

IoTtalk: Let IoT Talk

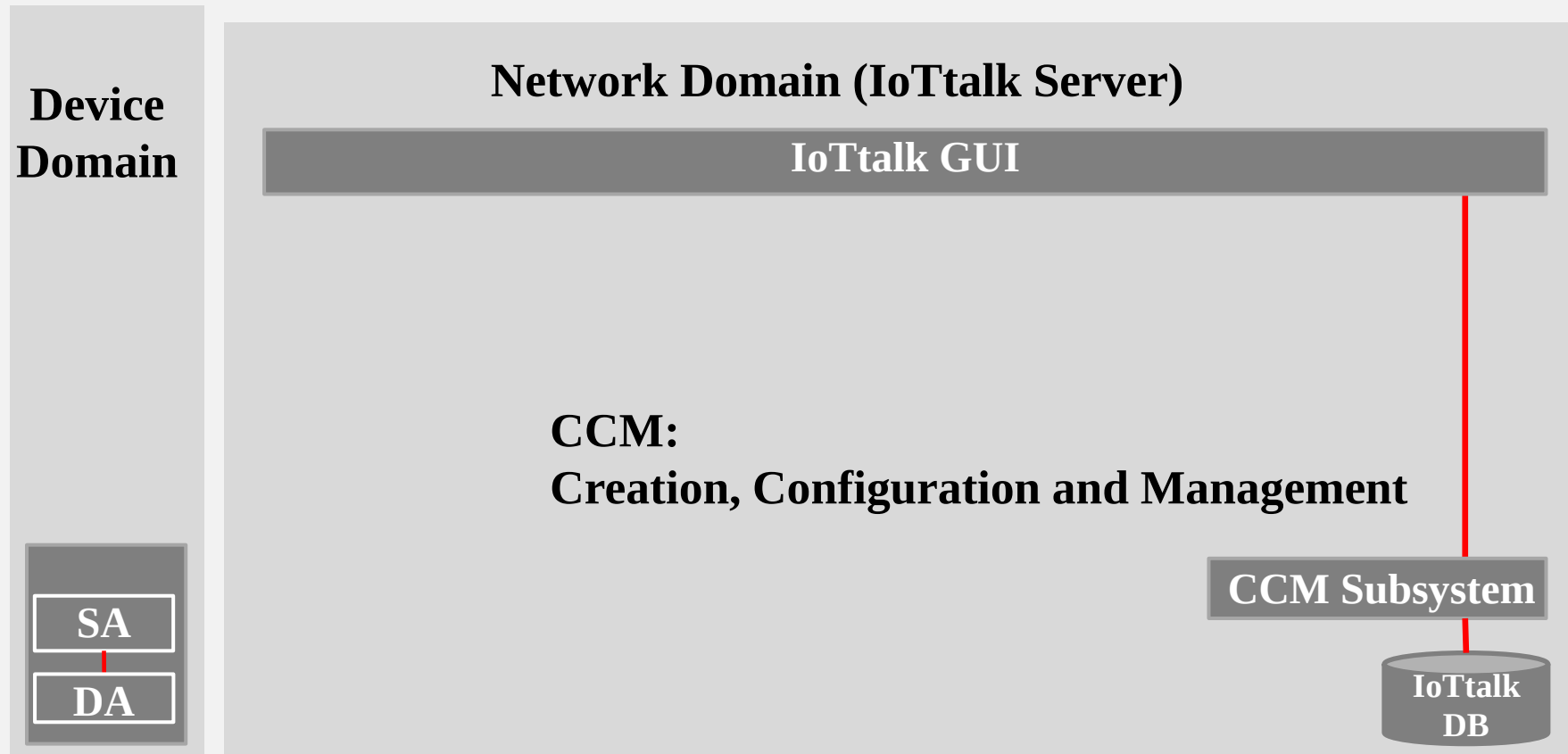


林一平(Yi-Bing Lin)
Winbond Chair Professor
NYCU, CMU, NCKU

A simple example: to use a smart phone to control a fan



Create an application graphically



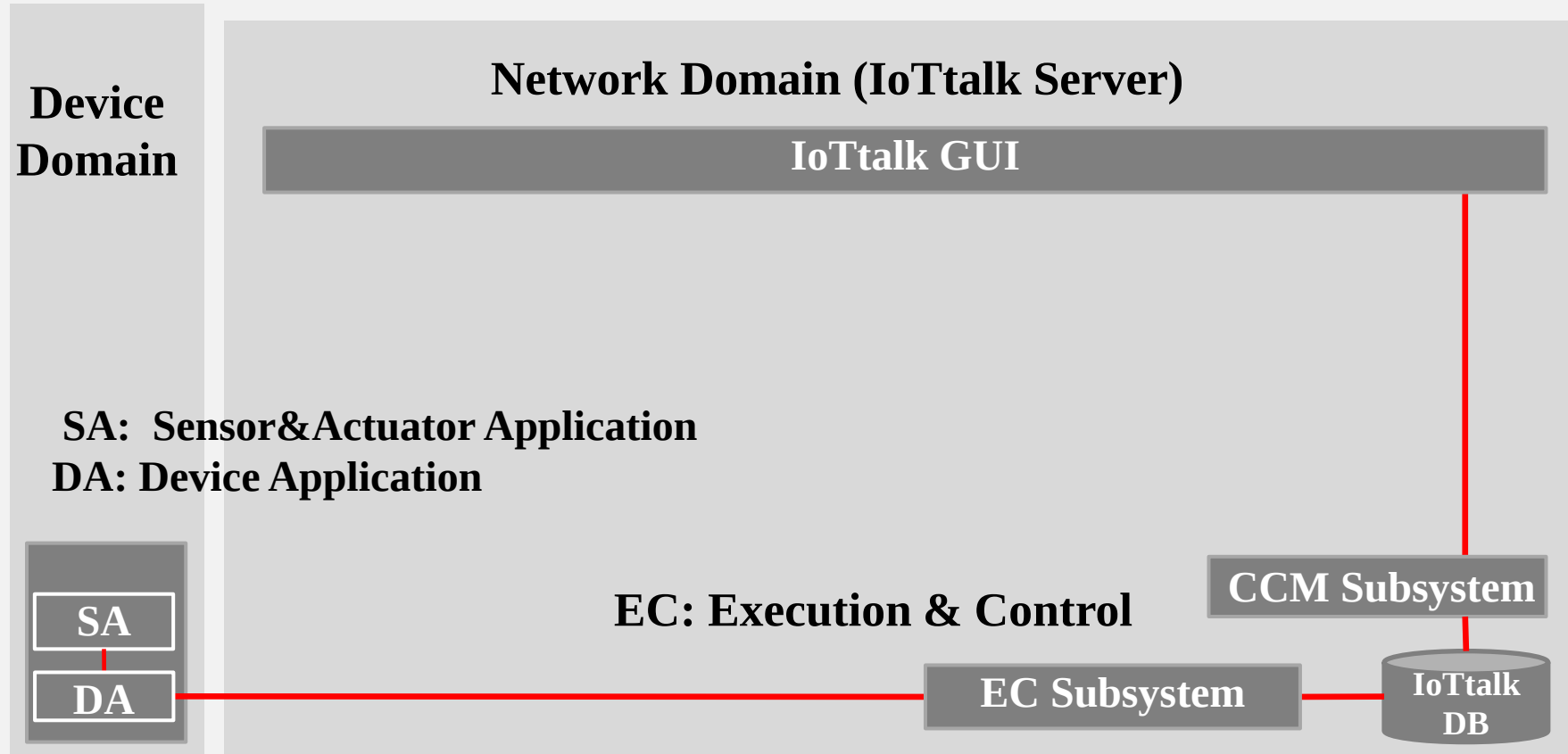
Yi-Bing Lin, Yun-Wei Lin, Chang-Yen Chih, Tzu-Yi Li, Chia-Chun Tai, Yung-Ching Wang, Fuchun Joseph Lin, Hsien Chung Kuo, Chih-Chieh Huang, Su-Chu Hsu. EasyConnect: A Management System for IoT Devices and Its Applications for Interactive Design and Art, IEEE Internet of Things Journal, 2(6):551-561, December 2015. [pdf](#)

IoTtalk can infinitely grow with the device model list

Fan	Model	Flush 	Delete	
	Qmote			
	RandNum			
	Remote_control			
	Riddle			
	SMS			
	ScratchX			
	Skeleton			
	Smartphone			
	Spring SHM			



Connect to the IoT device and execute the application



Yi-Bing Lin, Yun-Wei Lin, Chun-Ming Huang, Chang-Yen Chih, Phone Lin. IoTtalk: A Management Platform for Reconfigurable Sensor Devices. IEEE Internet of Things Journal, 4(5) 1552-1562, October, 2017. [pdf](#)



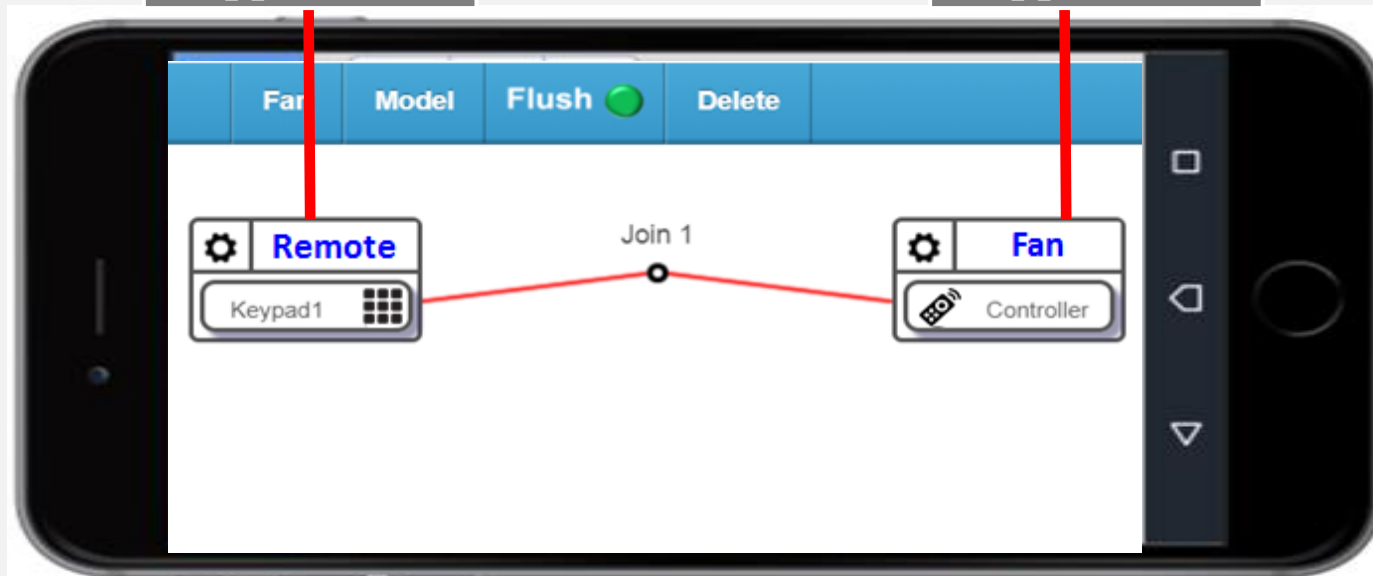
Control SA
(Sensor&Actuator Application)

