

Computer Science in the World

Gregg Vesonder
Matt Amoroso

Gregg Vesonder about me

Stevens for 12 years

Penn for 10 years

at&t labs for 35 years

Software Engineering,
Artificial Intelligence,
Human Computer Interaction
Software Design and Architecture

my first dog, my first computer



Tell me about yourself and your
interaction with computers

What is a computer?

Wikipedia

Computer science is the scientific and practical approach to computation and its applications. It is the systematic study of the feasibility, structure, expression, and mechanization of the methodical procedures (or algorithms) that underlie the acquisition, representation, processing, storage, communication of, and access to **information**, whether such **information** is encoded as bits in a computer memory or transcribed in genes and protein structures in a biological cell.



wetware

Do you have a smart phone?

What apps do you use?

Japan's Tsunami



blog.salvationarmyusa.org

Fukushima



3 of 6 nuclear reactors melted down

money.cnn.com

Radiation Spread

- ⦿ Government reported on the spread of radiation
- ⦿ A 20 kilometer exclusion zone was established
- ⦿ Citizens were skeptical about the government reports
- ⦿ Radioactive water was leaking into the ocean



wikipedia

Personal Radiation Detectors

- Citizens needed another way to assess the threat
- Personal radiation detectors emerged built on microprocessor technology
- iPhone Safecast app
- Data placed in repository
- APIs to access data
- Soon citizens were posting their own data

