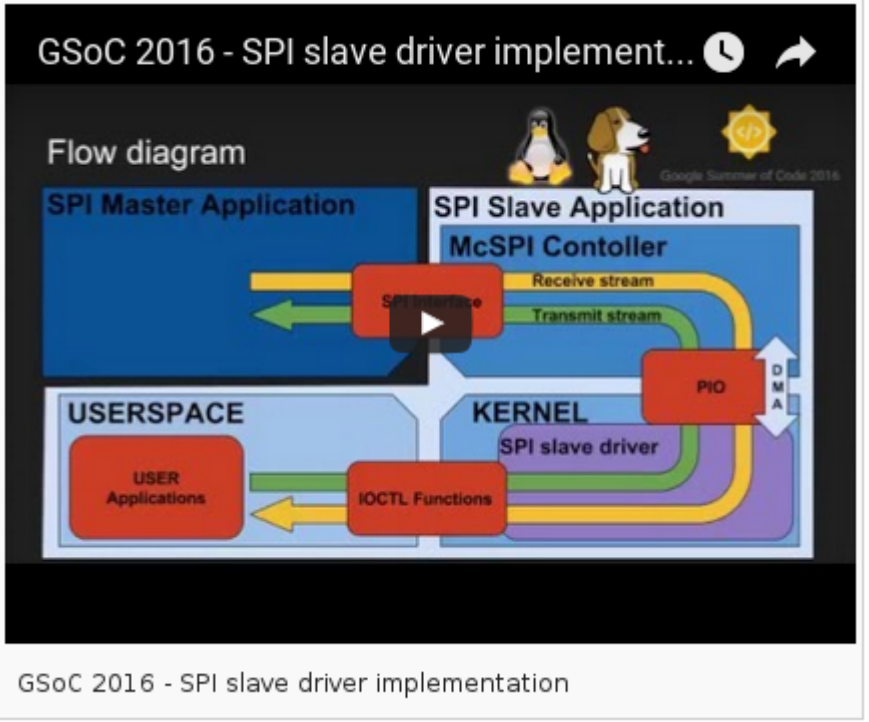
GSoC 2016 projects

- **Exposing the PRU as I2C & SPI master**
- Student: **Vaibhav Choudhary**
- Mentors: Andrew Bradford, Matt Porter



GSoC 2016 projects

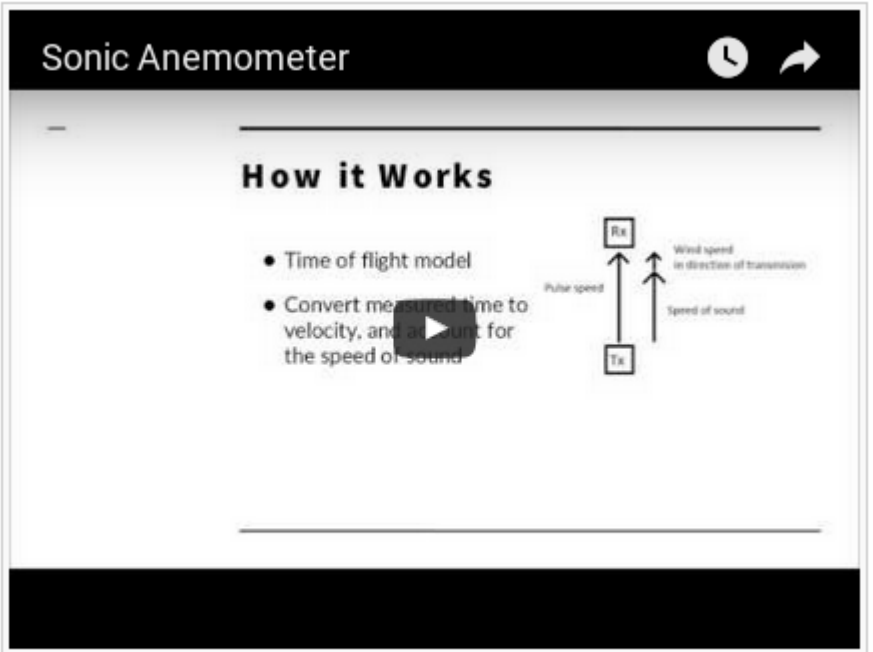
- **SPI slave driver implementation**
- Student: **Patryk Mężydło**
- Mentors: Michael Welling, Andrew Bradford, Matt Porter



GSoC 2016 - SPI slave driver implementation

GSoC 2016 projects

- **Sonic Anemometer for Weather Stations**
- Student: **Visaoni**
- Mentors: Steve Arnold, Alex Hiam



Sonic Anemometer

GSoC 2016 projects

- **Improving Bone101 Experience**
- Student: **Amr Ragaey**
- Mentors: Jason Kridner, Alex Hiam

Apply in 2017!

Google
Summer of Code

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