VISHNU
UNIVERSAL LEARNING

SVES
ESTD 1992
Sri Vishnu Educational Society

ENGINEERING
SCIENCES

in partnership with

Mr. Alan Rux - University of Massachusetts

presents

New World Engineer

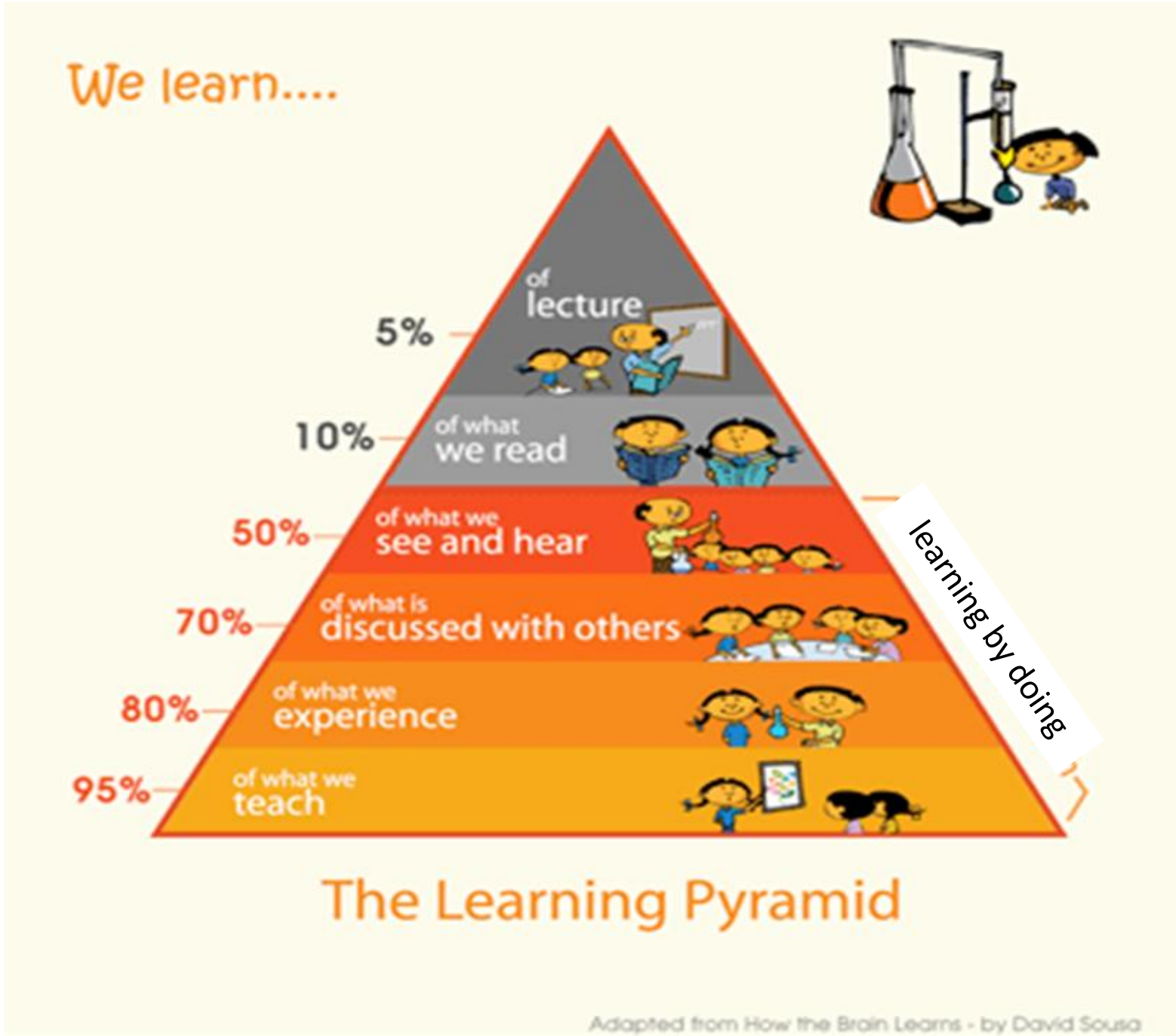
&

Learning by Doing

Mr. Alan Rux at BVRIT, Hyderabad

Revolutionizing How Engineering Students Learn Analog and System Design

learning by doing



learning by doing

Active learning –

learning by doing

helps engineering students understand the process of breaking down larger problems into smaller, more easily solved parts without losing the overall understanding of the complete system.

- This is a "**Hands-On** Course", the instructor will guide you on were to find the information you need.
- **Lectures will be "ON-LINE"** (24/7 web access)
- The instructor will not do it for you in the classroom and then you repeat what was showed.
- You will be given assignments.
- The classroom time will be group discussion, the ***instructor will act as an facilitator***.
- The laboratory time you will apply what you learned.
- Team or Batch participation is encouraged.

Facilitation

- Principles that inform the interaction between all students with each other and instructor.
- The facilitation is intended to spark interest.
- and help with understanding
- Facilitators focus student attention, based on individual paths of understanding.
- Facilitation should help to strengthen understanding by helping learners clarify their intentions through conversation.

http://srivishnu.edu.in/downloads

Discovery kit Power-points **Lecture handouts**

- Discovery kit wk 4a
- mini course discovery-wk-2
- mini course discovery-wk-3
- mini course intro-1a

Discovery kit videos **Video of Lecture**

- Analog Discovery Design Kit-1
- Analog Discovery Design Kit-2
- Analog Discovery Design Kit-3
- Analog Discovery Design Kit-4

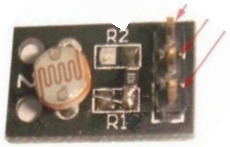
Starbucks Store

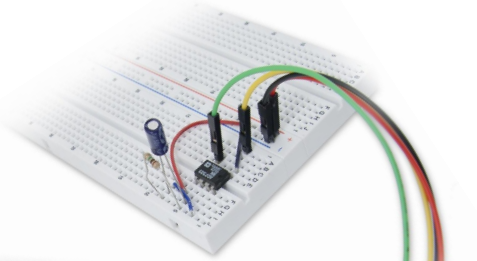
The most powerful engineer in the

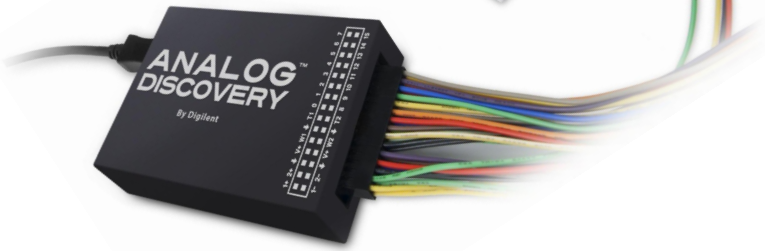
World

CAD Tools
Development Software
Simulation Tools
Fritzing
3D Printing
Chat Groups
Google

New World Engineer





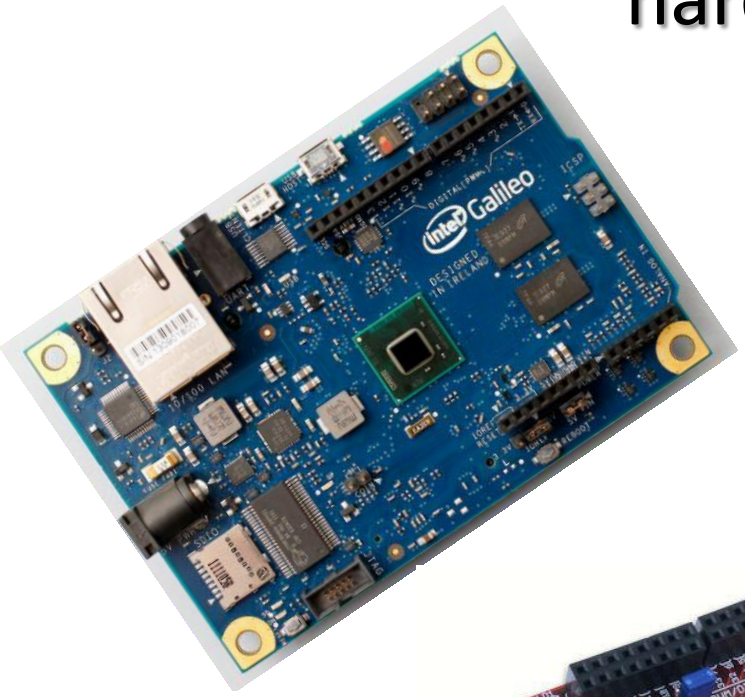


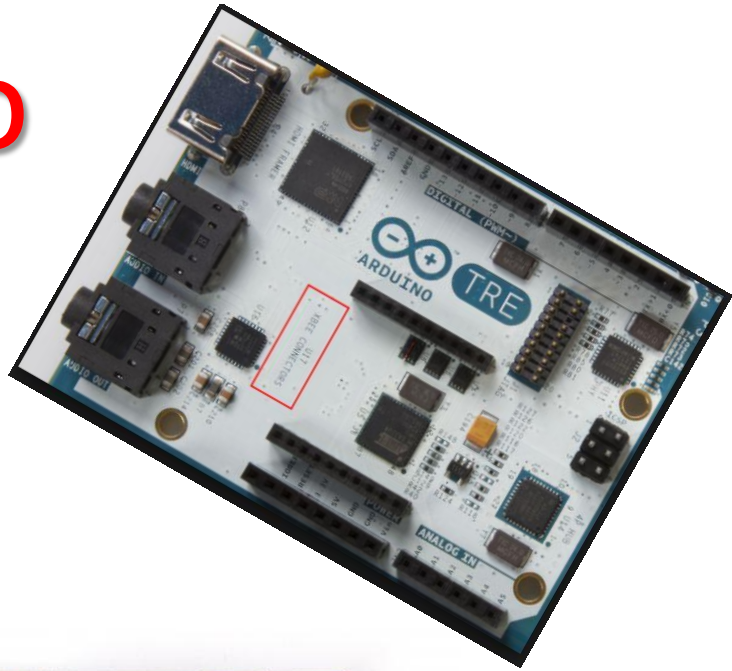
learning by doing

Open-Source Electronics Prototyping Platform based on flexible, easy-to-use hardware & software