Device
Application

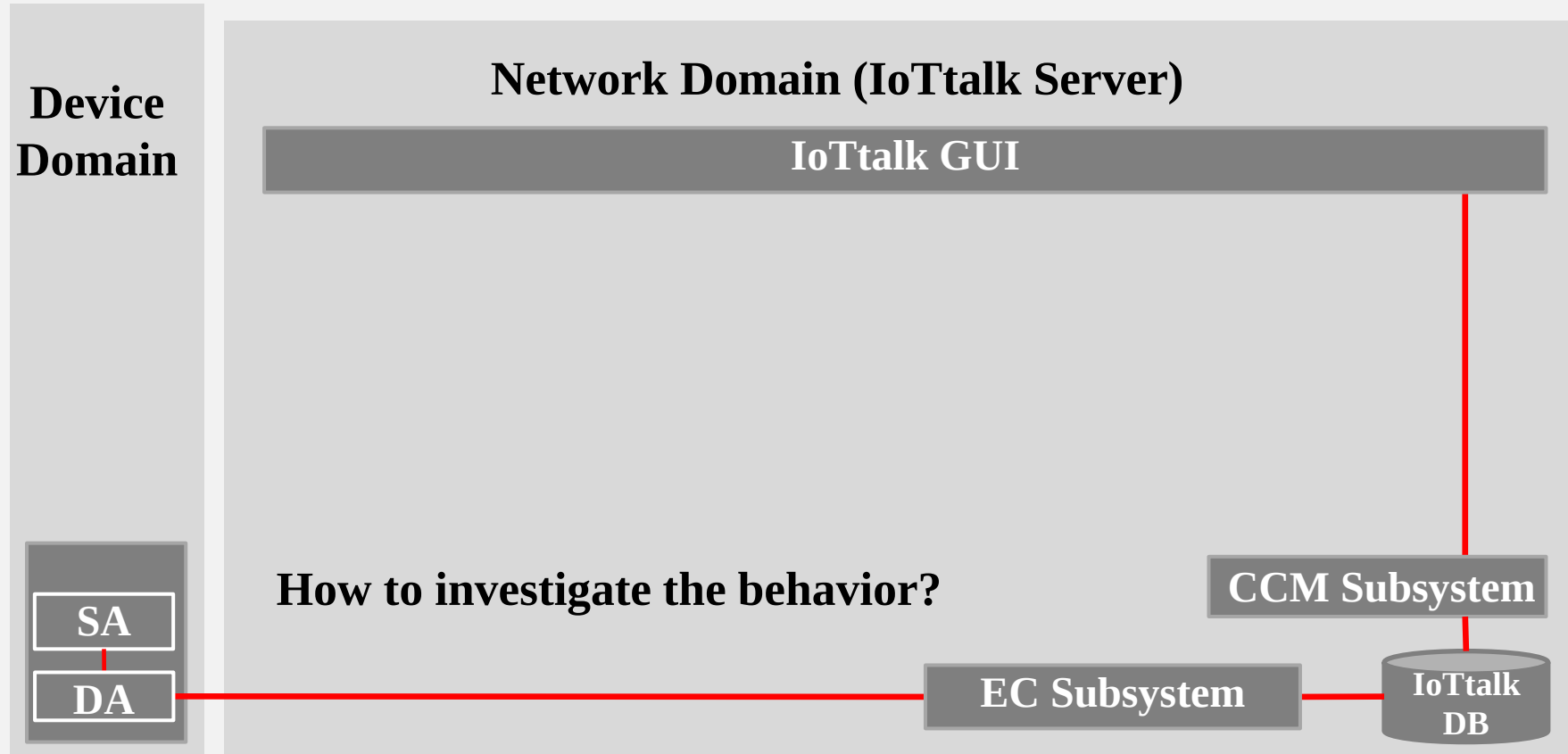


Fan SA
(Sensor&Actuator Application)