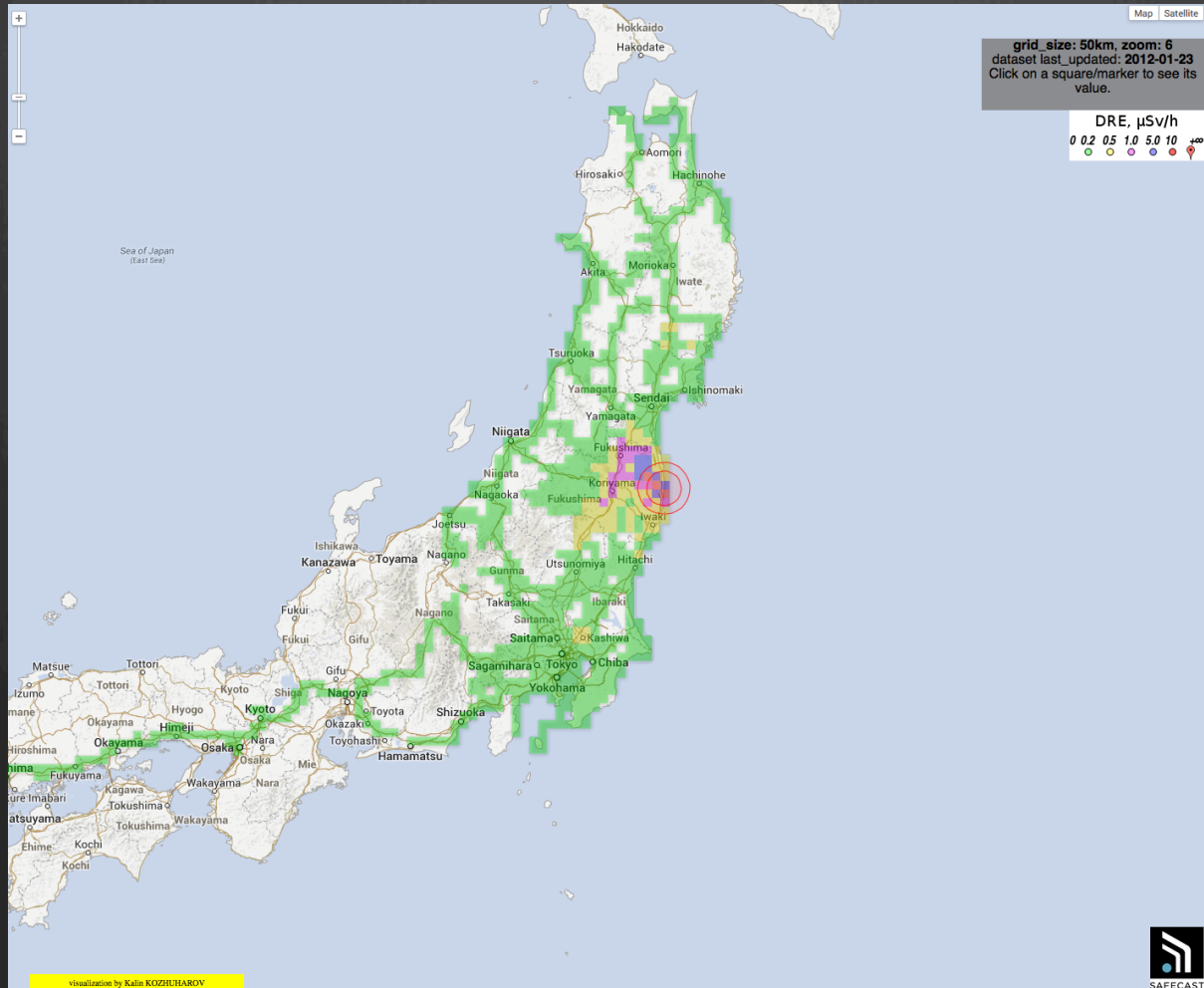


[amazon.com](https://www.amazon.com)



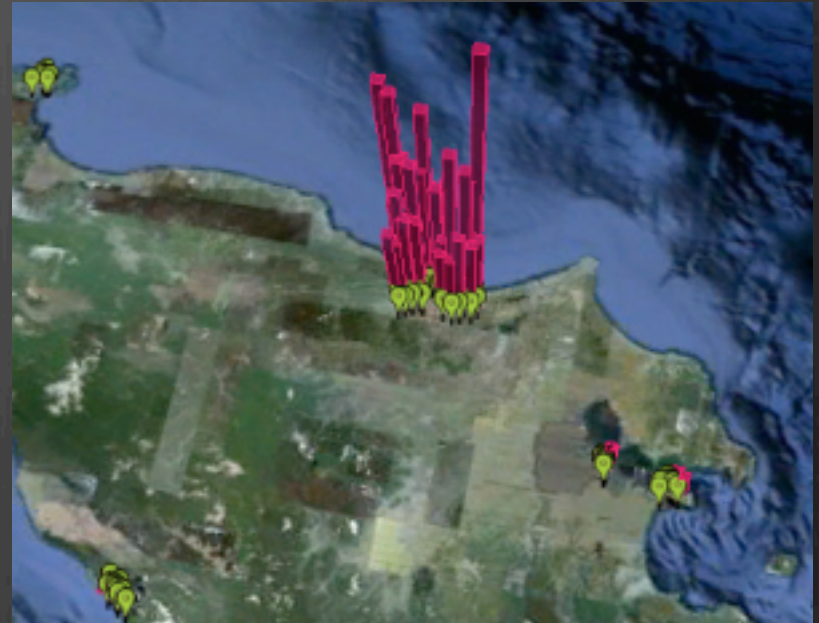
[Medcom.com](https://www.Medcom.com)

SafeCast Map



Other Maps

- ❶ Large number of readings invaluable
- ❶ Compared against government produced data
- ❶ Compared against their data — calibration is an issue
- ❶ Real-time data
- ❶ Multiple visualizations