Arduino

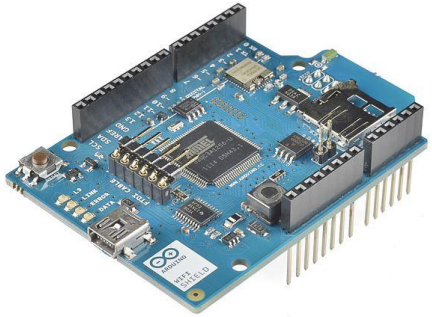
platform

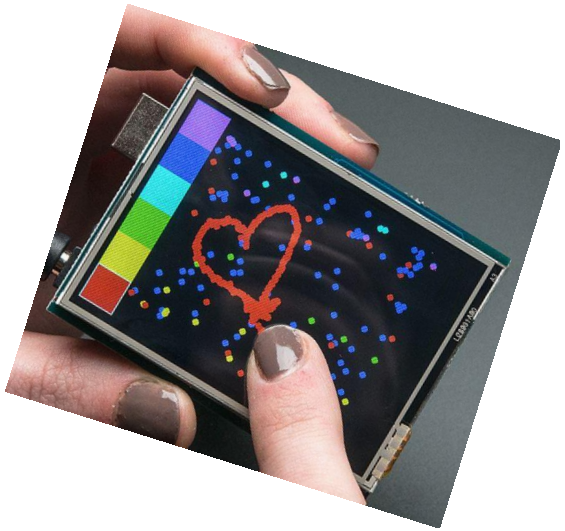


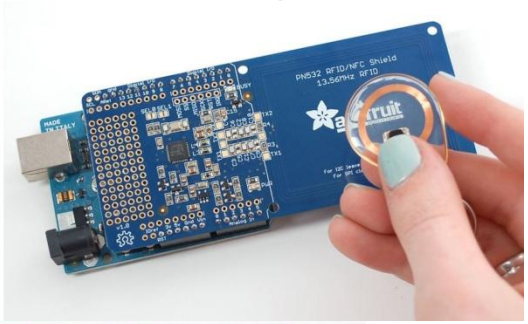


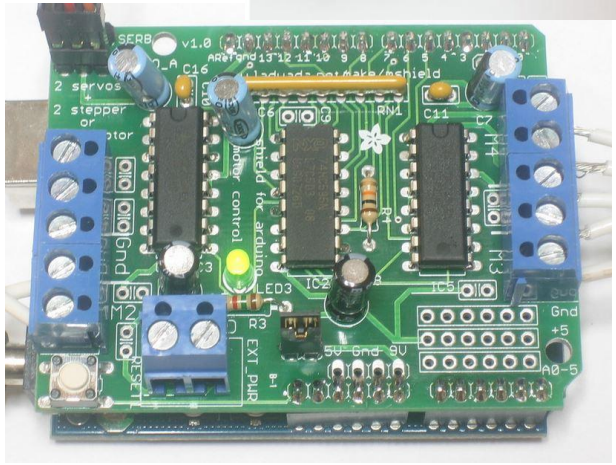
learning by doing

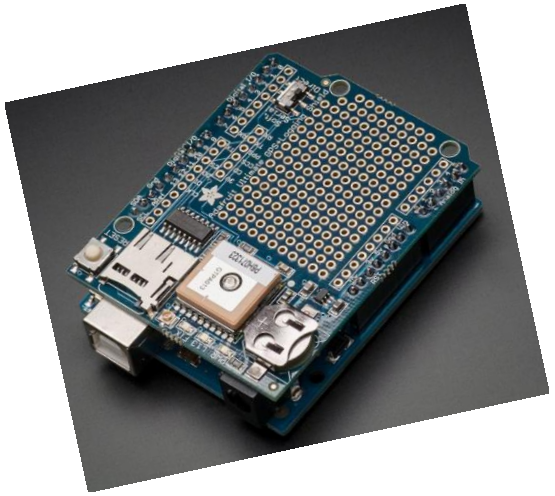
SHIELDS Arduino platform modules (over 300 and growing)