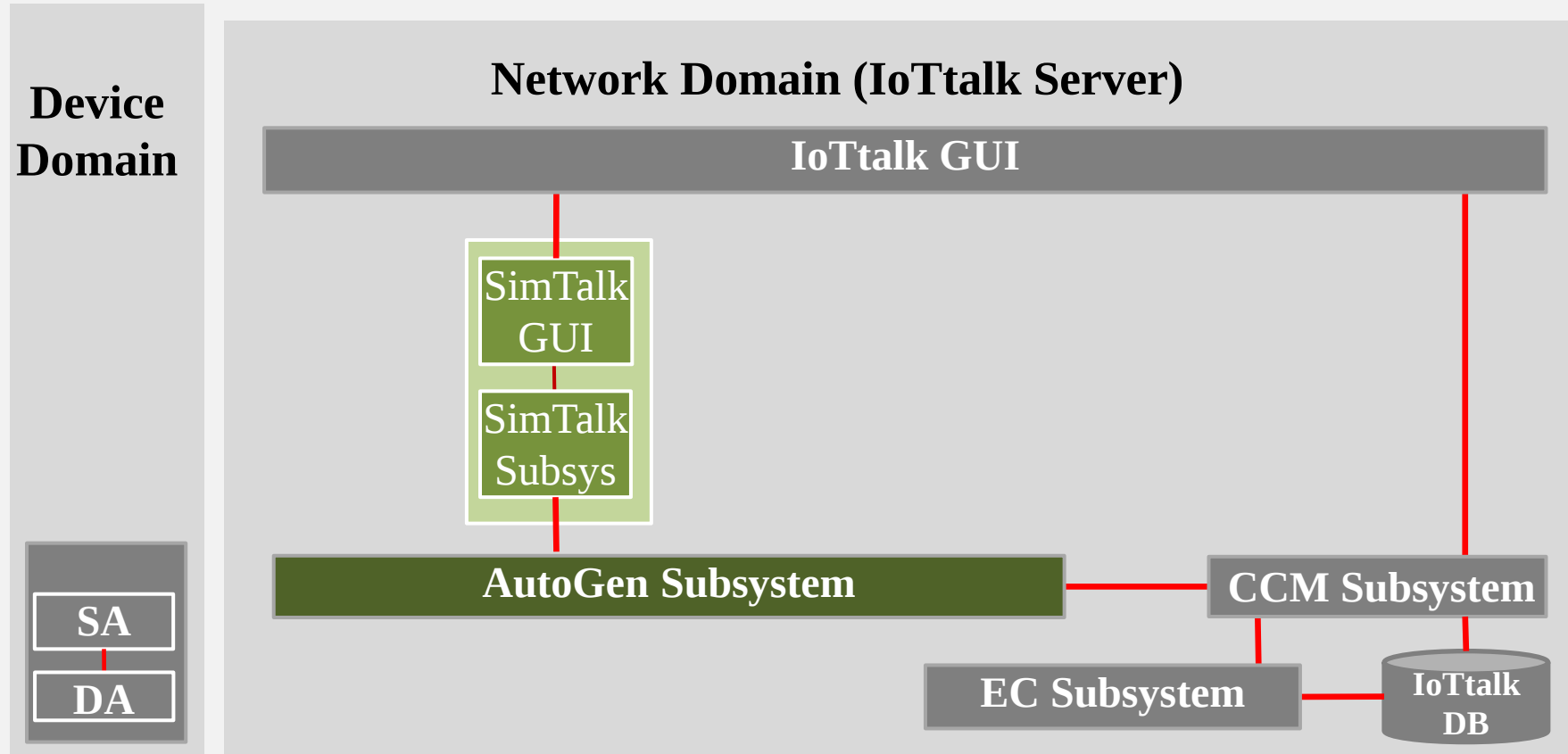
Device
Application



Connect to the IoT device and execute the application

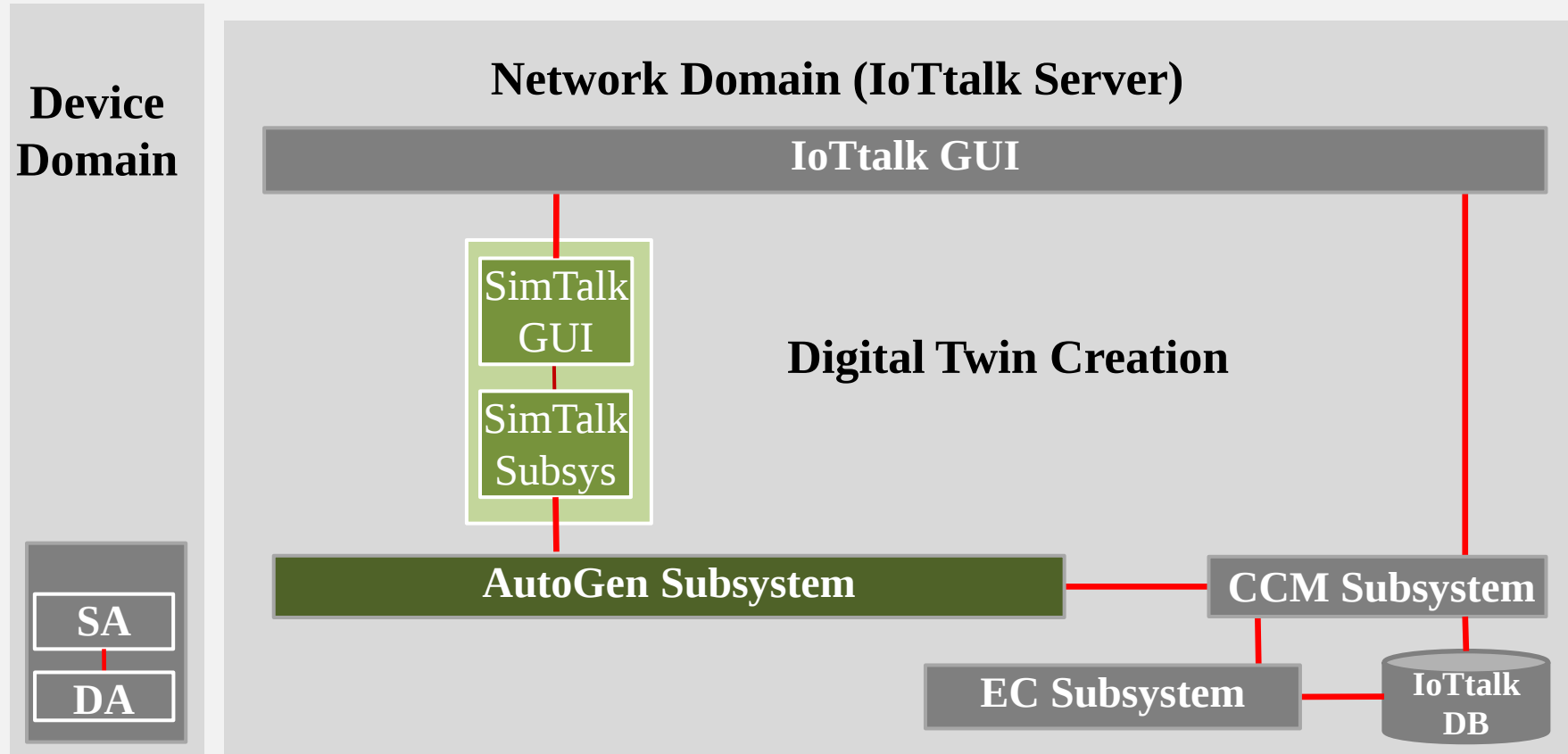


To make sure correct implementation for the application

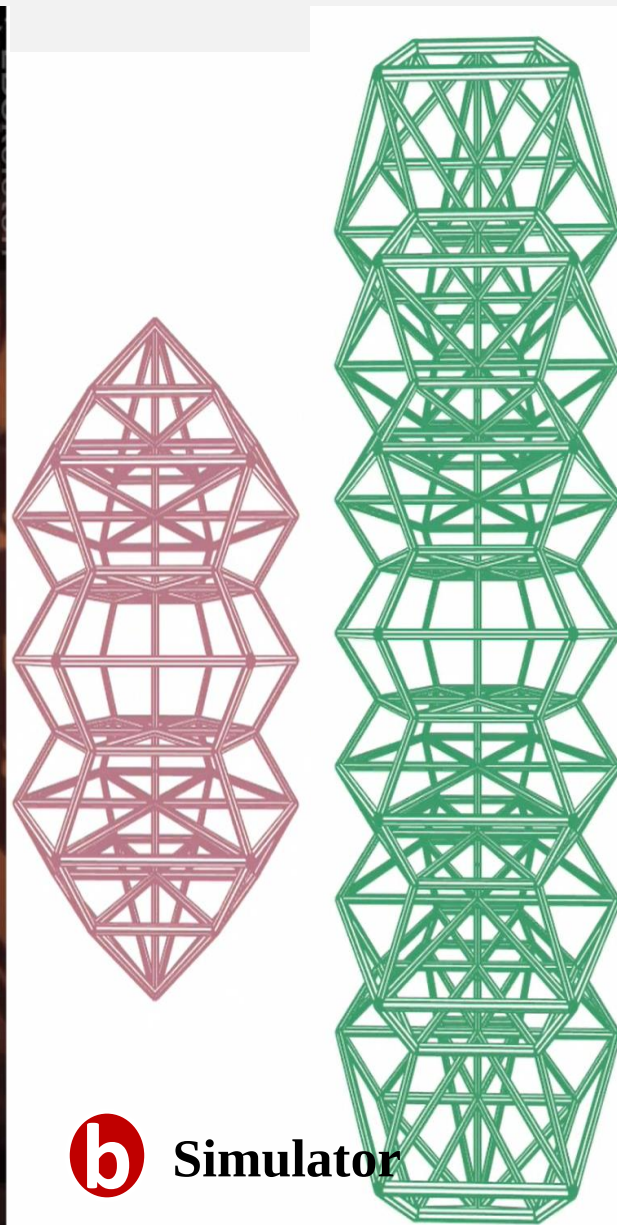


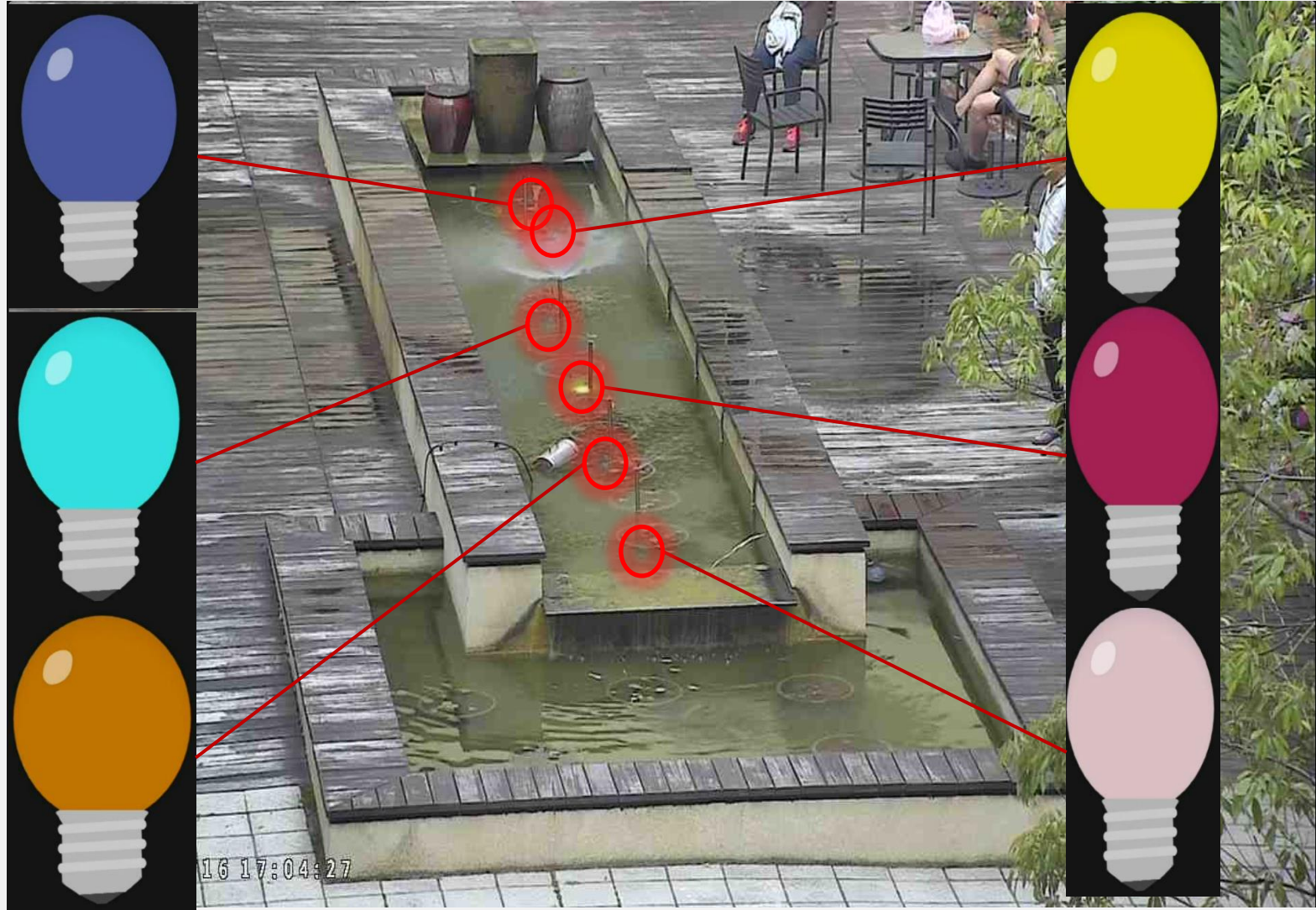
Yun-Wei Lin, Yi-Bing Lin , Tai-Hsiang Yen. SimTalk: Simulation of IoT Applications.
Accepted and to appear in Sensors. [pdf](#)

To make sure correct implementation for the application

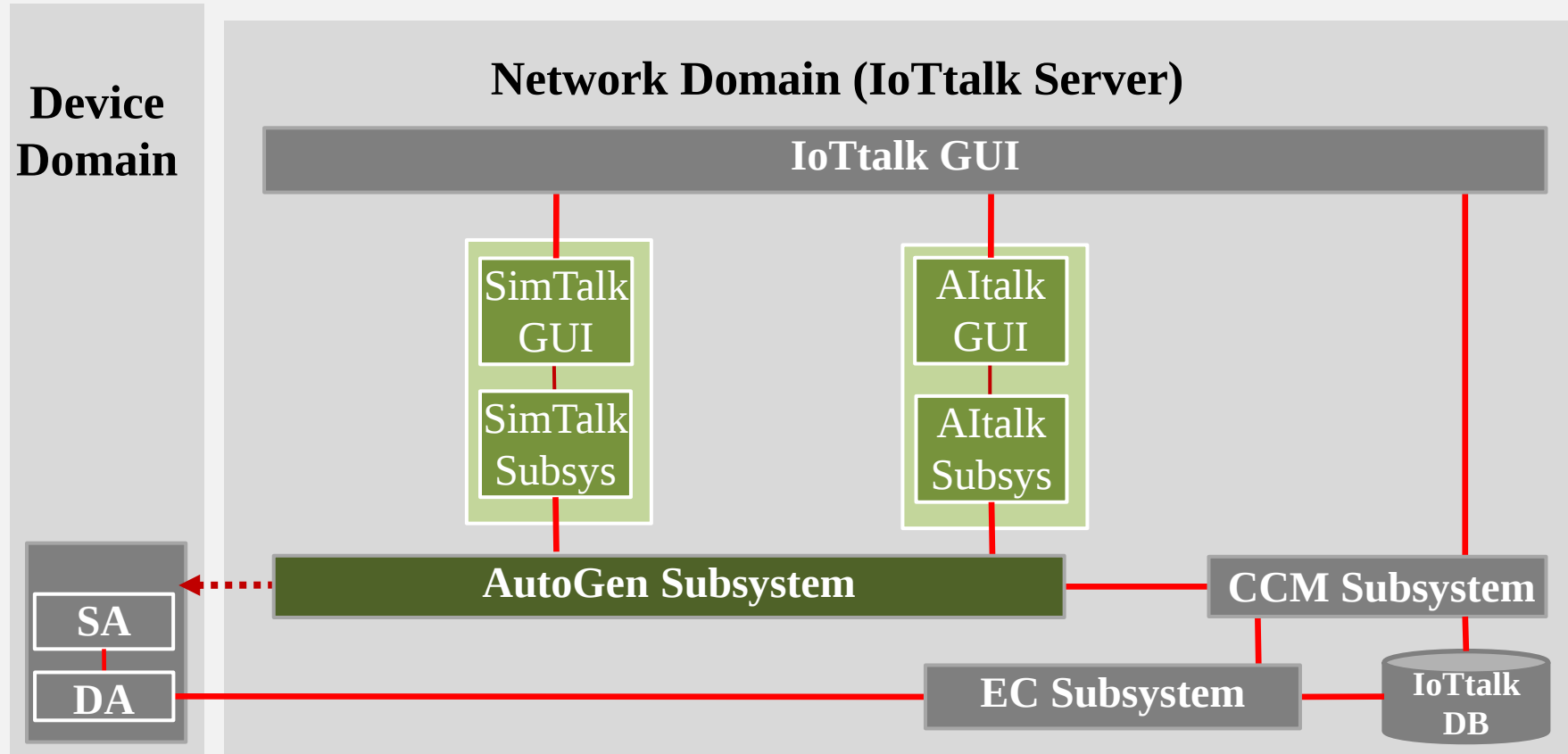


Yun-Wei Lin, Yi-Bing Lin , Tai-Hsiang Yen. SimTalk: Simulation of IoT Applications.
Accepted and to appear in Sensors. [pdf](#)



