UNIVERSITIES' REPRESENTATIVE INFORMATION

1. BUSAN UNIVERSITY

Representative**:** CHEULWOO RO
Professor, Dept. of Computer Eng.
Silla Univ., KOREA

WORK EXPERIENCE
Korea Central Park Cloud Forum, Senior Vice president and chairman of Platform Division (`12.8-present)
Vice Chairman of Korea Contents Association ('09.3~'14.12)
IT Advisory and Evaluation Committee of Busan City

I. ONGOING PROJECT

■ Project I
Aquaculture Theft Protection System Development Using Bluetooth Smart Mesh

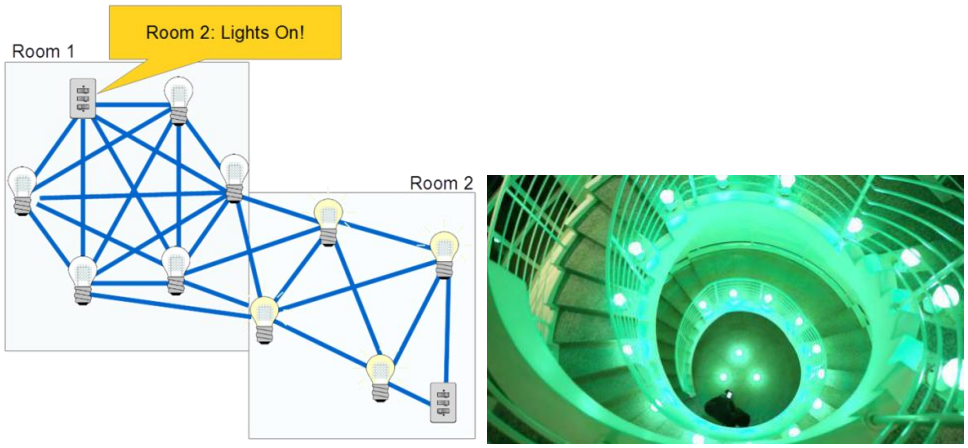
The project prevents fishermen's economic losses from thievery using low energy IoT technologies and contribution of marine fisheries development. A user-friendly Smartphone service using cloud-based technologies is provided.

Development and implementation

- Remote aquaculture monitoring module
- IoT offshore marine structure (HW)
- Cloud operating module
- Intrusion detection module
  - Developed by Bluetooth Smart Mesh method (SW)
- IoT middleware
- Smartphone App (android, IOS, and Cloud) and API

■ Project II
Development of Smart Street Lights by Enhancement of IoT Mesh Networking Convergence Technology

Bluetooth Smart Mesh Communication



< Dimming Control using Bluetooth Smart mesh >

Technology development

- BSM (Bluetooth Smart Mesh) modules (HW and Firmware)
- LED control module
- API for communication BSM and Smartphone
- Middleware

Service development

- Smartphone App (Android, IOS, and Cloud(Amazon))
- Smart street light control SW

(1) Development of smart streetlight platform (illumination management technology)

- Mesh communication method
- Dimming control module
- BSM module (HW+ Firmware) that communicates more than 50 meter
- API

A broad Mesh network is formed by number of streetlight communications; Bluetooth smart method. Bluetooth smart mesh streetlight platform, capable of generating value added services, is developed by Smartphones communicating freely within the area.

Control and information process is performed systematically by cloud linkage of streetlight mesh network. Scalability is considered accordingly.

As Mesh communication between Bluetooth modules is possible, improved value added service (such as Smartphone cross-communication and interrelational information utilize between nodes) generating platform is provided.

CSR1010 Bluetooth smart chip, worlds most advanced that supports mesh communication, is applied to develop Bluetooth smart networking technology.