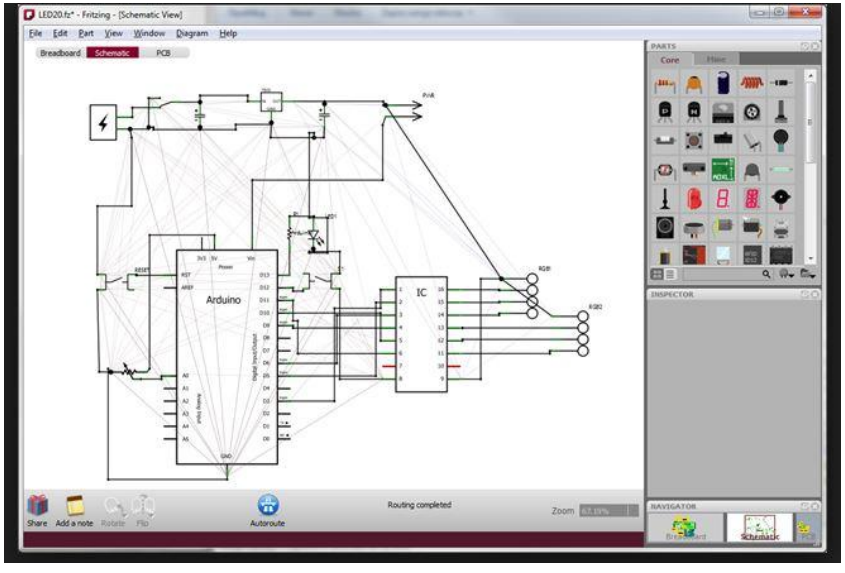


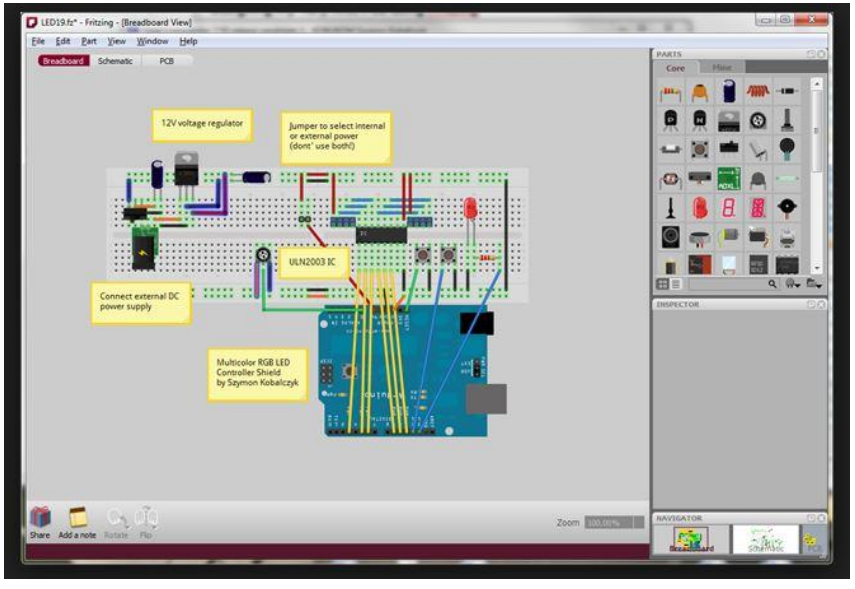


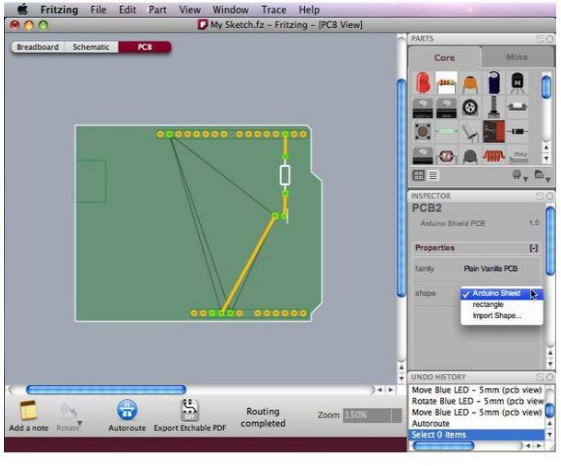


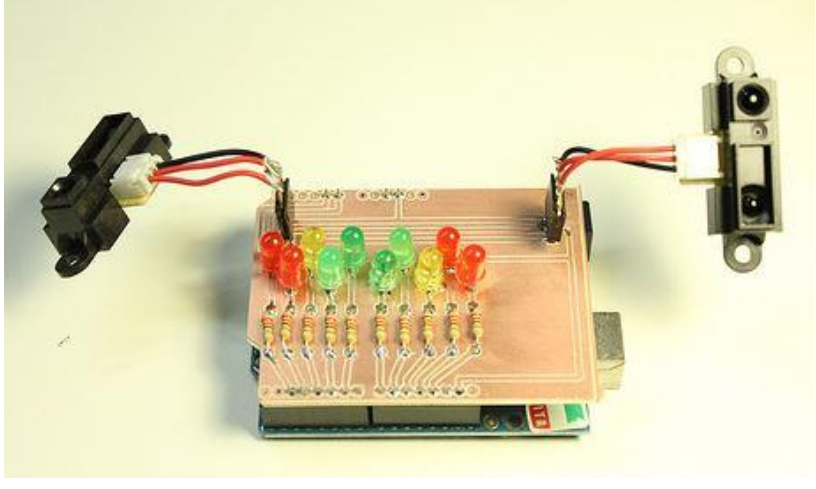
Fritzing is an open-source hardware initiative that makes electronics accessible as a creative material for anyone, a software tool, a community website and services in the spirit of Processing and Arduino, fostering a creative ecosystem that allows users to *document* their prototypes, *share* them with others, and layout and *manufacture* professional pcbs.

Fritzing Shield development





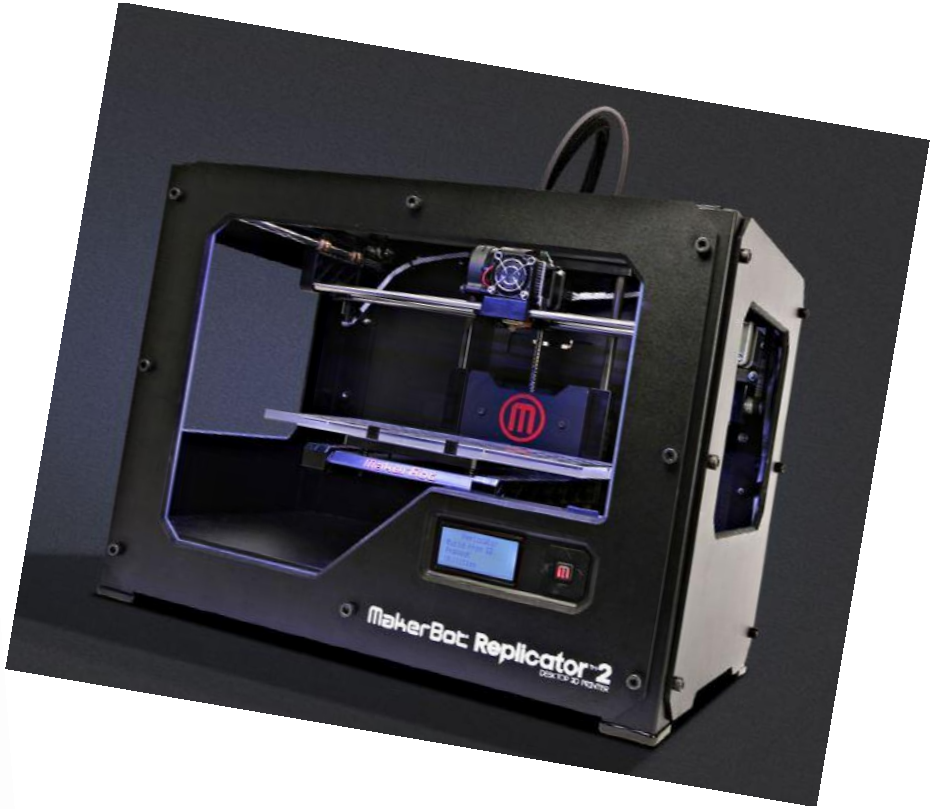




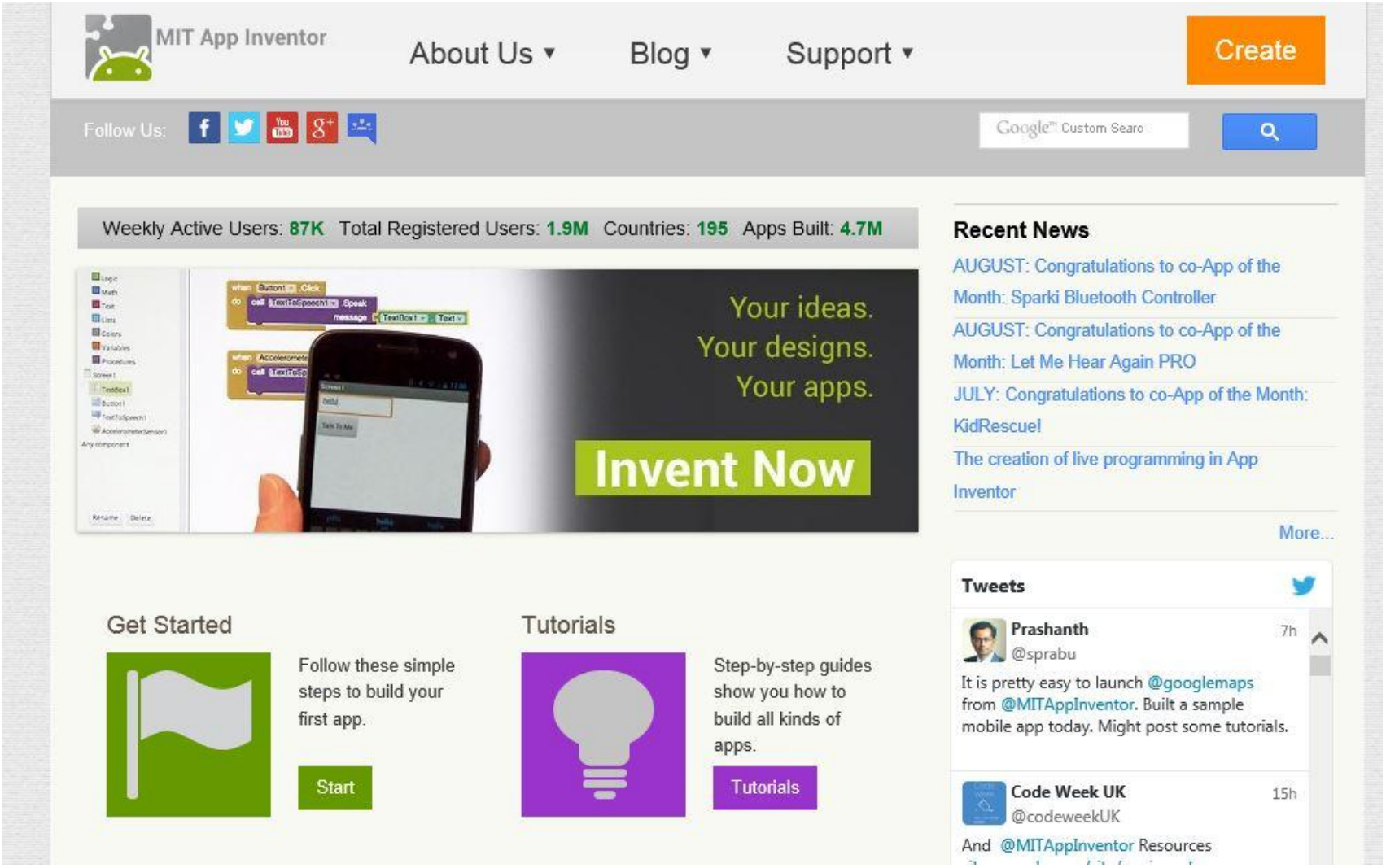
CAD & Development TOOLS

- Electronic Circuit Analyses
- Mechanical Design and Evaluation
- Micro-controller software:
  development and debugger tools
- PCB Design and Layout
- 3D Printing Tools
- Data Acquisition and Testing tools
- **App,s** and Human Interfaces Development software
- many others, MathCad, LabView, etc.