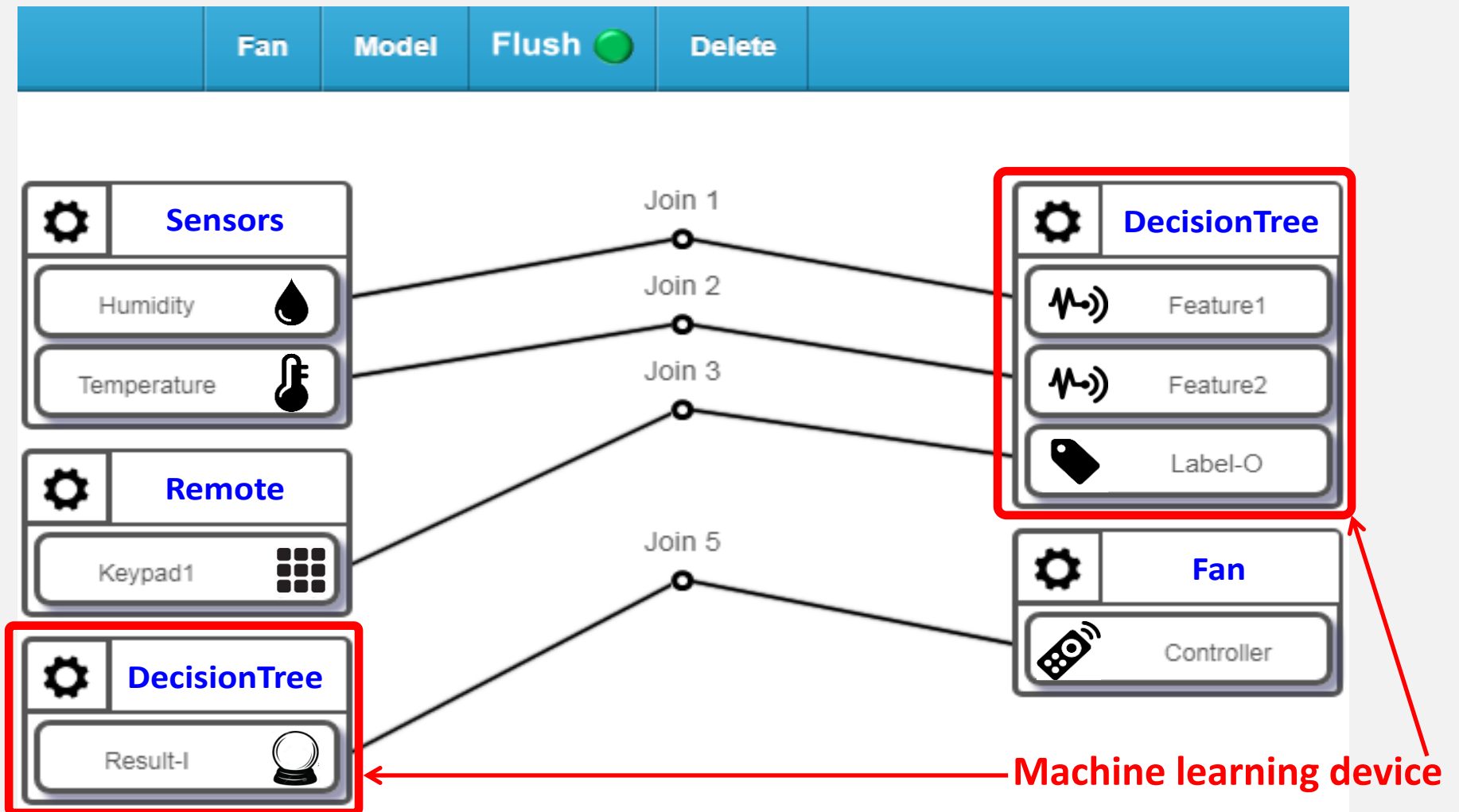


Need AI for prediction

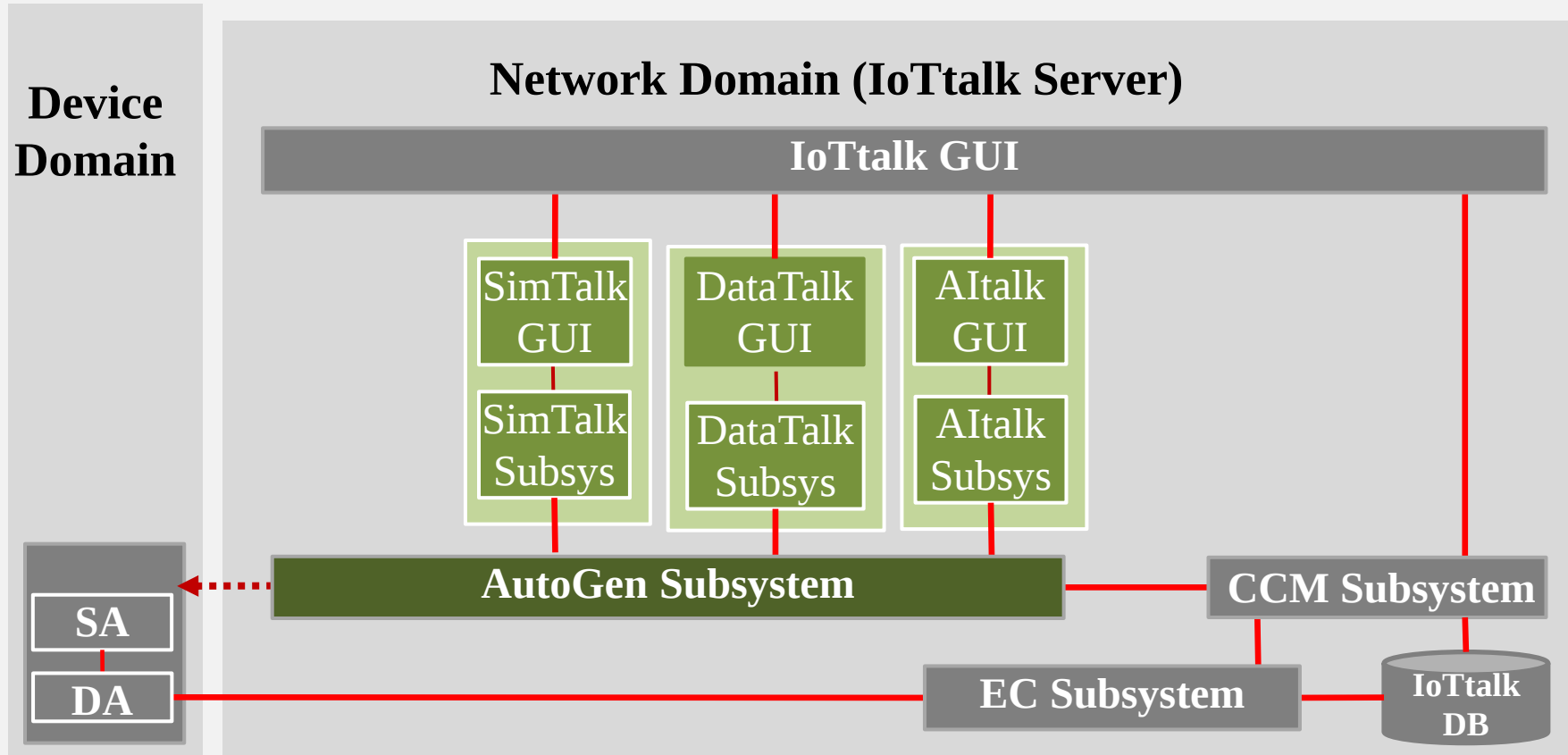


Yun-Wei Lin, Yi-Bing Lin, and Chun-You Liu, "Altalk: A Tutorial to Implement AI as IoT Devices", IET Networks, Vol. 8, Issue 3, pp. 195 - 202, 2019. (DOI:10.1049/iet-net.2018.5182) [pdf](#)