(2) Production of Mesh platform applied smart streetlight prototype

- Development of smart streetlight as well as its practical software
- Bluetooth smart Mesh streetlights provide variety of services through multiple connections between nearby streetlights in coverage distance of 50 meter to 100 meter
- LED light bulb development to solve secure coverage distance, heat emit, and other possible minor problems

(3) Expected effect

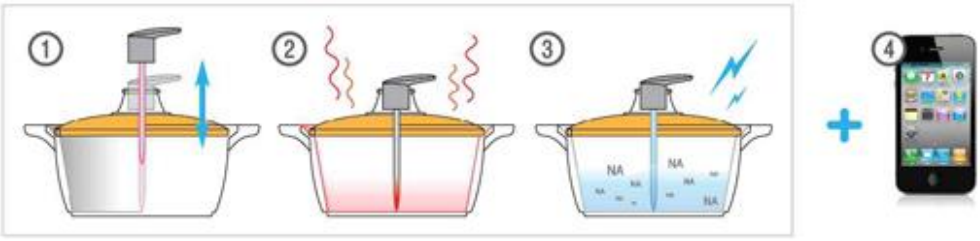
- Insuring competitive advantage of IoT technology
- Stability improvement of streetlights nodes
  - Development and application of Bluetooth mesh network technology enables continued networking through the bypassing a node outage
- Effective management can be formed by using low-power Bluetooth network technology and its application of streetlight control technology

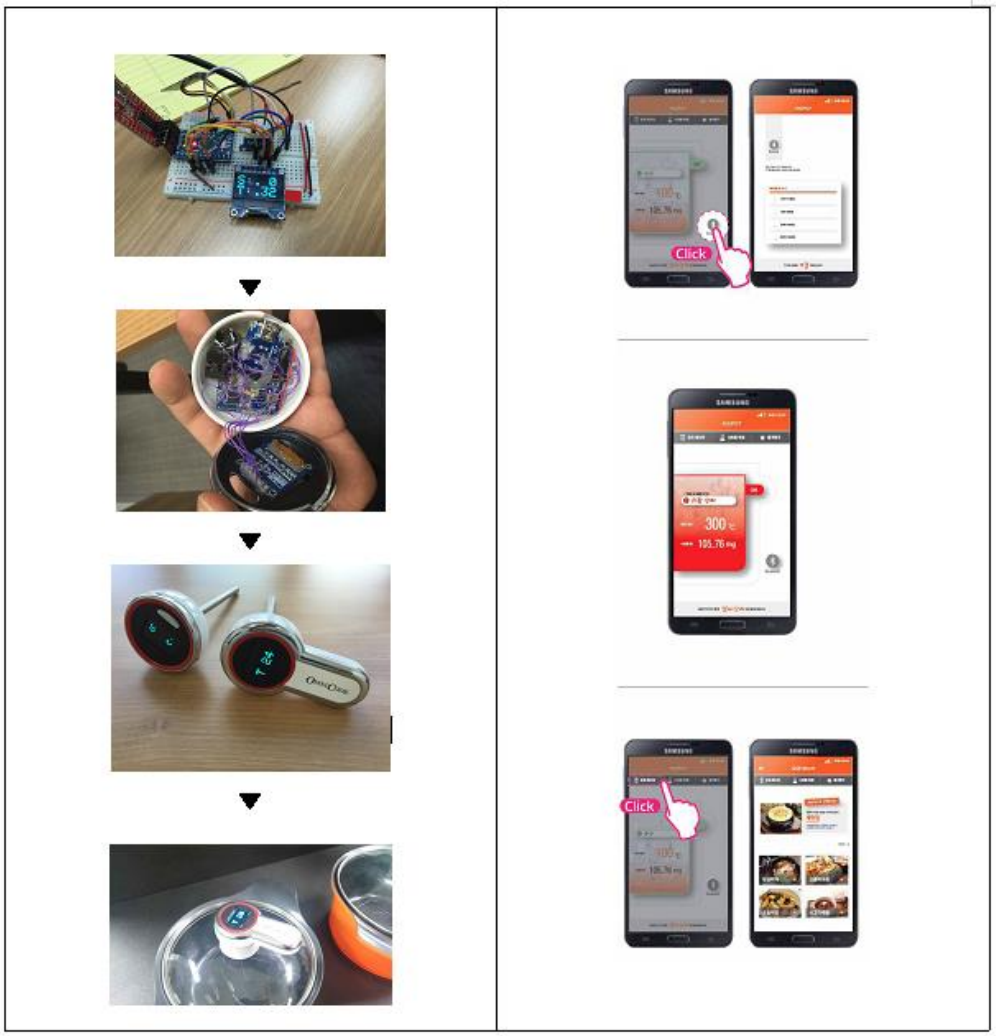
II. PROJECT CARRIED OUT

■ Project I

Development of Bluetooth Smart Cookware (Recursive Software, 2014 - 2015)