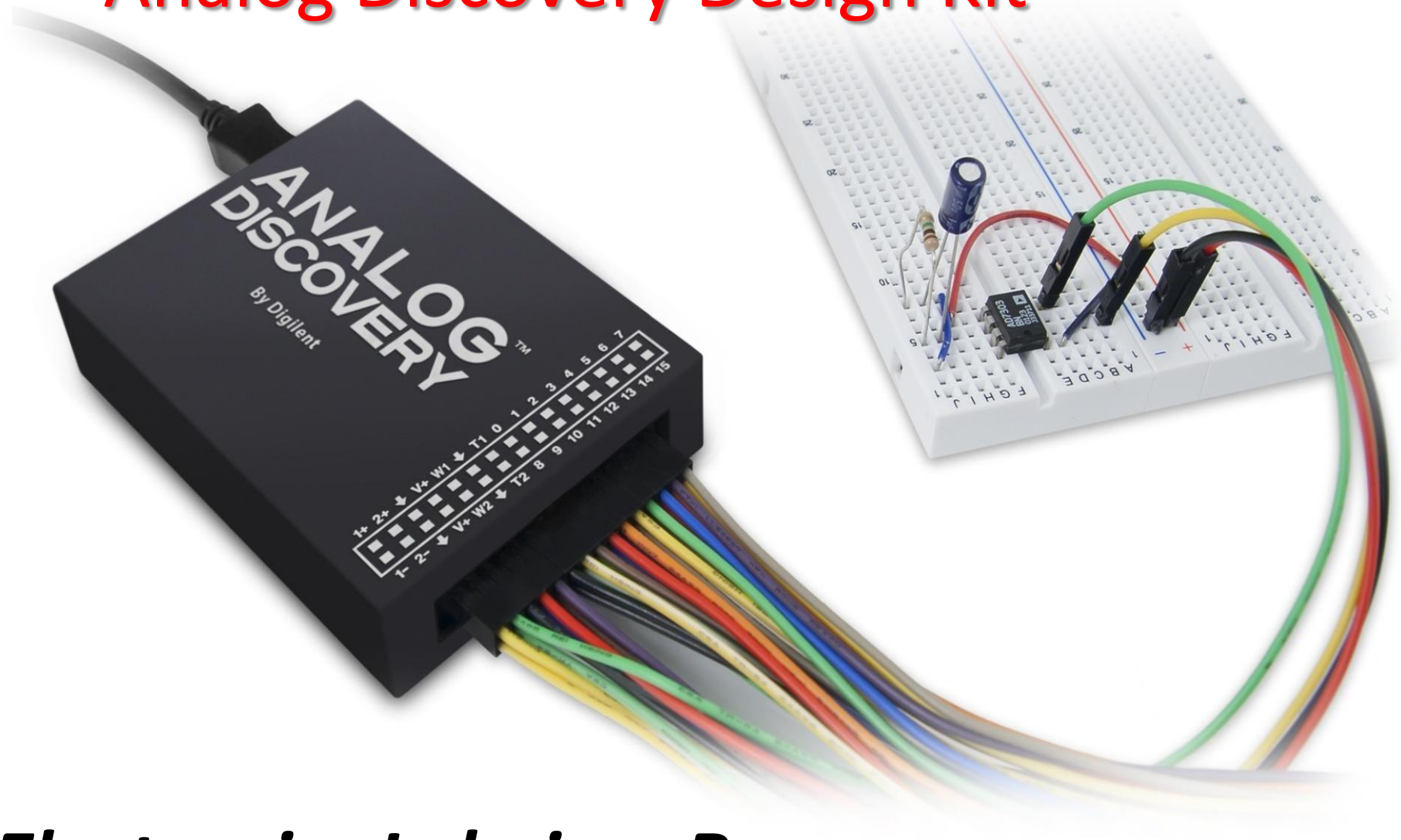
3D Printing



MIT/GOOGLE **App Inventor**



Analog Discovery Design Kit



Electronics Lab. in a Box

learning by doing

the

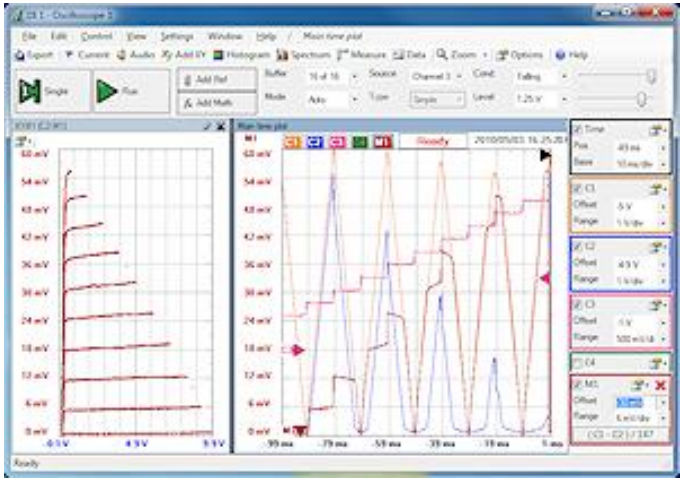
Analog Discovery Design Kit

allow students to build and test a wide range of analog and digital circuits using their own PC without the need for any other special test equipment.

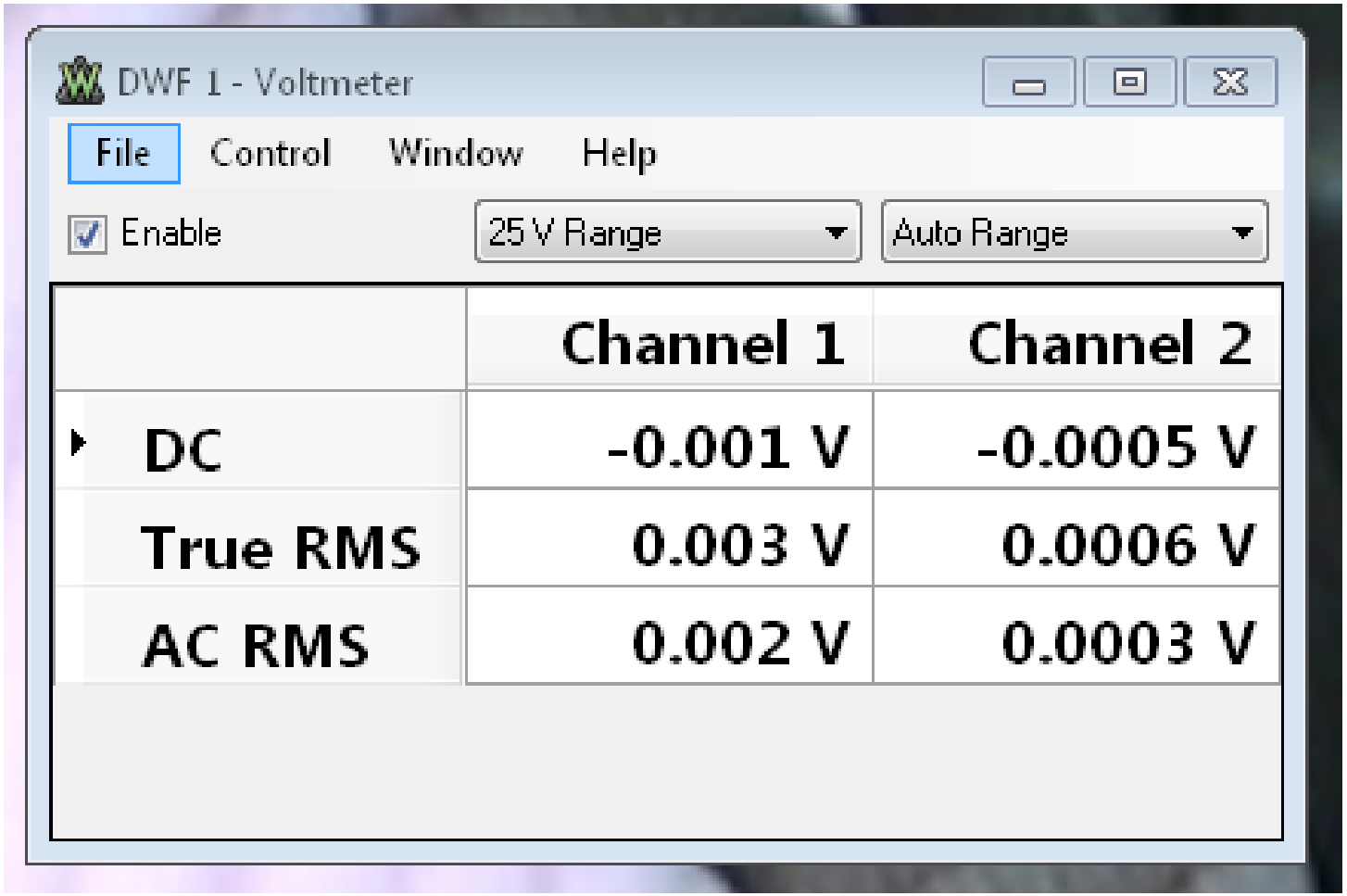
Basic Bench Electronic Lab.