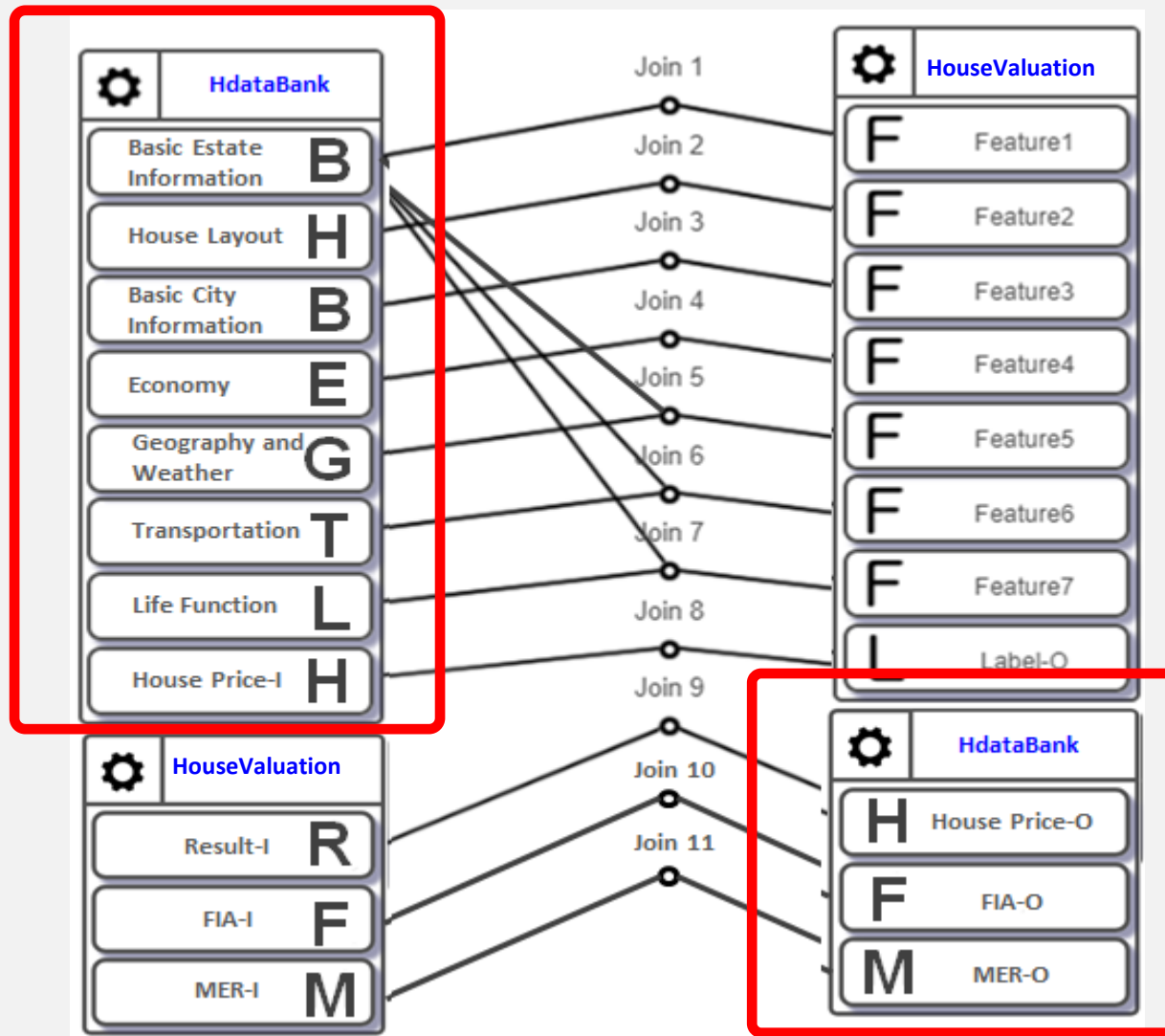




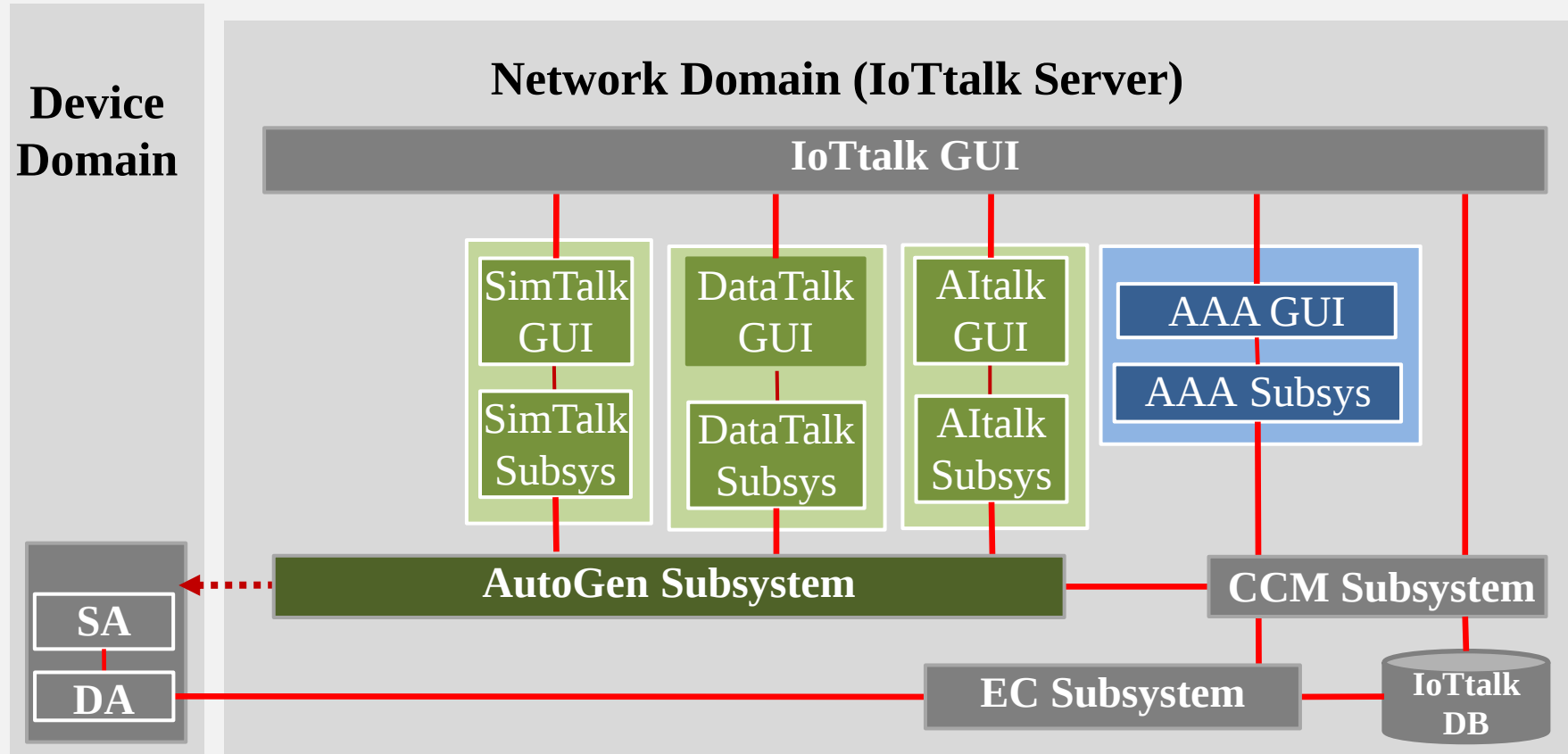
Need to process big data before AI



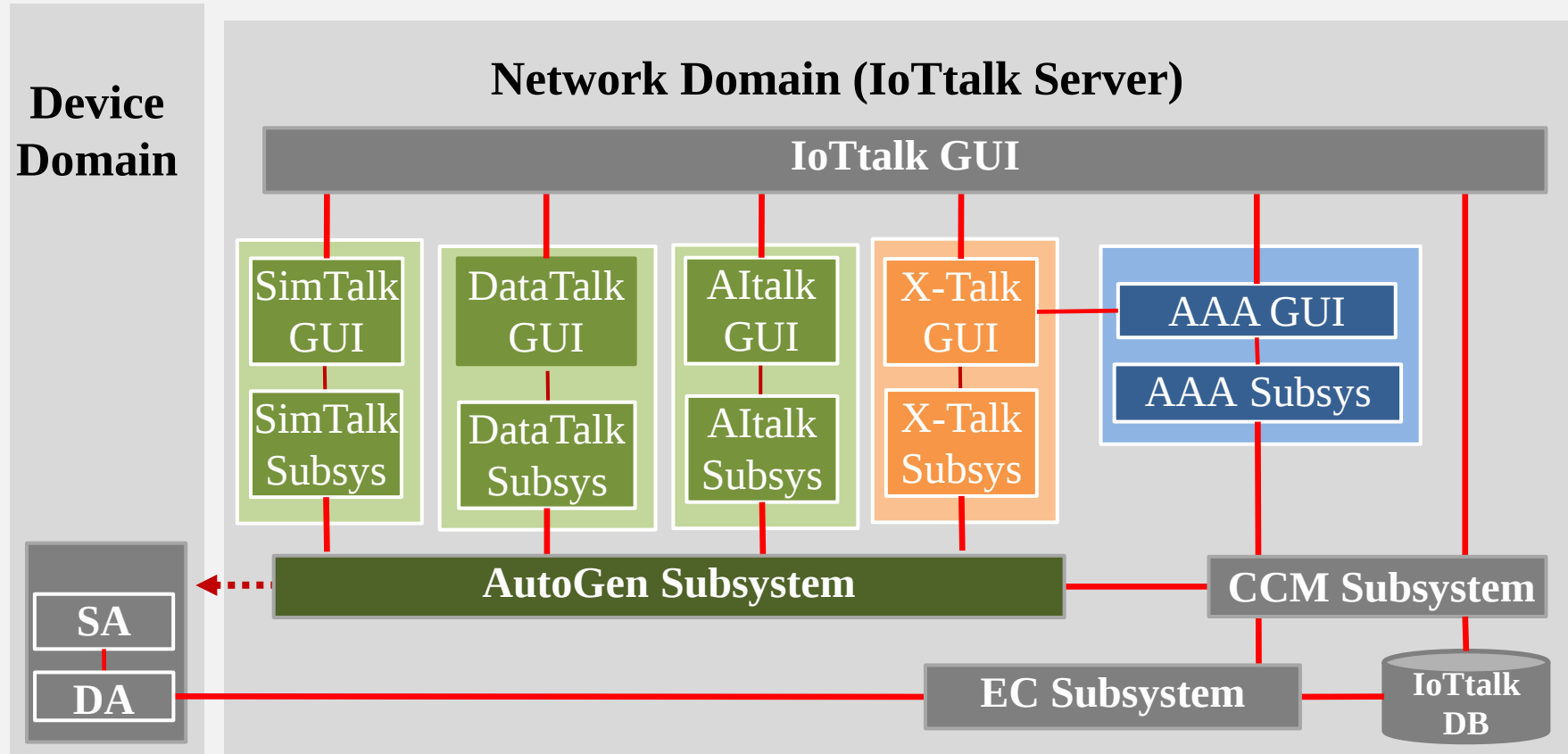
Yun-Wei Lin, Yi-Bing Lin, Chun-You Liu, Jiun-Yi Lin, Yu-Lin Shih, "Implementing AI as Cyber IoT Devices: The House Valuation Example", IEEE Transactions on Industrial Informatics, Vol 16, Issue 4, pp.2612-2620, 2020 (DOI:10.1109/TII.20192951847) [pdf](#)



We need AAA and GDPR (privacy protection)



Extend the IoT applications into IoT platforms



Yi-Bing Lin, Hung-Chun Tseng, Yun-Wei Lin and Ling-Jyh Chen, "NB-IoTtalk: A Service Platform for Fast Development of NB-IoT Applications", IEEE Internet of Things Journal, Vol.6, Issue 1, pp.928-939, February, 2019. (DOI:[10.1109/JIOT.2018.2865583](https://doi.org/10.1109/JIOT.2018.2865583)) [pdf](#)

Improve the IoT application quality

[1]

Yi-Bing Lin, Yun-Wei Lin, Jiun-Yi Lin, Hui-Nien Hung, **SensorTalk**: An IoT Device Failure Detection and Calibration Mechanism for Smart Farming, Sensors Journal, pp. 19-21, November 2019. [pdf](#)

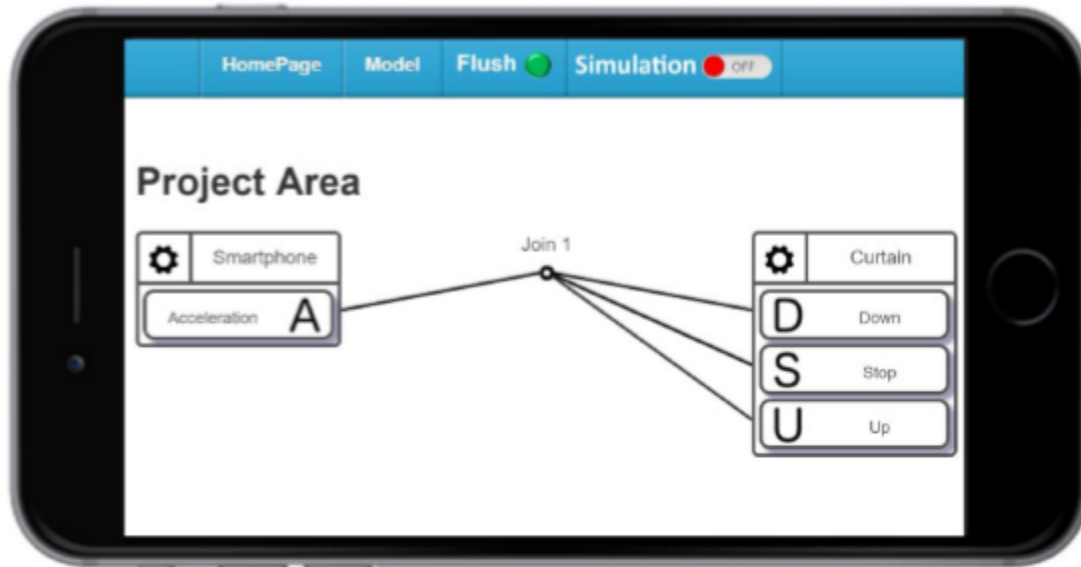
[2]

Archibald Blair, Min-Zheng Shieh, Yu-Hsuan Hu, Sevegnani Michele, Yi-Bing Lin, **BigraphTalk**: Verification Design of IoT Applications, IEEE Internet of Things Journal, Vol 7, Issue 4, pp.2955-2967, 2020. [pdf](#)

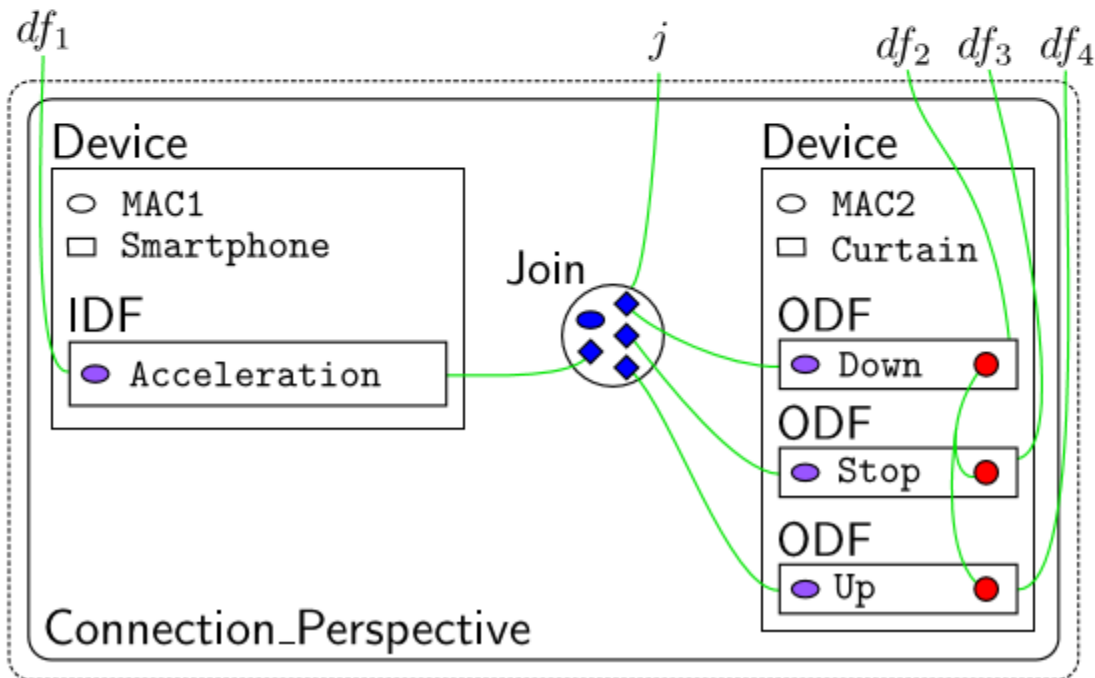
[3]