spectrum.ieee.org

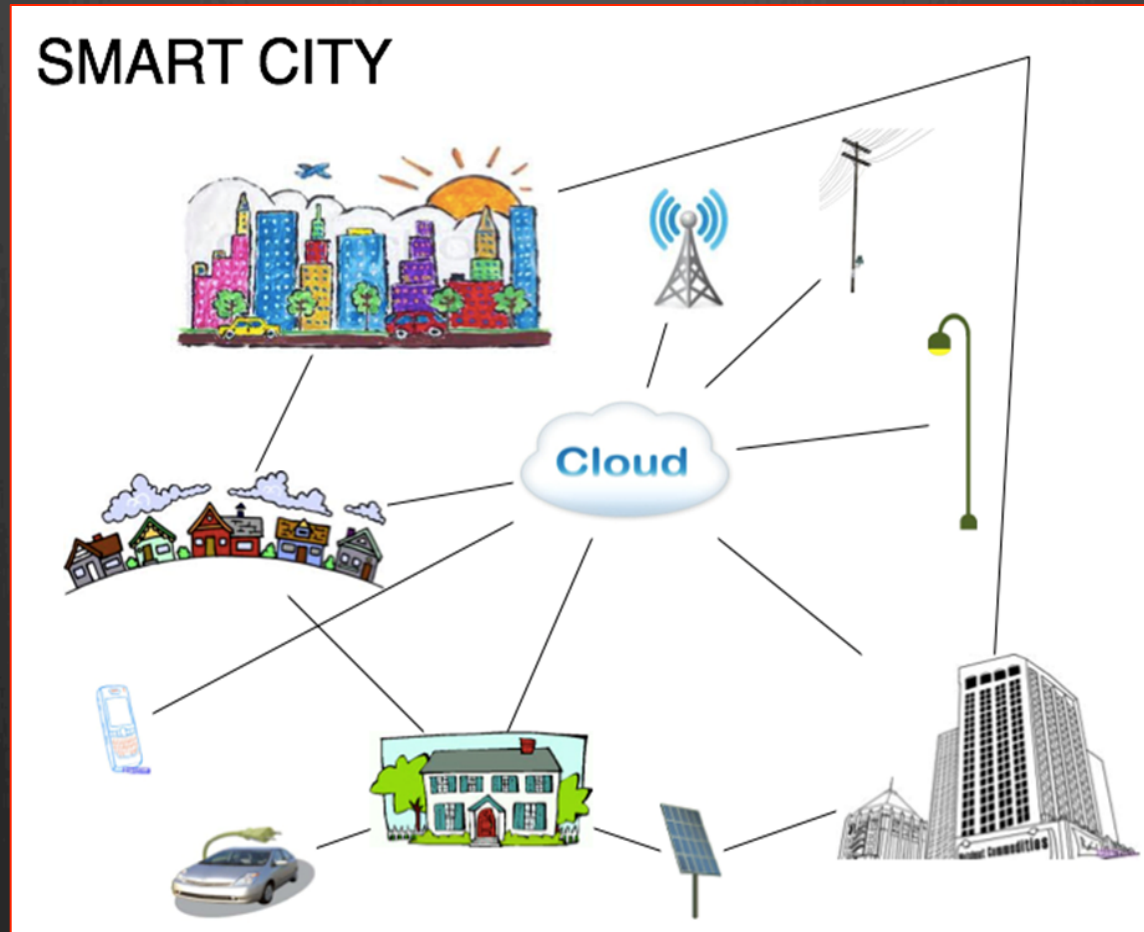
How it works

- ⦿ People or machines generate data
 - ⦿ PAN
- ⦿ Data is transferred to a collecting point
- ⦿ Data is ordered in some way
 - ⦿ Database
- ⦿ Code is written to access the data -> APIs
- ⦿ Developers use APIs to access data

IoT

- ⦿ Tagging Things
- ⦿ Sensing Things
- ⦿ Shrinking Things
- ⦿ Thinking Things

Leads to Smart Cities



Issues

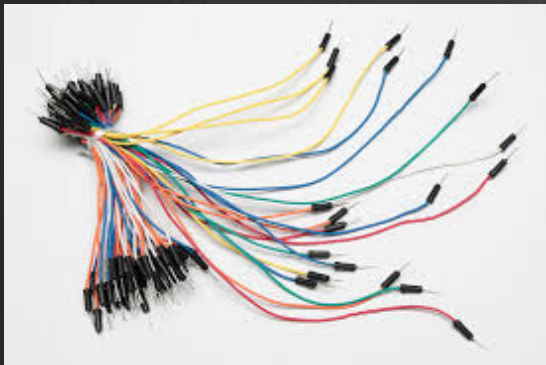
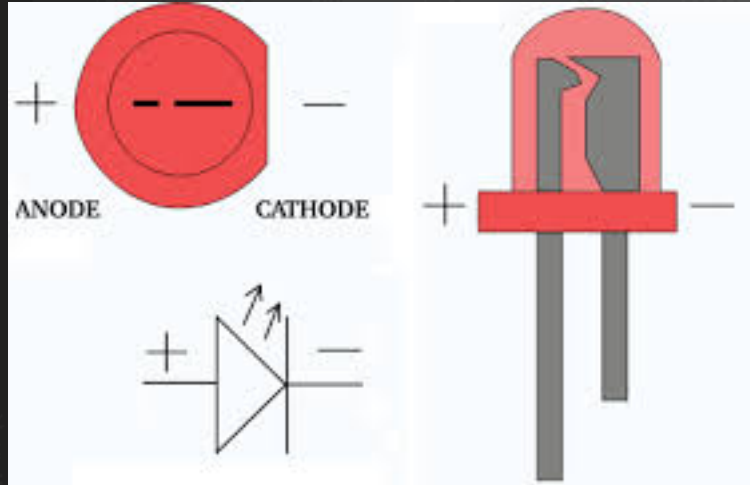
- ⦿ Power
- ⦿ Communication
- ⦿ Calibration
- ⦿ Security
- ⦿ Analysis
 - ⦿ Big Data