Analog Discovery Design Kit

- **Dual Channel Oscilloscope**
  - Two channels differential input, 1 Meg ohm, 24pfd
  - +/- 20 volts input max
  - 250 mv. to 5 Volts / division with variable gain settings
  - 100 MSPS, 5 MHz bandwidth, 16K points/channel memory
  - FFT function

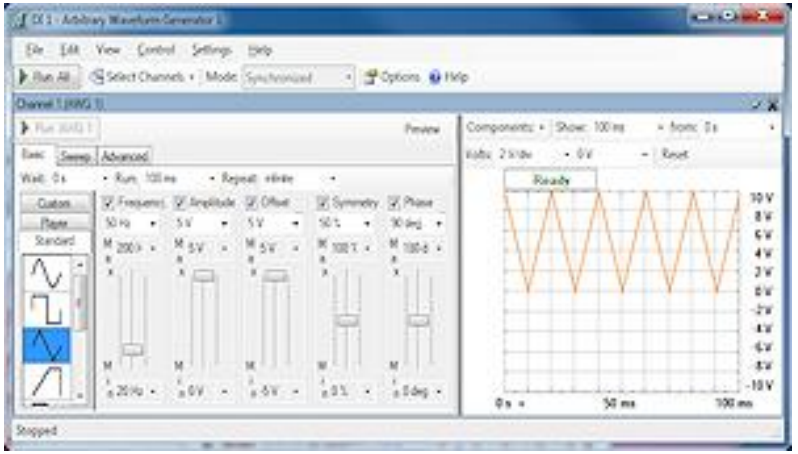


2 differential input **Voltmeters**



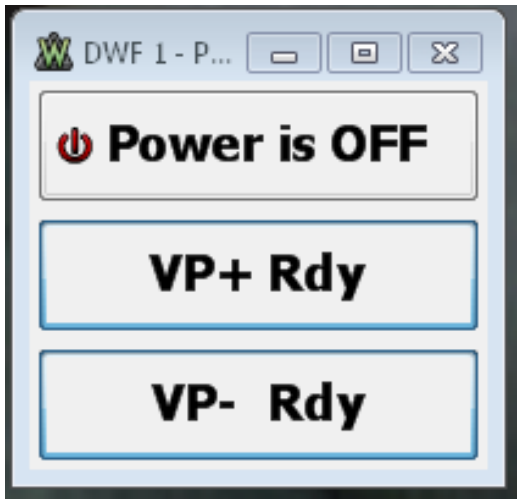
Analog Discovery Design Kit

- 2 Channel, **Arbitrary Waveforms Generator**
  - Sine wave
  - Square wave
  - Triangular wave
  - Sawtooth wave
  - Sweep function
  - AM-FM modulation
  - 4 MHz bandwidth,
  - 10 P-P voltage output
  - User defined waveforms
  - Bode function



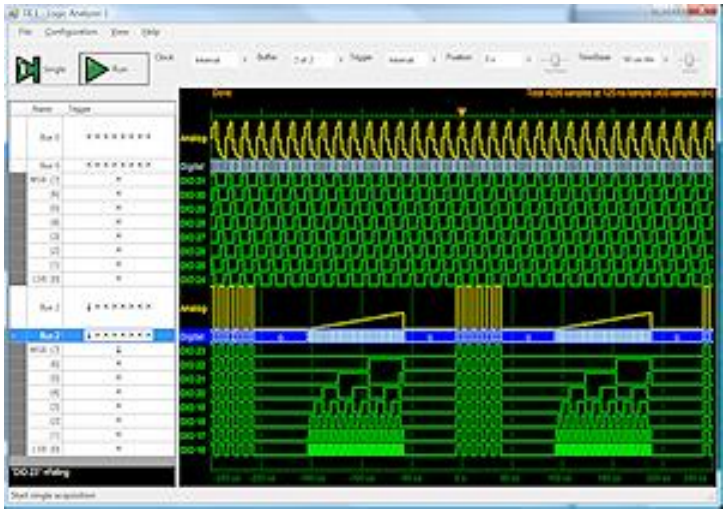
Analog Discovery Design Kit

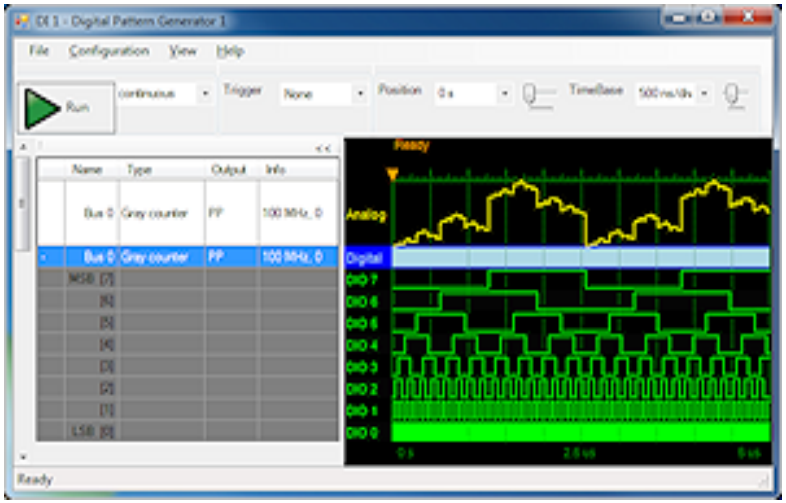
- **Power Supply**
  - Two fixed voltages +5 volts / -5 volts, 50 ma. Each
  - Switchable ON / OFF comands
  - **Unit powered by USB computer port**, (cable included)



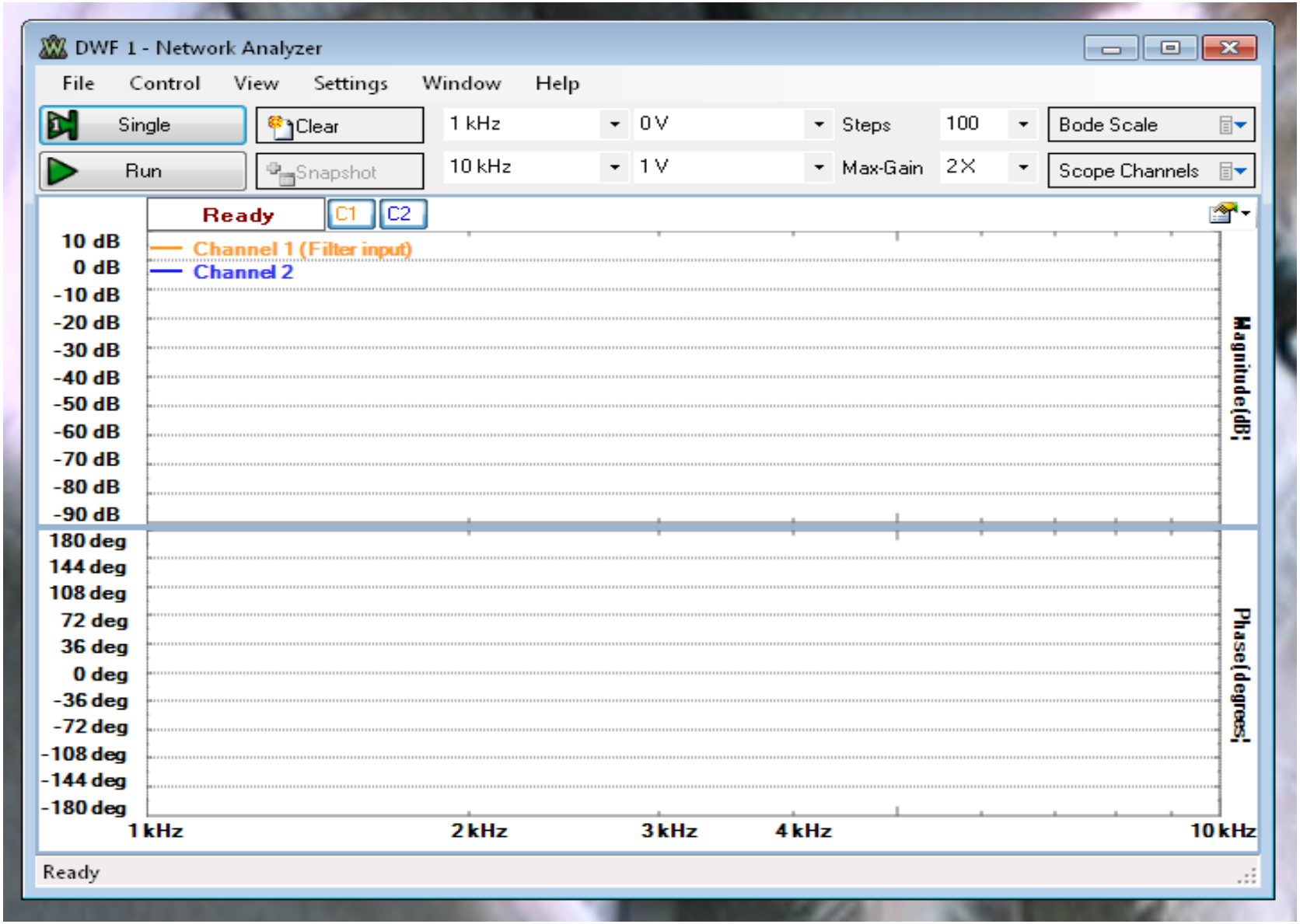
Analog Discovery Design Kit

- **Logic Analyzer – Pattern Generator – I/O s**
  - 16 signal channels shared between logic analyzer
  - pattern generator
  - discrete I/O devices
  - 100 MSPS, 4 k buffer per pin
  - Cross triggering with scope channels