Yun-Wei Lin, Yi-Bing Lin, Ming-Ta Yang and Jun-Han Lin, "**ArduTalk**: An Arduino Network Application Development Platform Based on IoTtalk", IEEE Systems Journal, Vol.13, Issue 1, pp.468-476, March, 2019. [pdf](#)

BigraphTalk



(a)

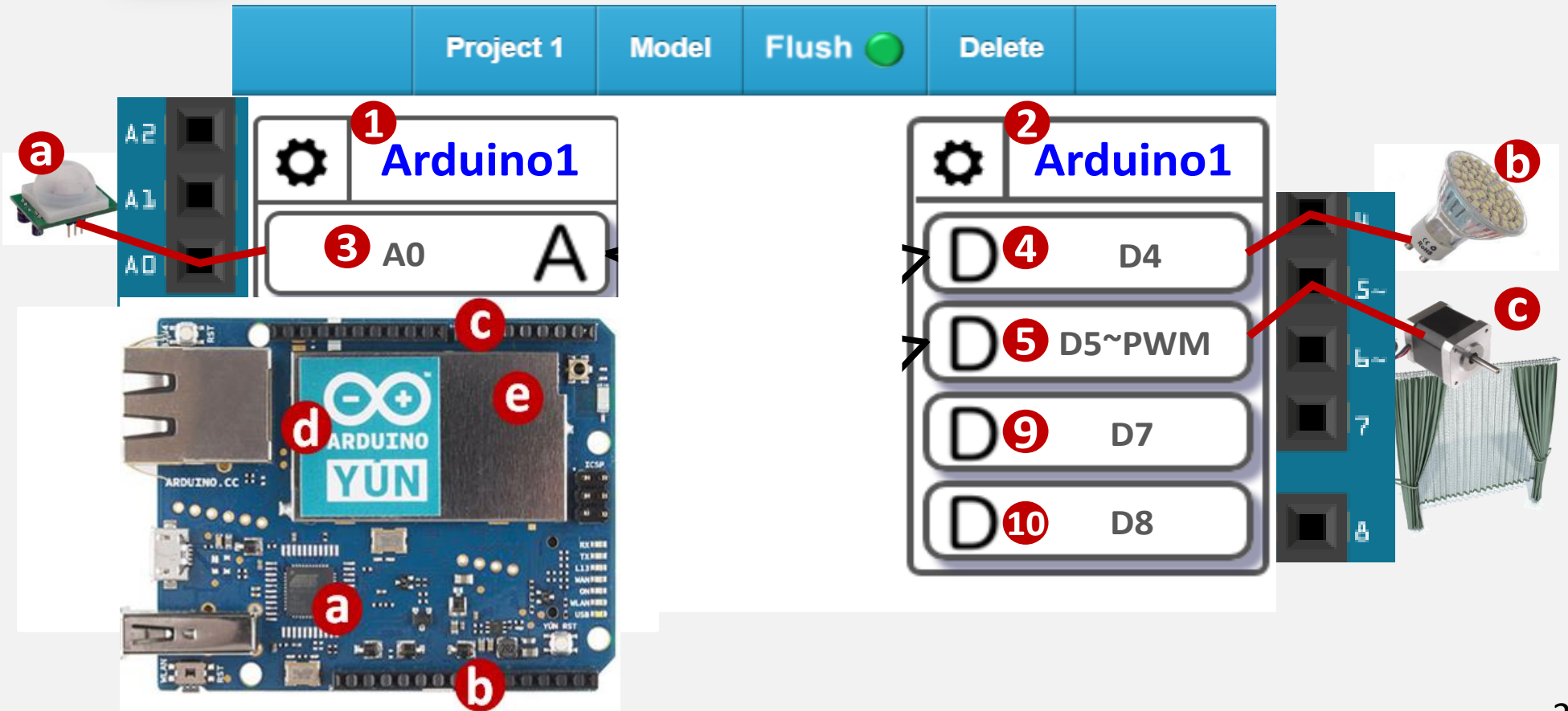


Archibald Blair, Min-Zheng Shieh, Yu-Hsuan Hu, Sevegnani Michele, Yi-Bing Lin, **BigraphTalk**: Verification Design of IoT Applications, IEEE Internet of Things Journal, Vol 7, Issue 4, pp.2955-2967, 2020. [pdf](#)

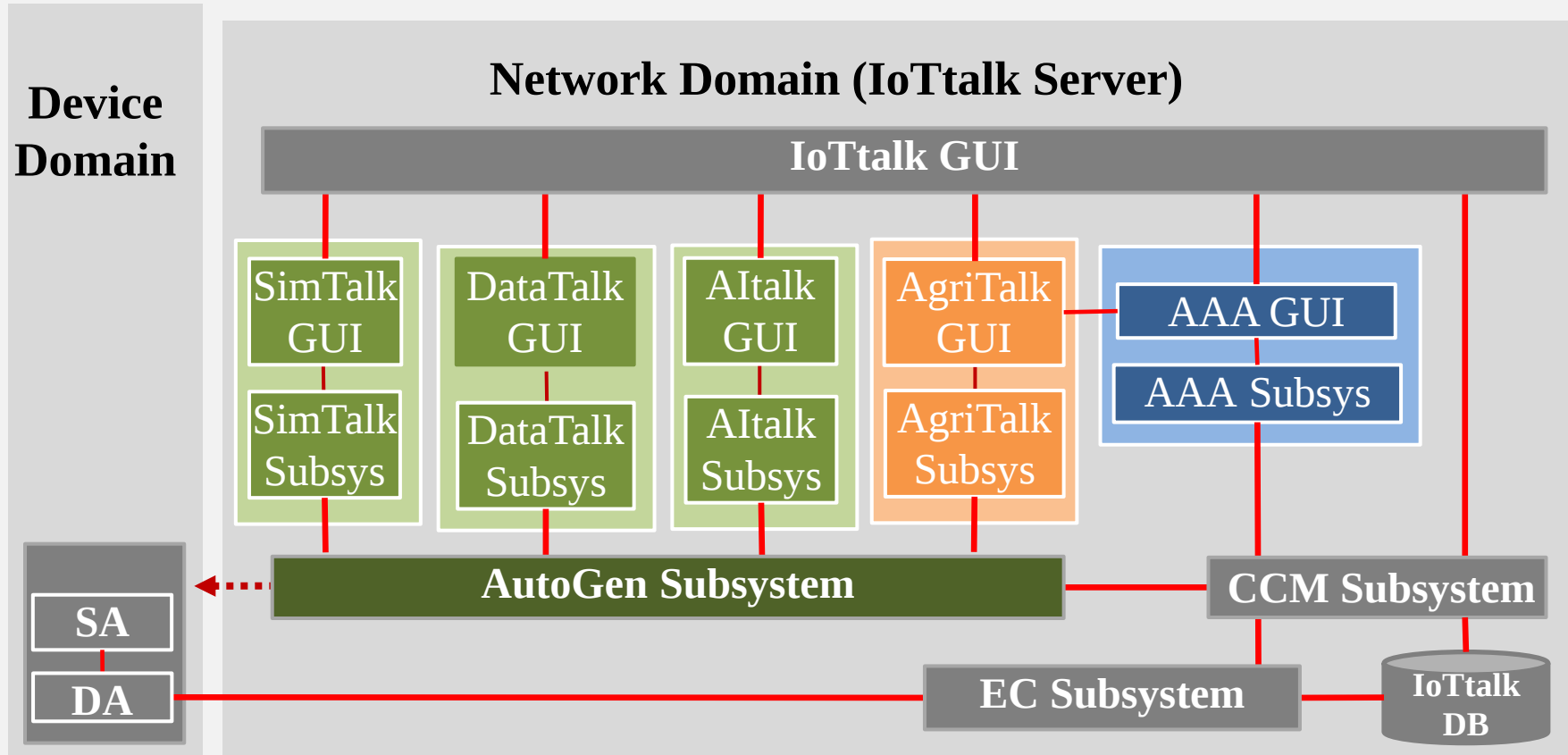
ArduTalk

[3]

Yun-Wei Lin, Yi-Bing Lin, Ming-Ta Yang and Jun-Han Lin, "ArduTalk: An Arduino Network Application Development Platform Based on IoTtalk", IEEE Systems Journal, Vol.13, Issue 1, pp.468-476, March, 2019. [pdf](#)



AgriTalk: Extended to IoT platforms



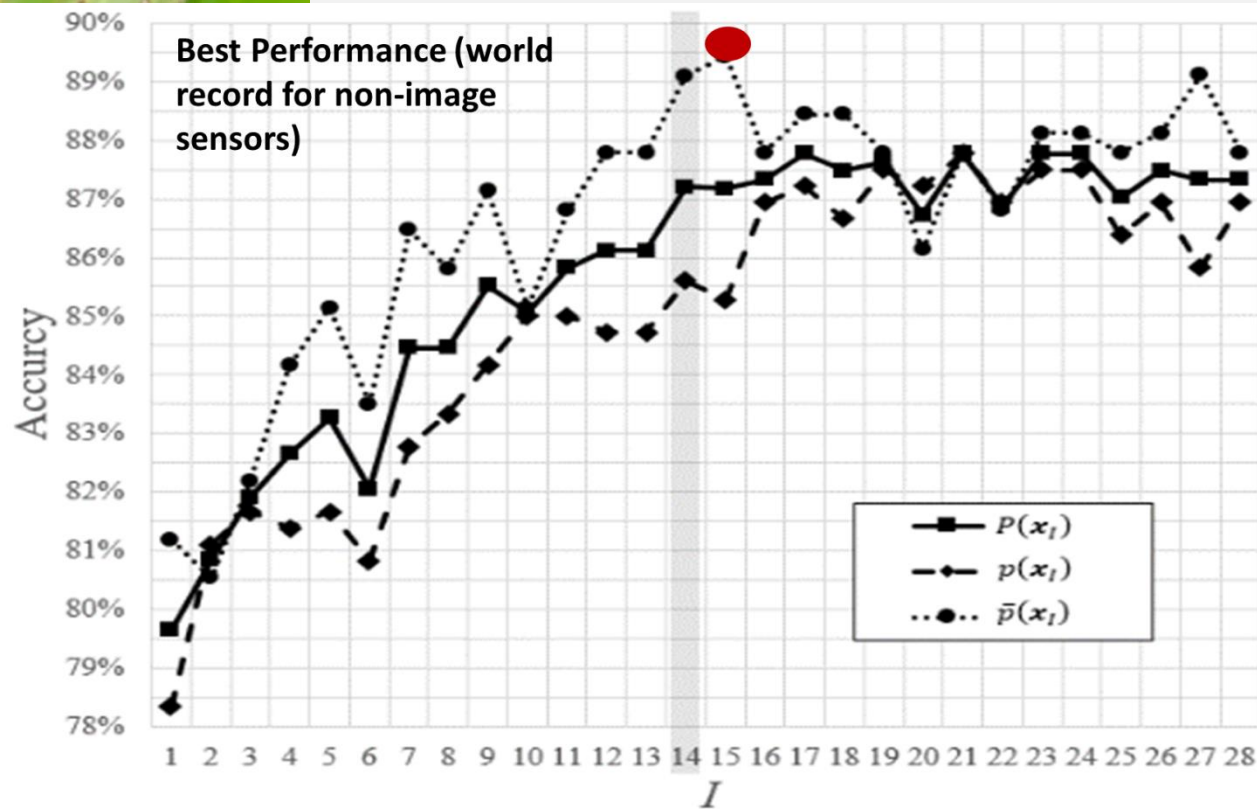
AgriTalk



Wen-Liang Chen, Yi-Bing Lin, et. al, "**AgriTalk**: IoT for Precision Soil Farming of Turmeric Cultivation", IEEE Internet of Things Journal, Vol. 6, No. 3, pp. 5209-5223, June, 2019.