- Smart cookware equipped with micro-soft sensor and Bluetooth smart module will prevent fire by alarming Smartphone user, as well as keeping one's health by measuring salinity
- Sensor coupled with Smartphone will transmit variety of data in real time (using exclusive Smartphone App) which provides convenient usability





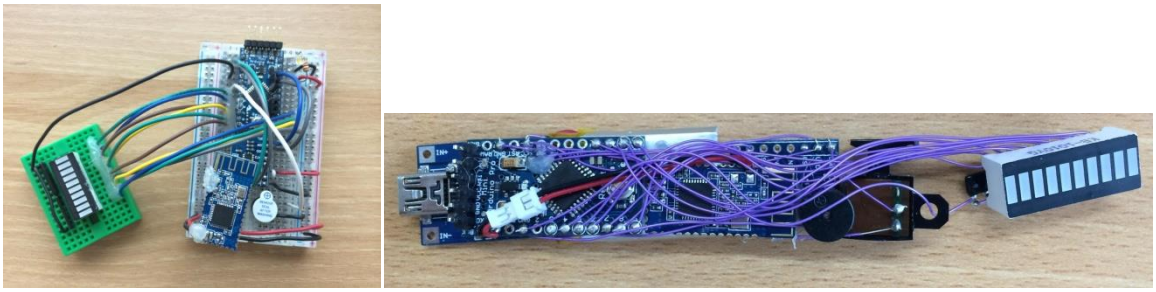
■ **Project II**

Development of Intelligent Stick for Elders (Recursive Software, 2014)

- Intelligent stick is developed by Recursive Software using a new concept of Arduino and low-power Bluetooth
- Uses an accelerometer, cane fall injury is detected and automatically sends a request to designated guardian's Smartphone
- Additional options include pedometer, flash function, and ability to use stick as a joystick to play a game

Intelligent stick requires four small size boards to produce; Arduino board, low-power Bluetooth module, accelerometer module, and recharge module. All in one exclusive board development necessity was on the ride in order to meet cost and mass production-efficiency.

Development of IOS App for the intelligent stick that works with Arduino HW/SW and low-power Bluetooth has been completed.



< Module prototype for smart stick >

< Smart stick prototype >

III. Relevance for the future

- Preparation of project expansion based on system development experience of U-healthcare, Mobile Monitoring, and aquaculture
- Advantage in technology development using smart Bluetooth communication based on the smart streetlight development experience
- Bluetooth Smart Mesh illumination control technology can be applied in various fields
- Communication module development using multiple sensors has been completed and it can take advantage on other business that uses sensor and information communication skill
- Mobile service technology reserve through the number of Smartphone mobile app development

2. YOUNGSAN UNIVERSITY

Representative: TAEHEE KIM
Director of International Cooperation
Professor, Department of Game and Contents

Teaching: Philosophy of Contemporary Art, Design Principles, Digital Media and Creativity, Game Programming (2D and 3D), Multimedia, Database Systems, Programming in C/C++

AREAS OF INTEREST
Intelligent Robots, Internet of Things(IoT);
Digital Media Art, Physical Computing

WORK EXPERIENCE
Korea Institute Of Science And Technology Information / *Daejeon, Korea* / *1997~1999*
Senior Researcher – Internet Search Agents, Natural Language Processing, Database Construction
SYSONE, Inc. / *Seoul, Korea* / *1989~1991*
Customer Engineer

PUBLICATIONS
- Taehee Kim, *Interactive Video Installation of Phenomenological Landscape Using a Custom Sensitive Fabric Map as Human Interface*, International Journal of Digital Content Technology and its Applications, vol.7, no.11, 202-208, 2013
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- Taehee Kim, *An Approach to Interdisciplinary Convergent Design Education*, Youngsan Journal of East Cultural Studies, vol.9, May 2012.
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- Taehee Kim, *An Analysis on Analogical Concepts between Media Art and Oriental Philosophy*, Youngsan Journal of East Cultural Studies, vol.6, November 2010.