SAKURA Science Workshop

さくらサイエンス ワークショップ

Introduction

SAKURA Science Program

- JST (Japan Science and Technology Agency) Program
- From JST document:
  - We invite people from Asian countries and others to Japan through Sakura Science Plan in a collaboration of industry-academia-government, to introduce and offer experience in Japanese science and technology.
  - Beginning in 2014, and for a period of 6 years, over 30,000 young people visited Japan on this program.

Central Asia

Kazakhstan
Kyrgyzstan
Tajikistan
Turkmenistan
Uzbekistan

East Asia

China
Republic of Korea
Mongolia
Taiwan

Other Regions*

Argentina
Brazil
Chile
Colombia
Mexico
Peru

Southwest Asia

Bangladesh
Bhutan
India
Maldives
Nepal
Pakistan
Sri Lanka

Southeast Asia

Brunei, Cambodia
Indonesia Malaysia,
Myanmar
Philippines, Laos
Singapore, Thailand
Timor-Leste
Viet Nam

Pacific Island countries

Fiji
Marshall Islands
Micronesia, Palau
Papua New Guinea
Samoa
Solomon Islands
Tonga

Schedule

- Day 1 (2/15)
  - Sakura science program
  - Lectures from METATECHNO Inc. JAPAN
  - IoT Programming Introduction
- Day 2 (2/17)
  - Lectures about sensors
  - Exercises
  - Conclusion

Hope you will enjoy
this workshop.

About Japan and Kyutech

About me

- Kazuaki Tanaka
- Professor at Kyushu Institute of Technology

Kyutech

- Lectures about computer science
- Researches about embedded systems
  - Small microcontroller
  - Programming language Ruby, mruby
  - LPWA communication protocols

Japan


中国
パキスタン
ネパール
ブータン
韓国
香港・マカオ
ラオス
インド
台湾
バングラデシュ
タイ
ベトナム
ミャンマー
フィリピン
カンボジア
スリランカ
マレーシア
シンガポール
モルディブ
インドネシア

Kyutech Fukuoka, and Japan

Image of Japan

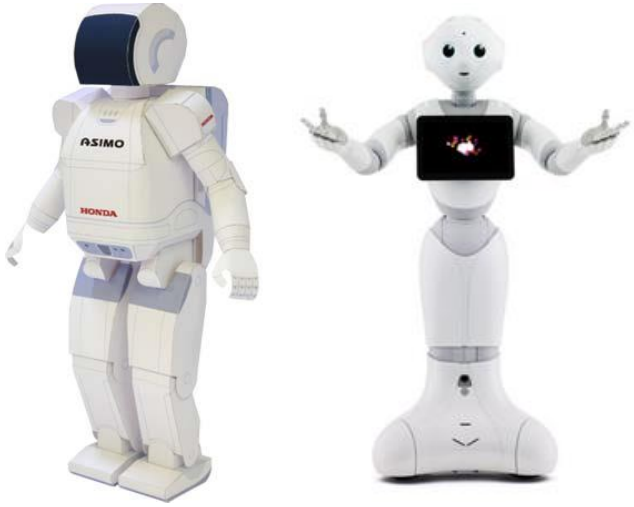


Image of Japan, also

Look for opportunities to visit Japan.

Kyushu Institute of Technology
Kyutech

- Undergraduate and graduate school

- Plan to enter to Kyutech:
  - Skipping grade to 3rd year in undergraduate
    OR
  - Entering master course
- Entrance examination and some requirements