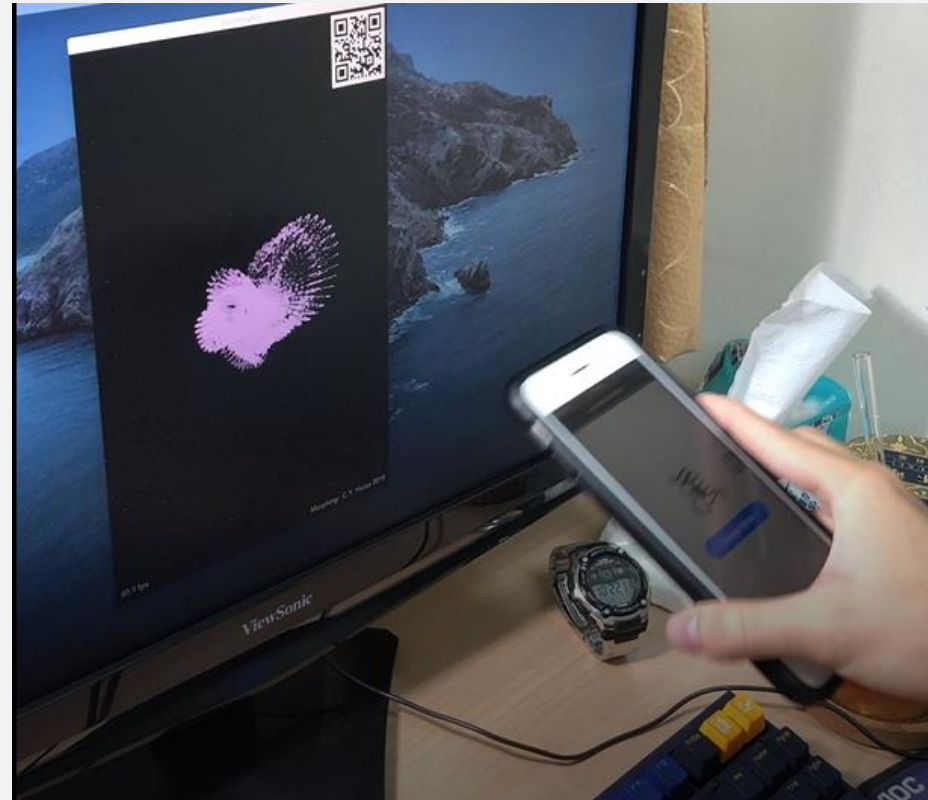
[pdf](#)

RiceTalk



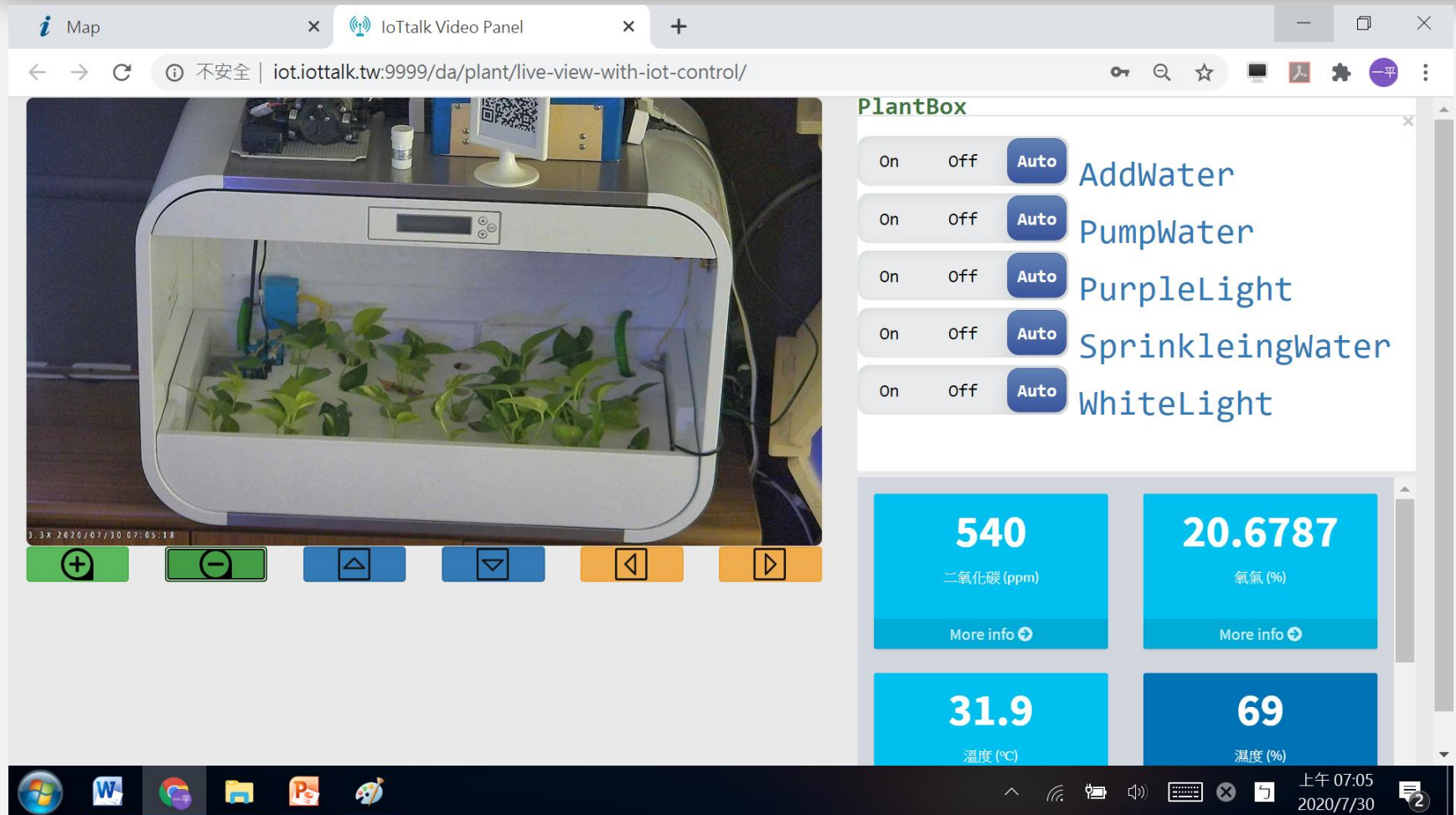
Chen Wen-Liang, Yi-Bing Lin, Ng Fung-Ling, Liu Chen-You, Lin Yun-Wei, "RiceTalk: Rice Blast Detection using Internet of Things and Artificial Intelligence Technologies", IEEE IoT Journal, Vol 7, No. 2, pp.1001-1010, February, 2020. [pdf](#)

FrameTalk



Wen-Shu Lai, Yi-Bing Lin, Chung-Yun Hsiao, Li-Kuan Chen, Chao-Fan Wu and Shu-Min Lin, "FrameTalk: Human and Picture Frame Interaction through the IoT Technology", Mobile Networks and Applications Journal, First Online: 28 May 2019. [pdf](#)

PlantTalk



Lan-Da Van, Yi-Bing Lin, Tsung-Han Wu, Yun-Wei Lin, Syuan-Ru Peng, Lin-Hang Kao and Chun-Hao Chang, "**PlantTalk**: A Smartphone-based Intelligent Hydroponic Plant Box", Sensors Journal, Vol. 19, No. 8, pp1763, 2019. [pdf](#)

FishTalk



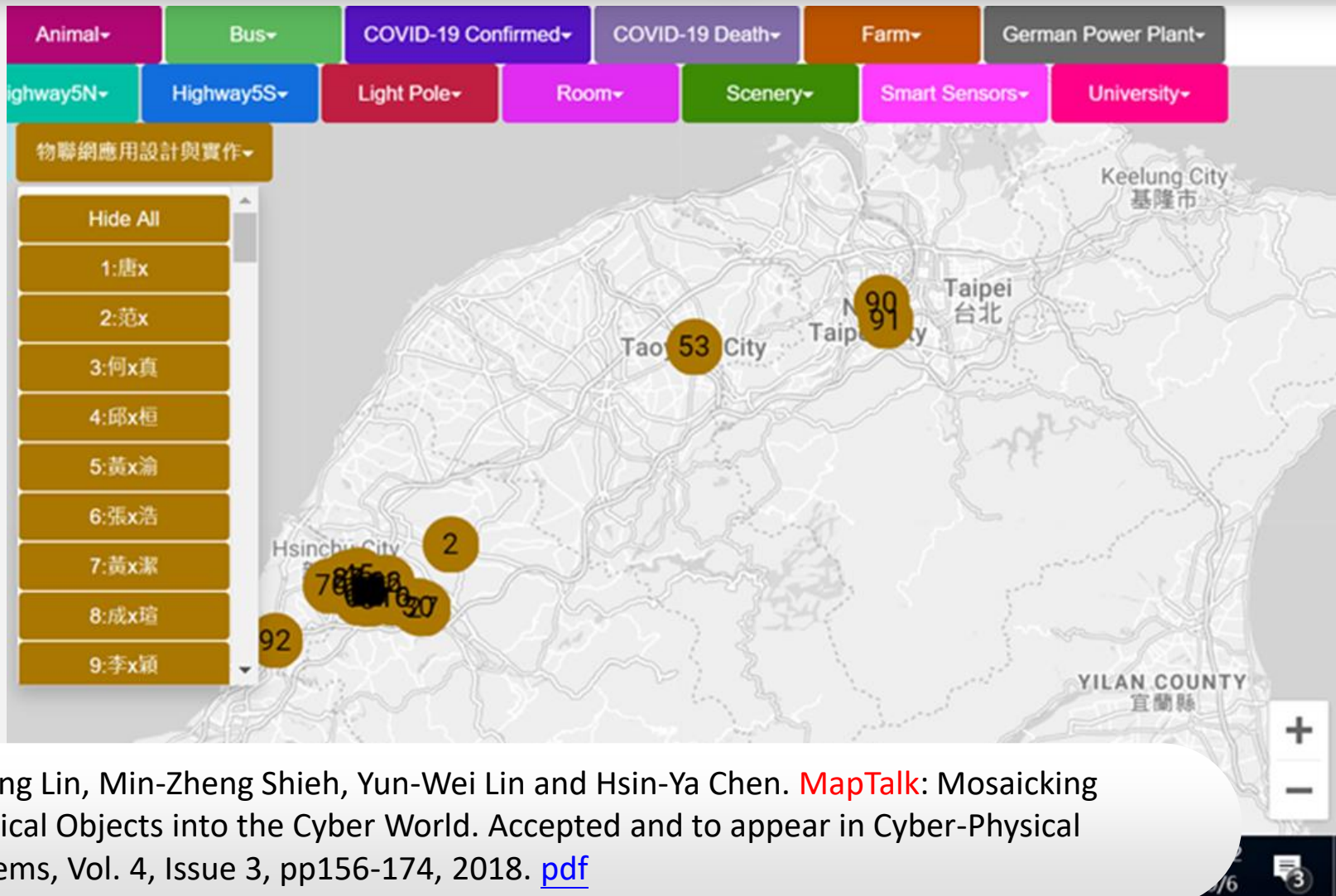
26.96

溫度(Temp.) (°C)