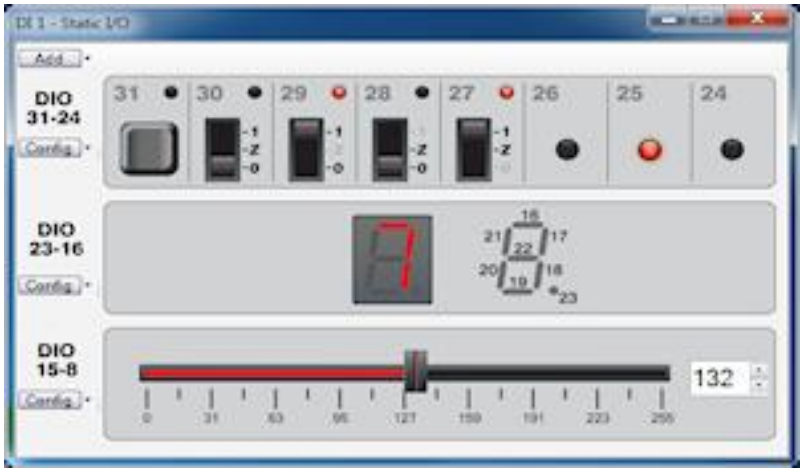


Network Analyzer 10Hz to 5 MHz



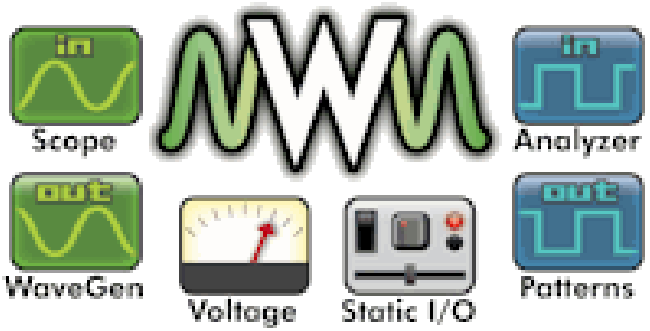
Analog Discovery Design Kit

- **Static I / O**
  - PC based virtual I/O device drivers including:
    - push buttons
    - LEDs
    - switches
    - seven segment displays
    - sliders
    - Progress bars



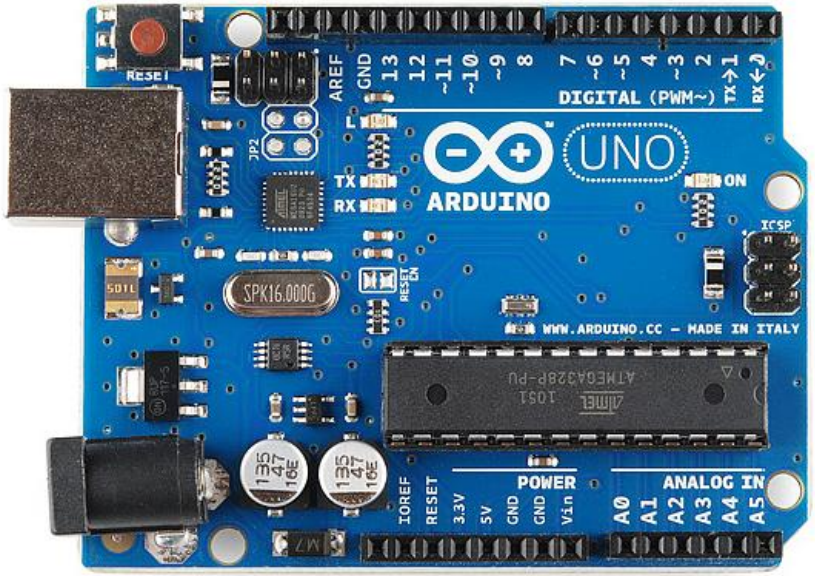
“WaveForms” Software

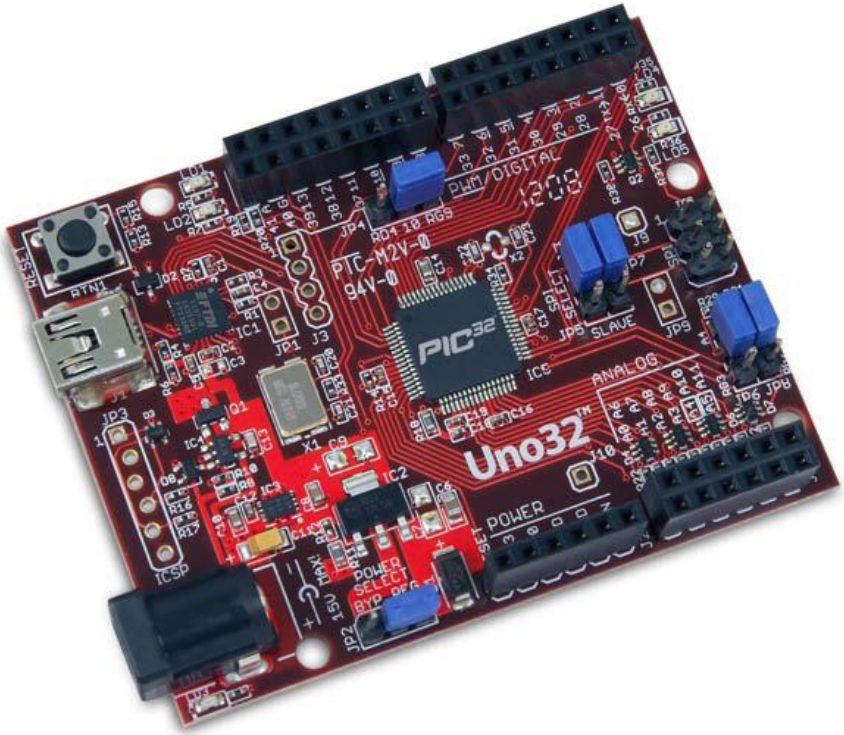
- Windows XP or newer
- full –featured GUI for all instruments

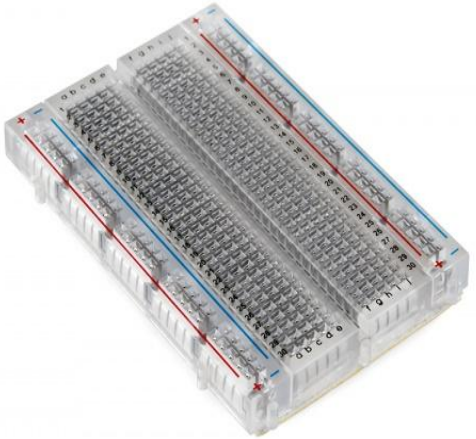


Minimum tools to get Started

- Arduino platform Board
- Solderless Breadboard
- USB Cable

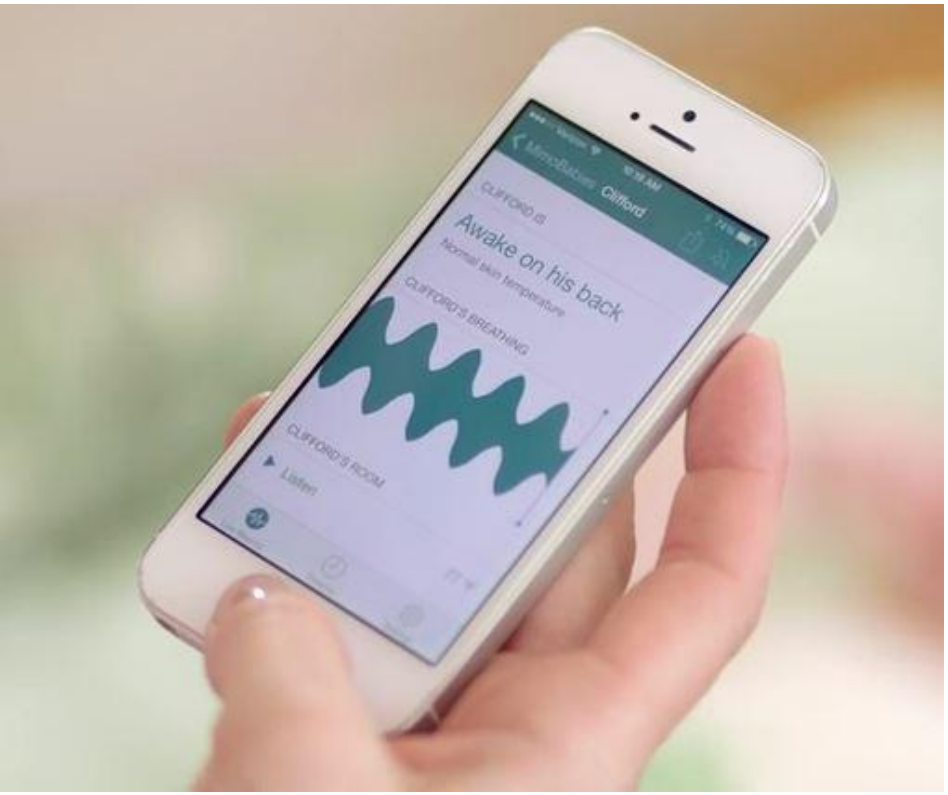






Example of Idea-Design-application-Product

Mimo Baby Monitor,
which detects sleep apnea in infants



Breathing , heart-rate, temperature, sound, movements and body position,
Customizable alerts will let you know if anything happens

that most powerful engineer in the

World ***is*** ***YOU***

VISHNU
UNIVERSAL LEARNING

ATL

Assistive Technology Laboratories

Enhanced Engineering Education

Training Young Engineers for the Real World with original projects that benefit Society

Assistive Technology Program

Students Appling their Engineering Skills and the newest advances in technology to design devices that improve the quality of life for people with disabilities.