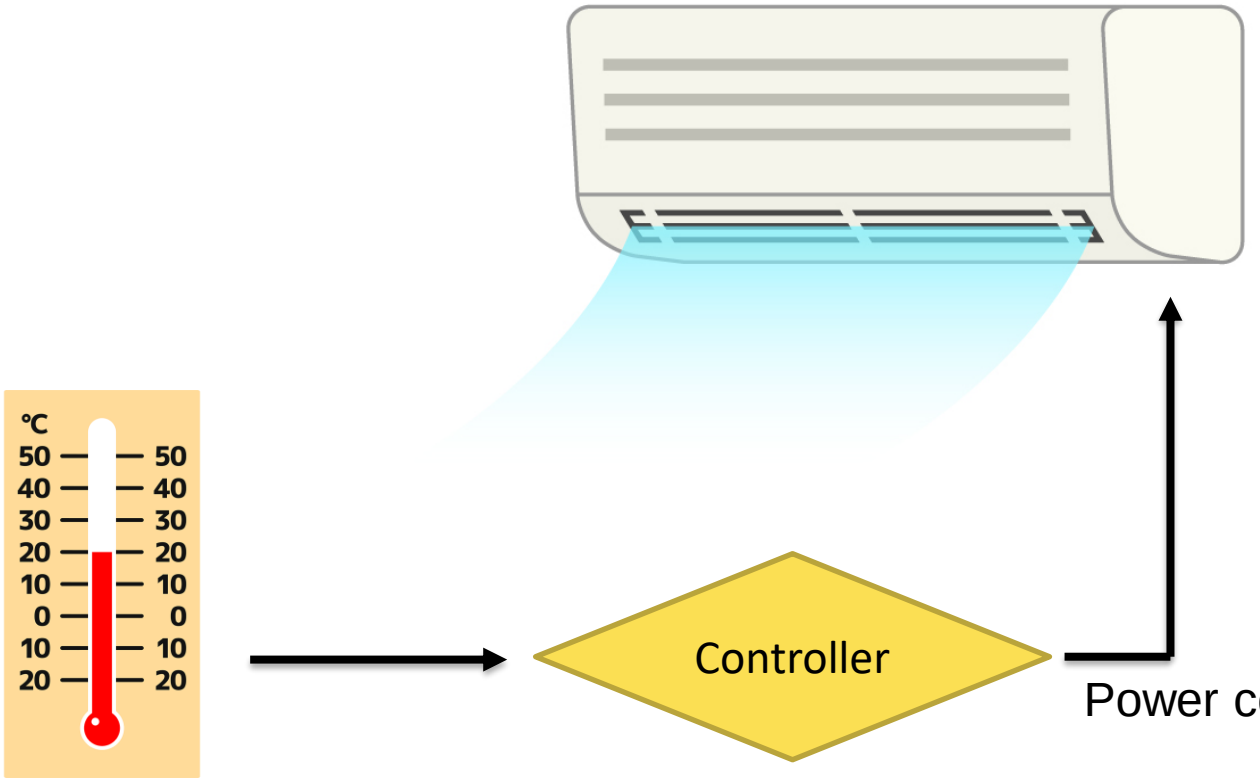
- More details, contact to me.

Lectures from METATECHNO Inc. JAPAN

(Change screen share)

IoT workshop introduction

Example: Air conditioner



Temperature measurement

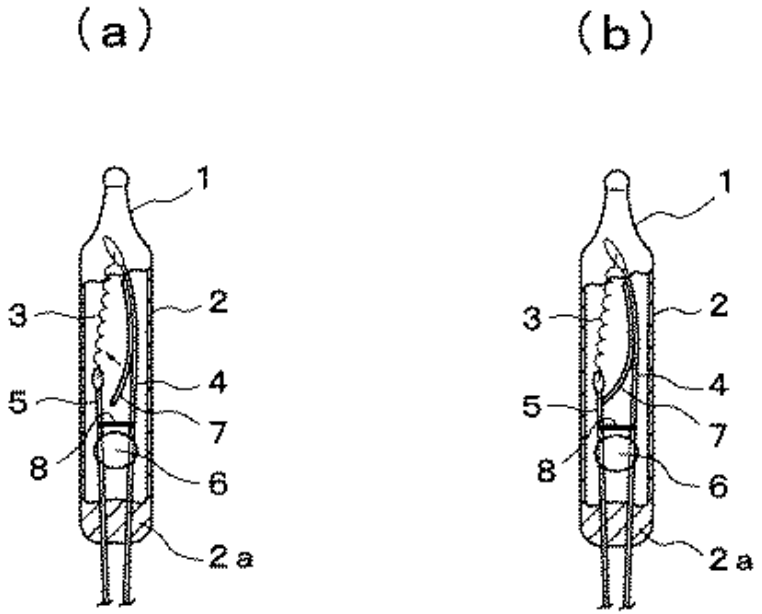
KEY of this system

What is a Controller ?

- Monitor input values
- Data processing
- Output control signals

- Using mechanical reaction
- Using electrical circuit
- Using processor(program)