More info ⓘ

Yi-Bing Lin, Hung-Chun Tseng,
"FishTalk: An IoT-based Mini
Aquarium System", IEEE Access,
Vol.7, Issue 1, pp. 35457-35469,
December, 2019. [pdf](#)

MapTalk



Yi-Bing Lin, Min-Zheng Shieh, Yun-Wei Lin and Hsin-Ya Chen. **MapTalk**: Mosaicking Physical Objects into the Cyber World. Accepted and to appear in Cyber-Physical Systems, Vol. 4, Issue 3, pp156-174, 2018. [pdf](#)

CampusTalk

Voting



問題: [3/2 日治時代資通訊之演進 點名]
因應新型冠狀病毒肺炎(COVID-19), 你
希望這門課教授如何進行教學? (本次
作答為"記名"回答, 請以 Facebook 帳
號登入)

Total: 221

維持每個禮拜到教室上課: 12%

使用同步教學線上教室QC3系統 (不用到教室,
但有可能線上點名): 34%

觀看老師事先錄好的教學影片 (偶爾會有小作業/
測驗): 54%

回到問題列表

遠距投票

遠距點餐



校狗管理



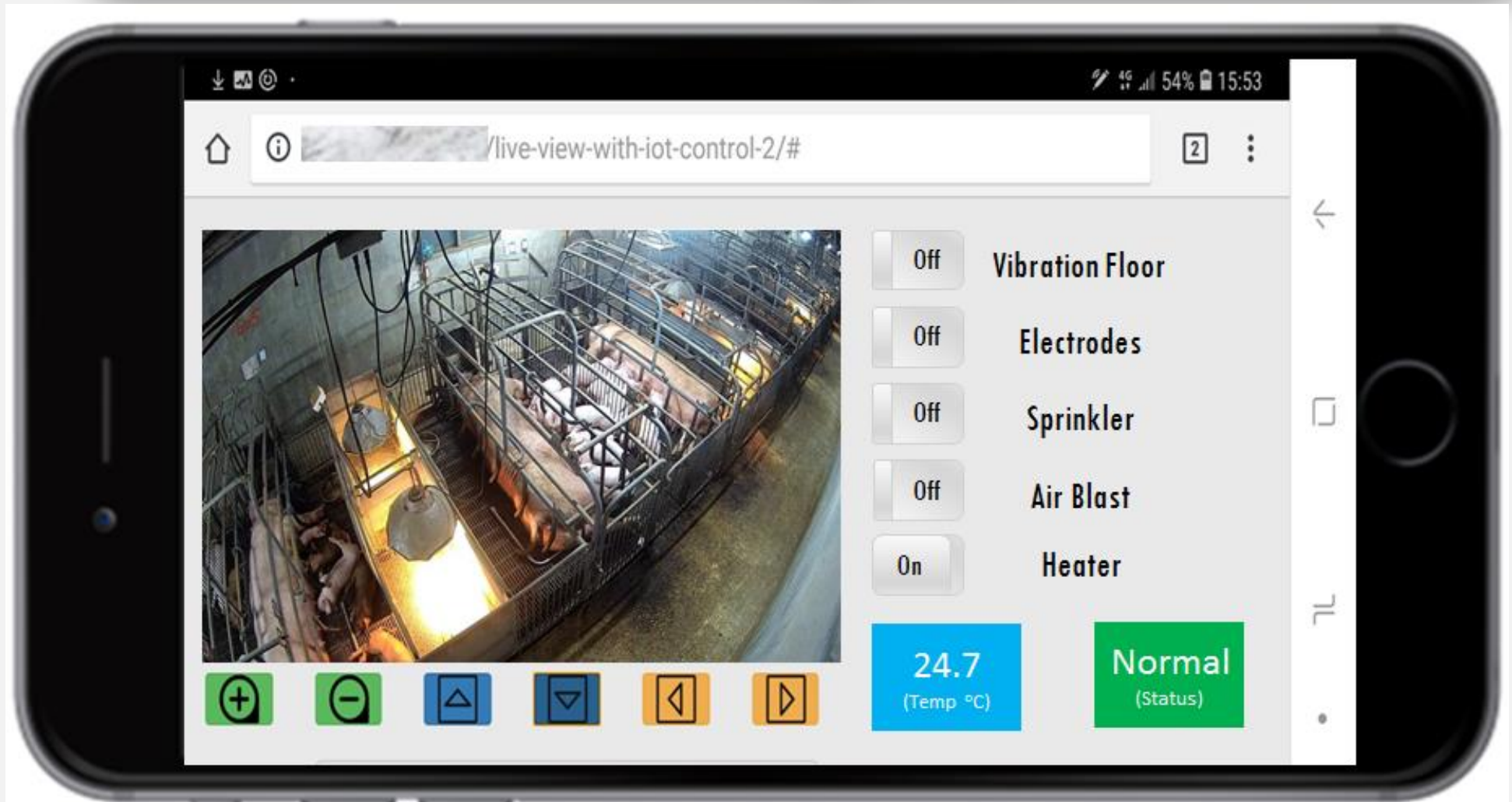
Yi-Bing Lin, Li-Kuan Chen, Min-Zheng Shieh, Yun-Wei Lin, and Tai-Hsiang Yen. **CampusTalk**: IoT Devices and Their Interesting Features on Campus Applications. IEEE Access, Vol. 6, Issue 1, pp. 26036-26046, December, 2018. [pdf](#)

ElevatorTalk



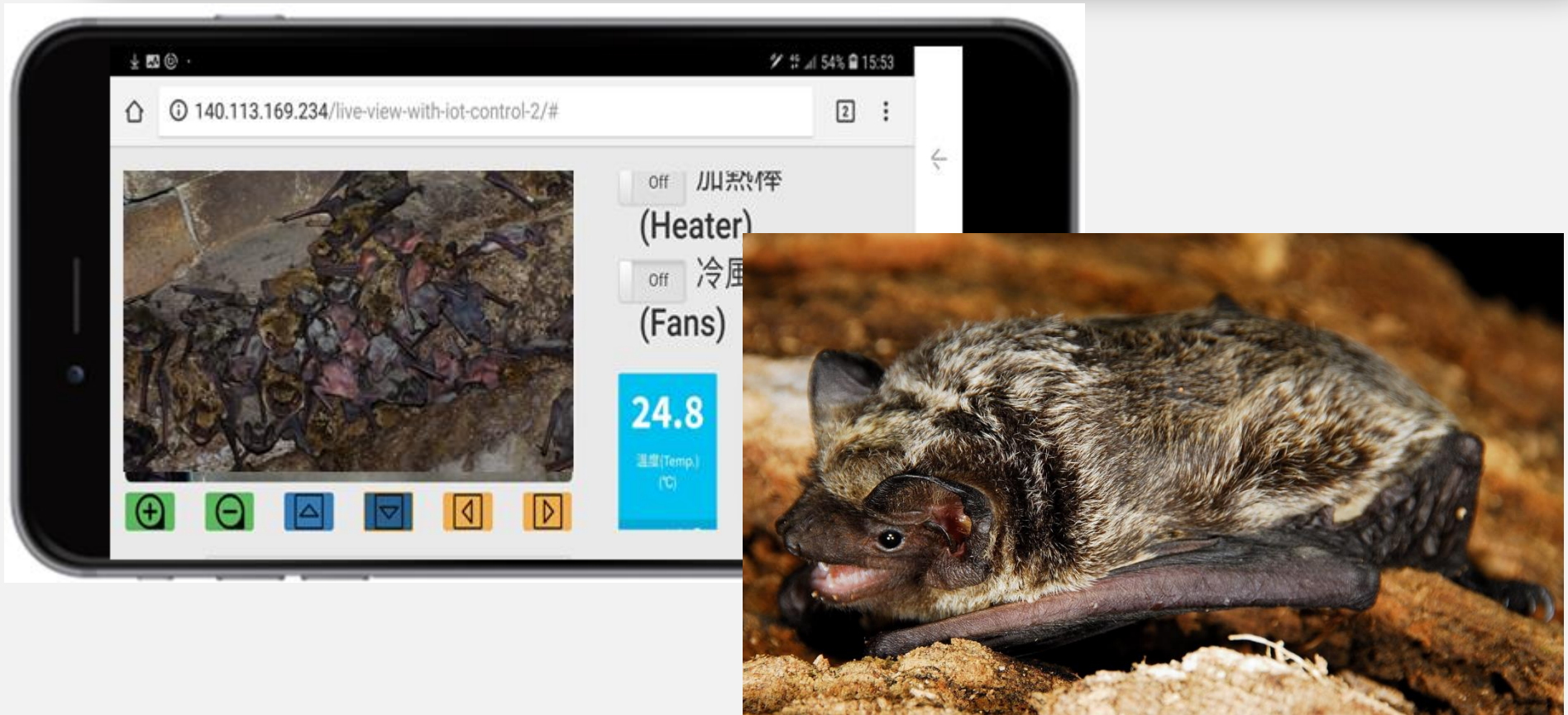
Lan-Da Van, Yi-Bing Lin, Tsung-Han Wu, and Yu-Chi Lin, "An Intelligent Elevator Development and Management System", Accepted and to appear in IEEE Systems Journal. [pdf](#) (ElevatorTalk)

PigTalk



W. E. Chen, Y.-B. Lin, L.-X. Chen. PigTalk: an AI-based IoT Platform for Piglet Crushing Mitigation. Accepted and to appear in IEEE Transactions on Industrial Electronics. [pdf](#)

BatTalk



Yun-Wei Lin, Tai-Hsiang Yen, Cheng-Han Chou, Yi-Bing Lin, Wen-Shu Lai. Investigating Asian Parti-colored bats using the BatTalk internet of things approach. Journal of Network and Computer Applications, Volume 172, 15 December 2020, 102809. [pdf](#)

EduTalk

The diagram illustrates the workflow of an IoT project. It consists of three main components: a data display, a QR code, and a simulation interface.

1. Scanning the QR code: A red dashed arrow labeled '1' points from the QR code to the data display.

2. Data Display: A dark gray box showing sensor data:

Orientation	
α	6.5
β	37.2
γ	10.5

Morsensor	
Humi	71
UV	0.020
Alc	0.000

3. Simulation Interface: A black box showing a simulation of the Moon and Earth. A red dashed arrow labeled '3' points from the QR code to the simulation. A box in the top right corner displays:

Gravity: 9.800
Speed: 5.500

4. QR Code: A red dashed arrow labeled '4' points from the QR code to the data display.

5. Sensor Data: A red dashed arrow labeled '5' points from the data display to the simulation interface.

Yi-Bing Lin and Min-Zheng Shieh. To Learn Programming through Internet of Things. Accepted and to appear in IEEE Internet of Things Magazine. [pdf](#)

ParadeTalk



Yi-Bing Lin, Yun-Wei Lin, and Kin Hui, **ParadeTalk**: Innovative Interactions between Parade and Audiences using IoT. Accepted and to appear in IEEE Internet of Things Magazine. [pdf](#)