Emphases of the program

- **Enhance the education of student engineers** through the designing and building of a device or software that meets a real need.
- Allow participating universities an opportunity for unique service to the local and International Community.
- Provide children and adults with disabilities **student-engineered devices or software** to improve their quality of life and provide greater self-sufficiency,

Assistive Technology Lab.

Students Appling their Engineering Skills and the newest advances in technology to design devices that improve the quality of life for people with disabilities.

Students Meet with Clients

Design their Ideas
in Assistive Technology Lab

Design Solution Presented to Class

Build and Test their Design in Assistive Technology Lab.

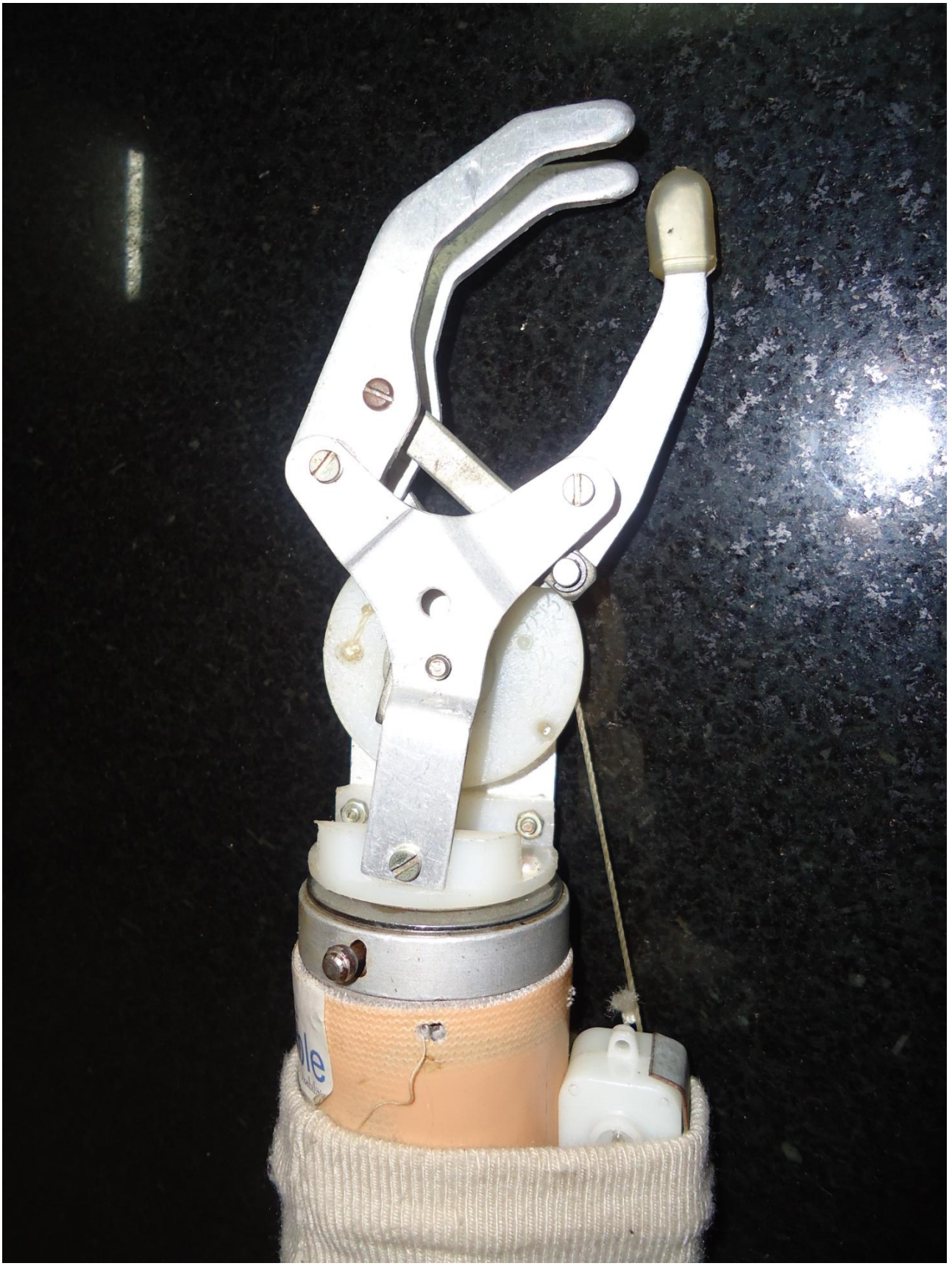
Project is Delivered to Client

Thinking
Out-of the Box
Hand Gripper Project

Request

from local Bhimavaram person

- I lost my left hand in a accident
- I would like to operate a motorbike
- Left hand operates the clutch
- Can you help me ?



Hand Gripper

Batch

Leader

With

Hand

Padmabhushan Dr.B.V.Raju Foundation

Sri Vishnu Educational Society
Vishnupur, Kovvada Village, Bhimavaram

International Day of Persons with Dis Abilities

03 December 2010

Multi-Discipline Teams

- *Electrical Engineering*
- *Mechanical Engineering*
- *Computer Science*
- *Disability Support Originations*
- *Clients and their Care Providers*
- *Manufacturer of Devices*
- *Supply Vendors*

Are **YOU**

UP to the

Challenge ?

Assistive Technologies International Team Projects

VISHNU

SVECW EAMCET CODE : VISW

Shri Vishnu Engineering College for Women

VISHNU
UNIVERSAL LEARNING

BVRIT HYDERABAD ESTD 2012

College of Engineering For Women

VISHNU
UNIVERSAL LEARNING

BVRIT ESTD 1997 NBA & NAAC ACCREDITED

Padmasri Dr BV Raju Institute of Technology

UMASS LOWELL

VISHNU INSTITUTE OF TECHNOLOGY
SRI VISHNU EDUCATIONAL SOCIETY
ESTD 2008
LEARN TO EXCEL
BHIMAVARAM

UNH
UNIVERSITY of NEW HAMPSHIRE

Powered Wheelchair for Rural areas

Designed to be reproduced in developing countries

Applied for project sponsorship
Rotary International Club

2013 spring project

Water Borne Pathogen Inactivation System

International Student Team Design Project

UML (2 teams) USA , **BVRIT** (1 team) Hyderabad, India

Water Borne Pathogen Inactivation System
Requesting client.