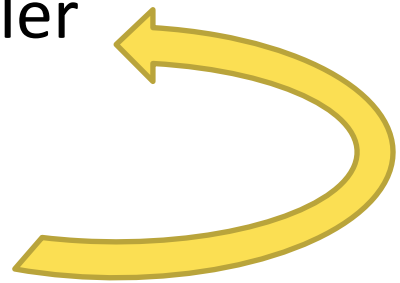
Mechanical Controller



Bimetal bulb
7: bimetal strip

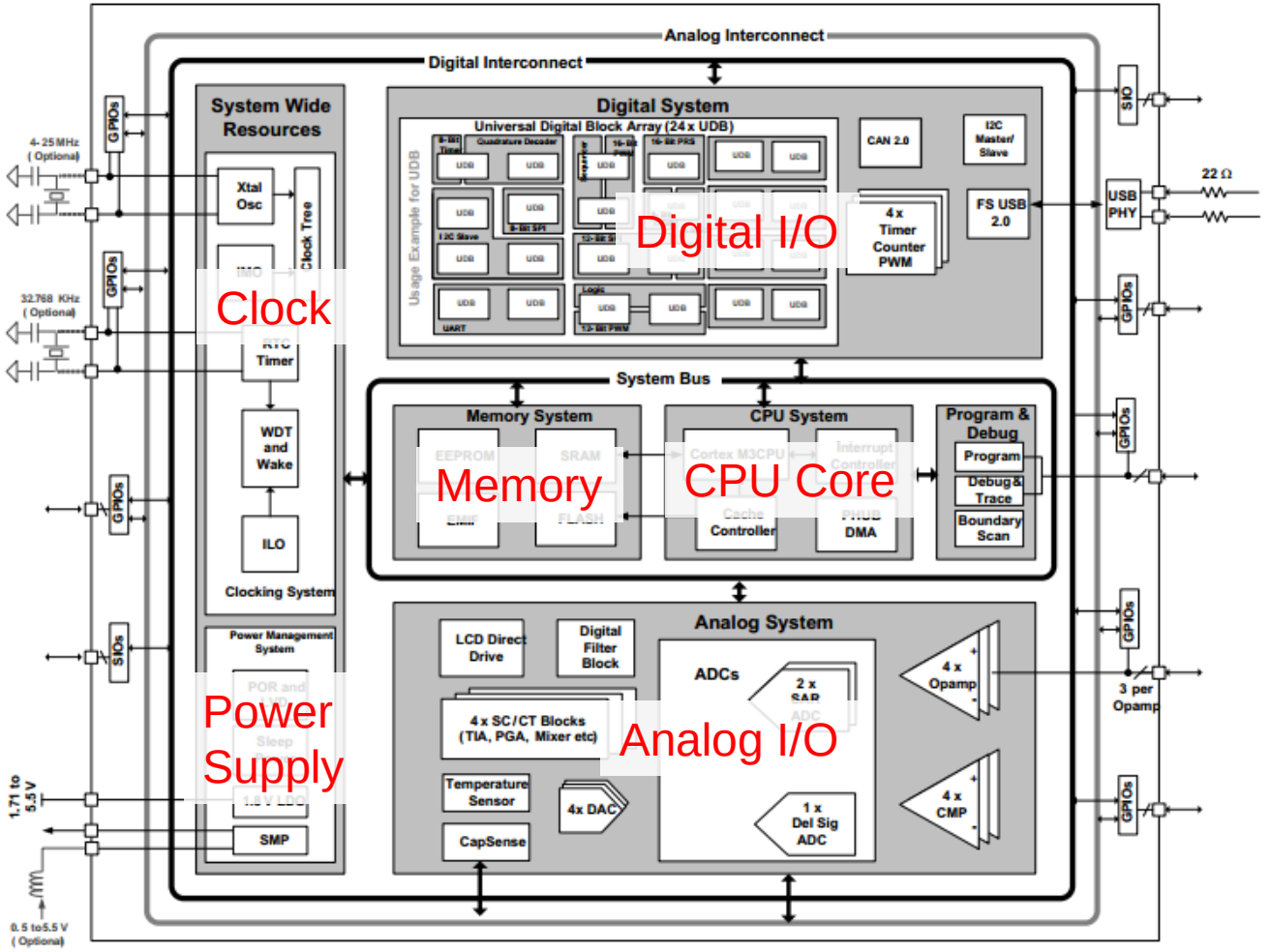
Embedded System

- Hardware + Software
- Hardware:
  - Small microcontroller
- Software:
  - Control software