About the LAB

Morse Code

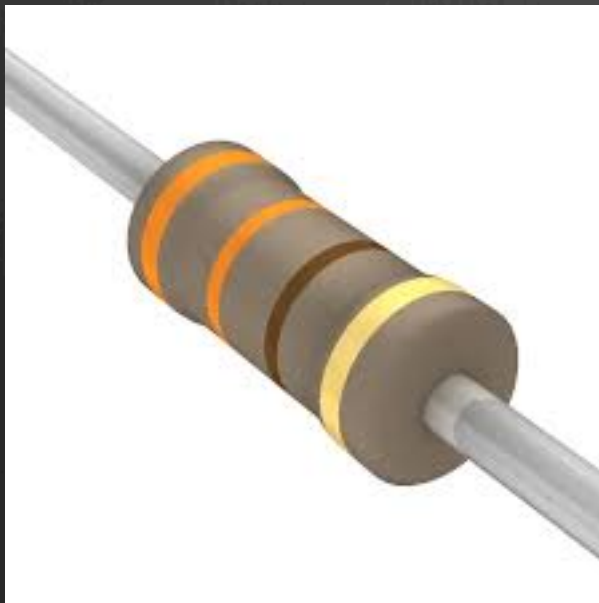
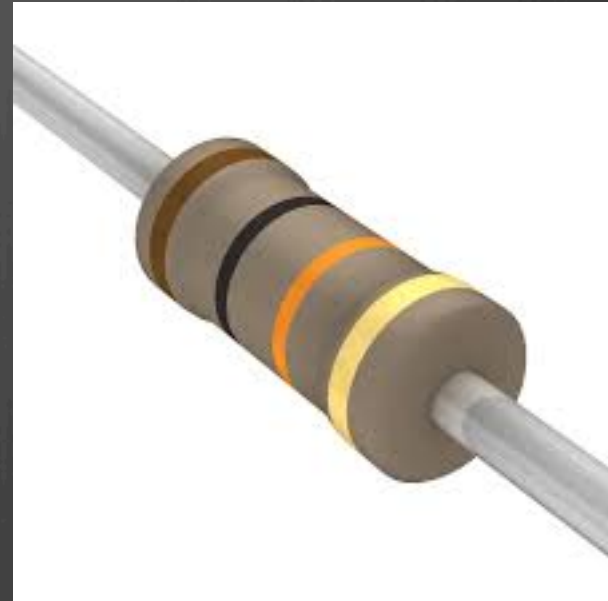
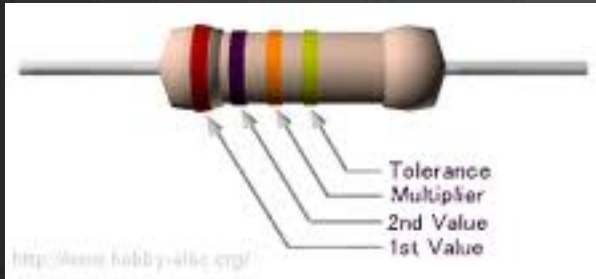
- ⦿ Long history
- ⦿ <http://www.youtube.com/watch?v=BgelmcOdS38>