UNIVERSITY OF CALGARY

ELECTRICAL & COMPUTER ENGINEERING University of Calgary

LIGHT UP THE WORLD FOUNDATION

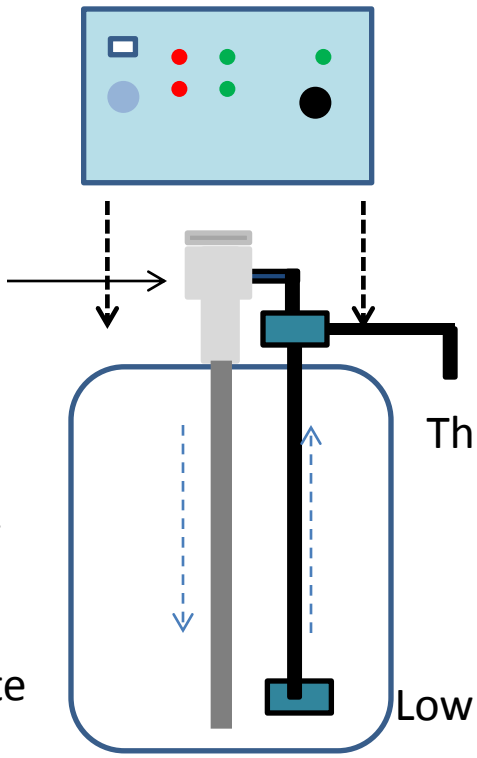
Visionary Lighting & Energy India

VLE Darkness to Light

Dr. Dave Irvine-Halliday

LED Power Control Enclosure

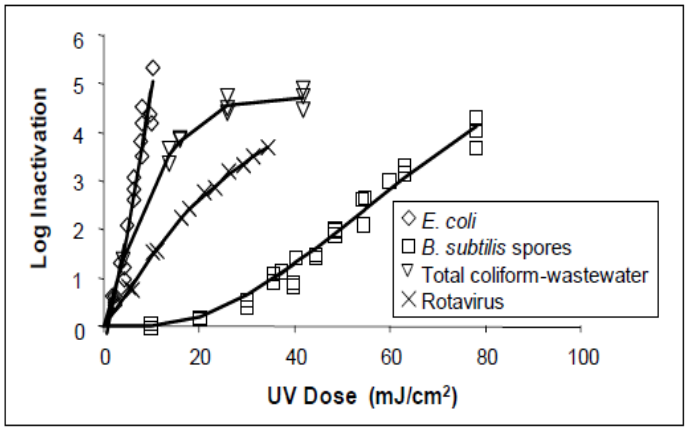
LED Power Source



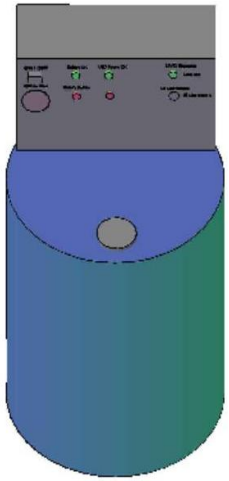
Three Way Valve

Low Flow Pump

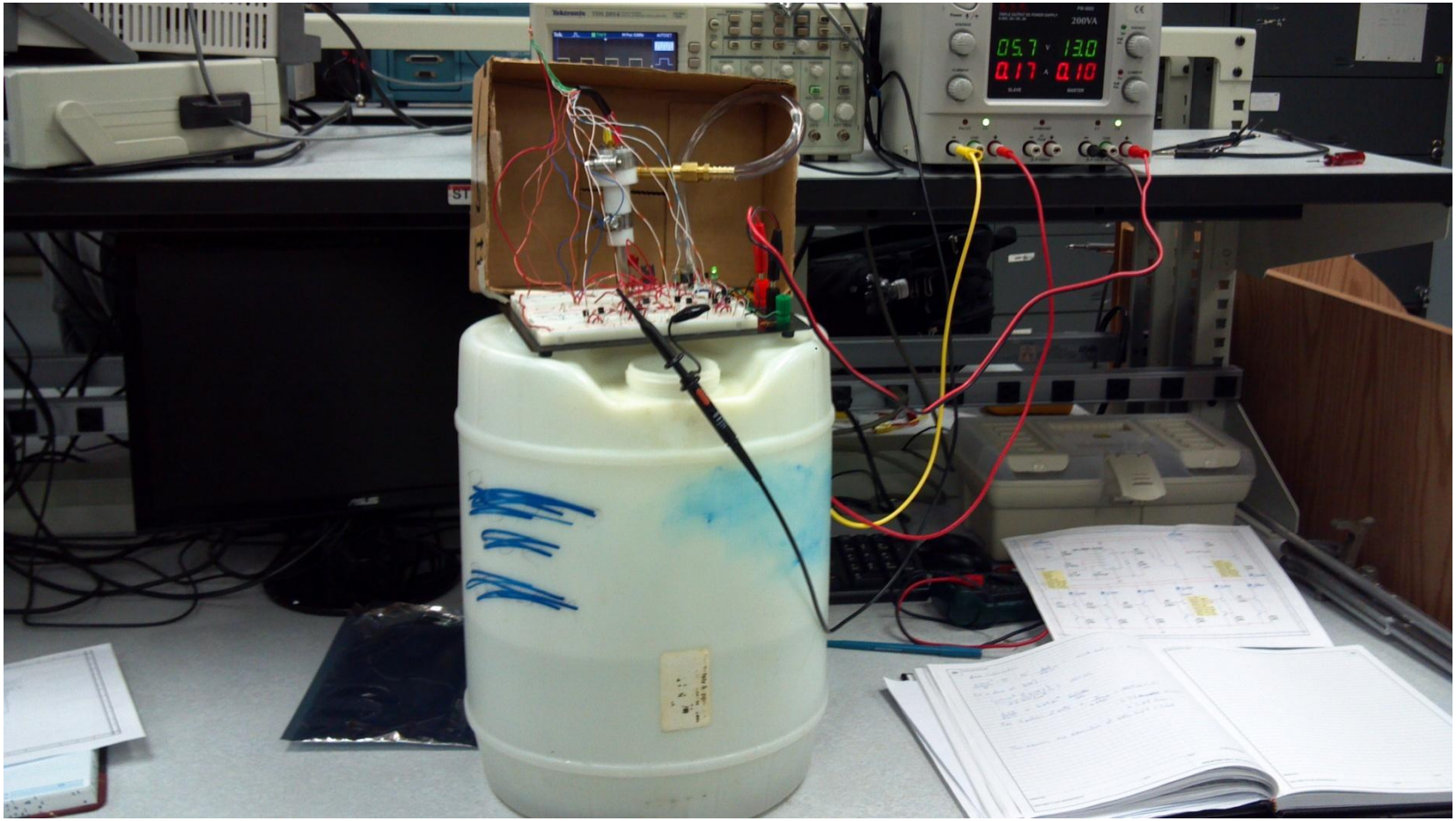
System will produce 1 gallon of 4-Log Pathogen Inactivation per half hour (Estimate based on %UVC transmission).



Source: Adapted from Chang et al. (1985)

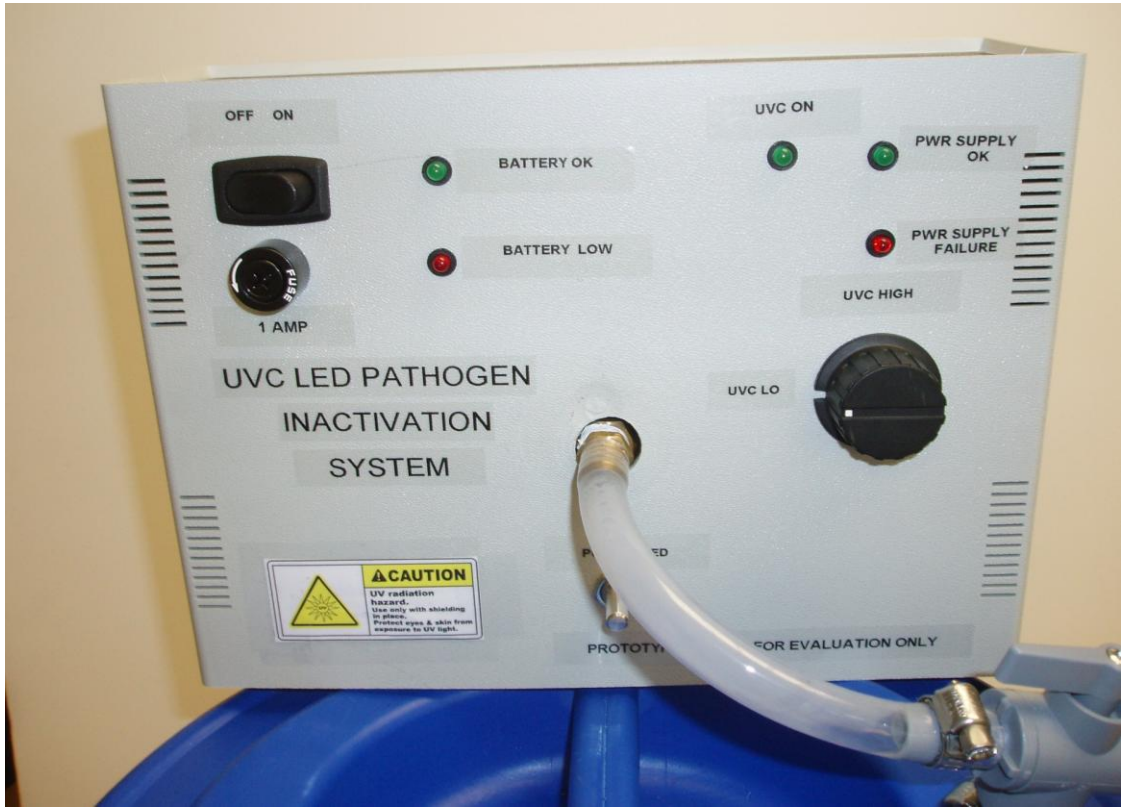


* System Design Overview



Working prototype built and in testing

Philip Seekell & Alan Rux May 2013



Final prototype built

and in testing at Blaze Automation Hyderabad, India
under direction of BVRIT Biomedical dept.

International Team “Bio-Bot”

U-Mass Electrical & Computer Engineering (3 students)
with BVRIT Biomedical Engineering (2 students)

advisor: Srinivasa K. Rao, Ph.D.
Managing Director , Indian Institute of Biotechnology Pvt., Ltd., Hyderabad, India

In sensor validation testing at Vishnu Institute of Pharmaceutical Education & Research (VIPER)

2013/14 International Student Projects 1 of 5 example

Devices for Blind, Deaf, & Dumb

- Project Mentors:

LVPEI
So that all may see
LV Prasad Eye Institute

EnAble India
To empower people with disabilities

Perkins School for the Blind
Nonprofit organization

Perkins

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ESTD 1992

Vishnu Engineering Colleges and L.V.Prasad Eye Institute Assistive Technology Project

LVPEI
So that all may see
LV Prasad Eye Institute

Project

“Liquid Level Alarm”

Questions

Let the

Fun

&

Learning Begin