Control

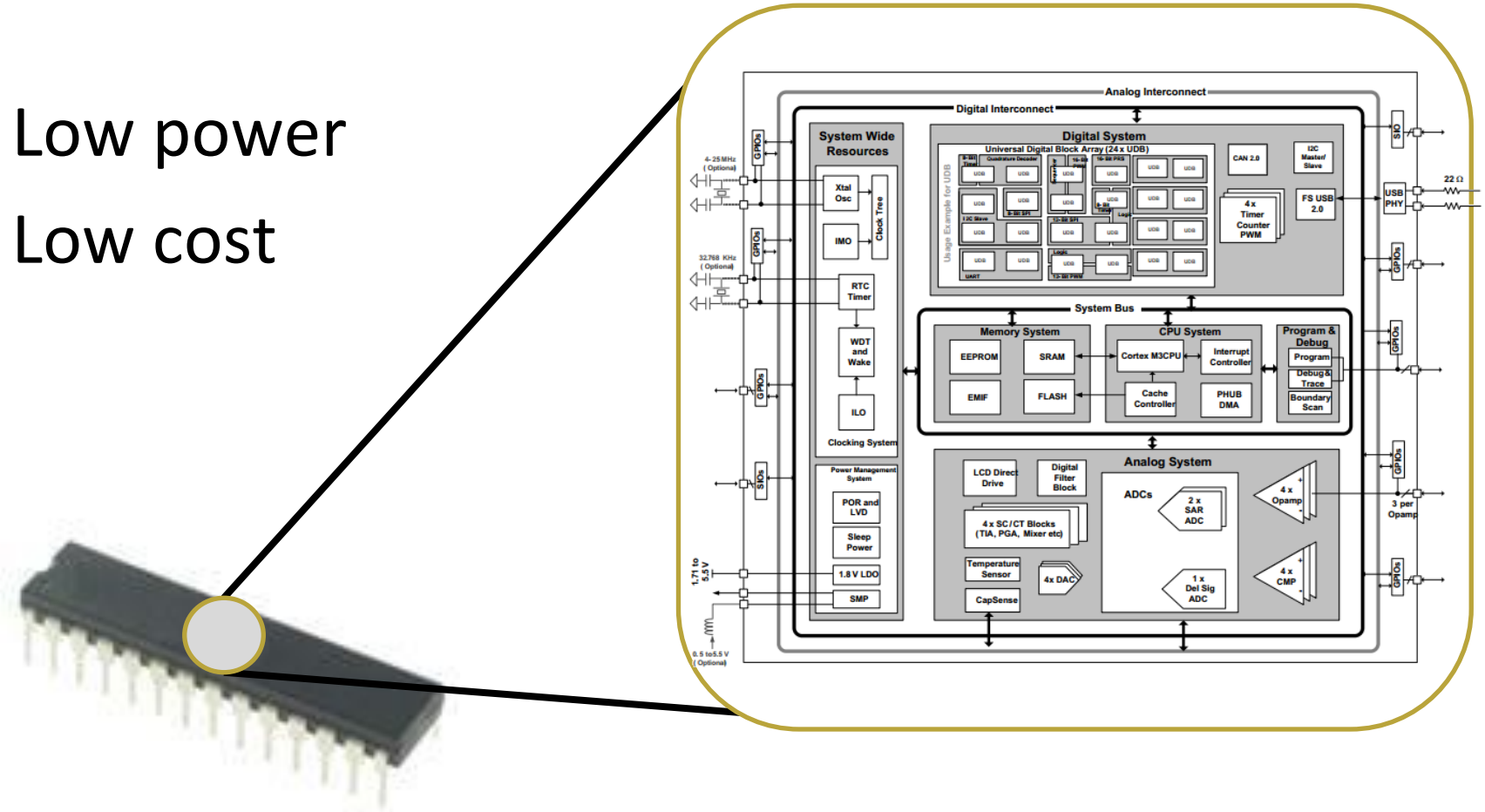
Small microcontroller



Cypress semiconductor PSoC5LP

Small computer

- Low power
- Low cost

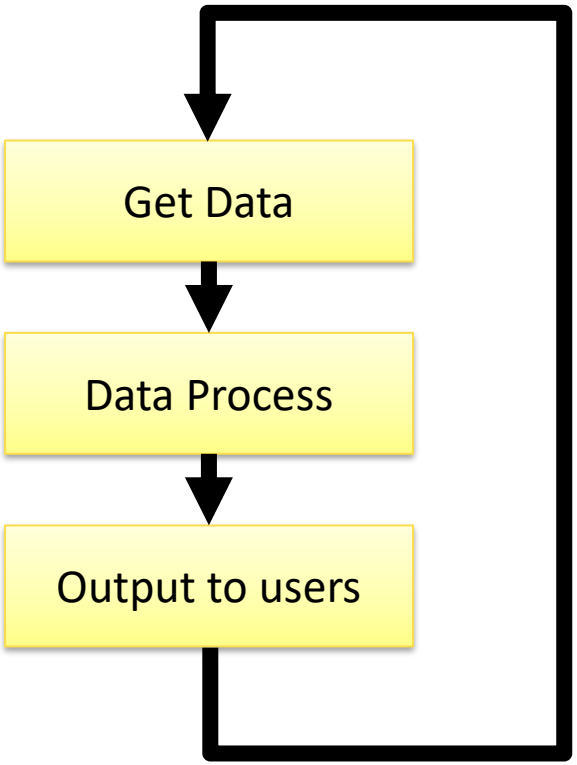


Simple IoT software

- Input from somewhere
  ↓
- Data processing, Algorithms
  ↓
- Output to somewhere

Software design

- Usually repeat forever



Experiences from this workshop

- What is IoT software ?
- How to design software/hardware ?
- How to combine software and hardware ?
- How to implement program code ?

Workshop agenda

- Programming
  - Using programming language
    ~ Ruby Language
- Hardware controlling
  - LED and Sensor
- Application programming
  - Implement your own program

Finally, you can complete THIS.

- Controlling LED by environment brightness