Hardware components

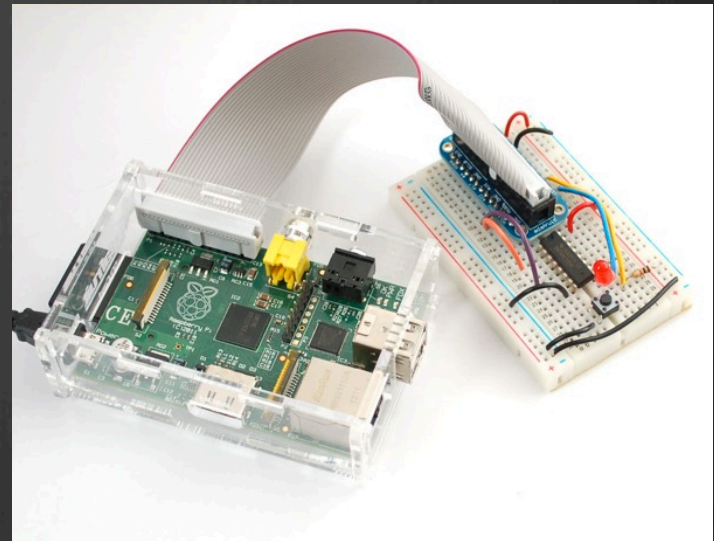
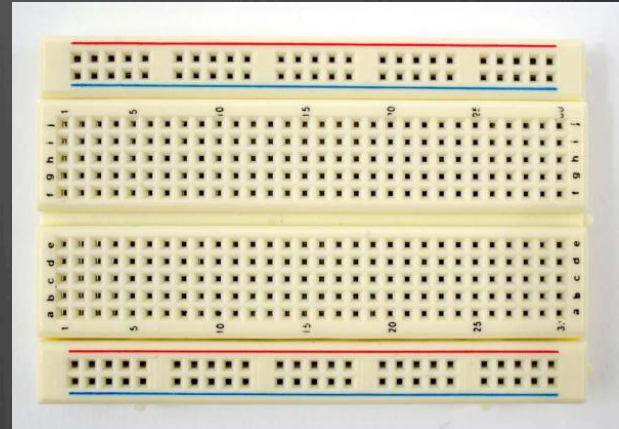
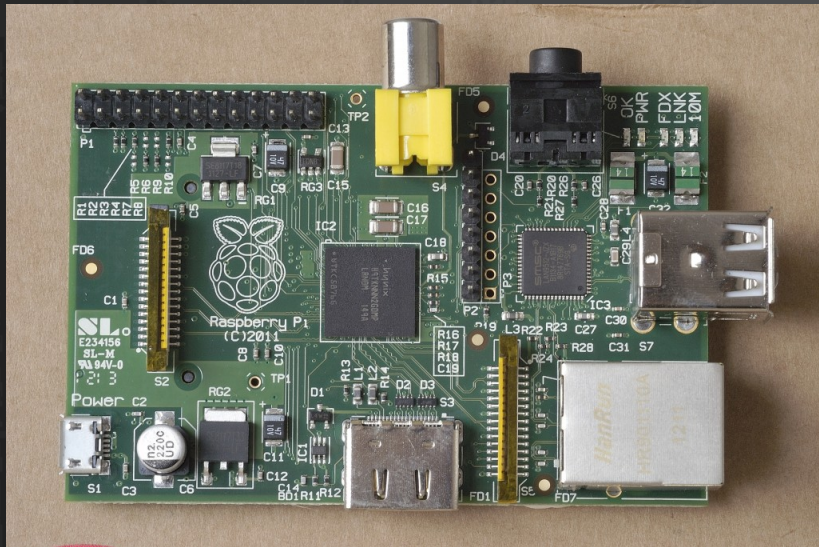


+resistors

Resistors



Platform



Code

- Variables
- Iterators:
 - while (condition):
 - for <var> in :
- Def myFunctionName (myArgs):
- If (condition) :
- True and False
- # is comment indicator

Ongoing

- Learn computer languages
- Program
- Learn from others
 - Stack overflow
- Build
- Be curious
- Be creative
- Find your Joy
- aarphacker.com
- vesonder@mac.com
- Matt Amoroso - mea217@lehigh.edu