Telescience update on pragma 37

Shinji Shimojo
Fang-Pang Lin

Developing coral factories producing resilient and customized corals

Tung-Yung Fan, Zong-Min Ye, Tai-Chi Chang, and Yan-Leng Huang

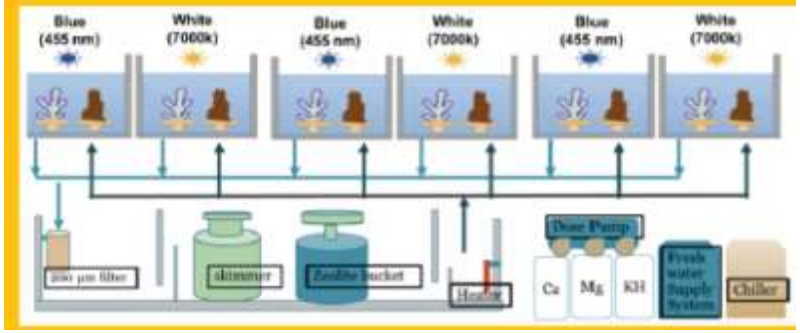
National Museum of Marine Biology and Aquarium (NMMBA), Taiwan
Institute of Marine Biology, National Dong Hwa University, Taiwan

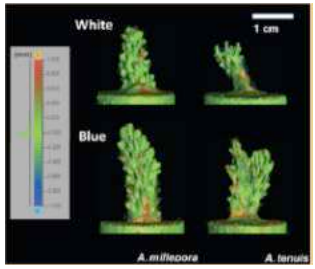
Coral ark and large-scale **coral farm** have been established in NMMBA for 20 years.

Coral factories are developing.

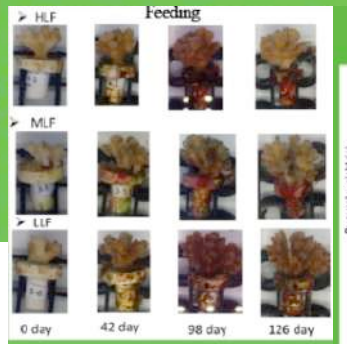
Internet of Things and 3D printing will be applied in the near future.

1. A factory for ornamental stony coral Acropora.

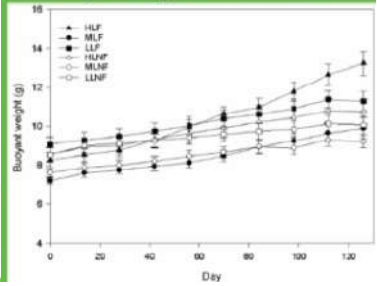




2. A factory for broodstock breeding of stony corals Pocillopora.



Feeding enhances coral growth.
Buoyant weight measurement.

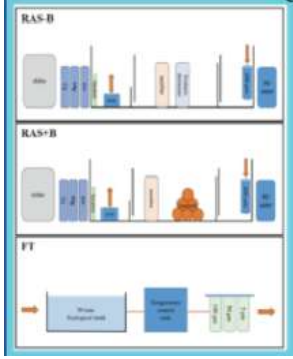


3. A factory for pharmaceutical soft coral Sarcophyton

RAS-B: a RAS without exogenous biological input
RAS+B: a RAS with live rocks and an exogenous food supply, fed with phytoplankton solution
FT: a flow-through system featuring natural seawater.

Light: 100 vs 200 μmol quanta m^{-2} s^{-1}
Flow: 5 vs 15 cm s^{-1}
Soft coral, *Sarcophyton glaucum*

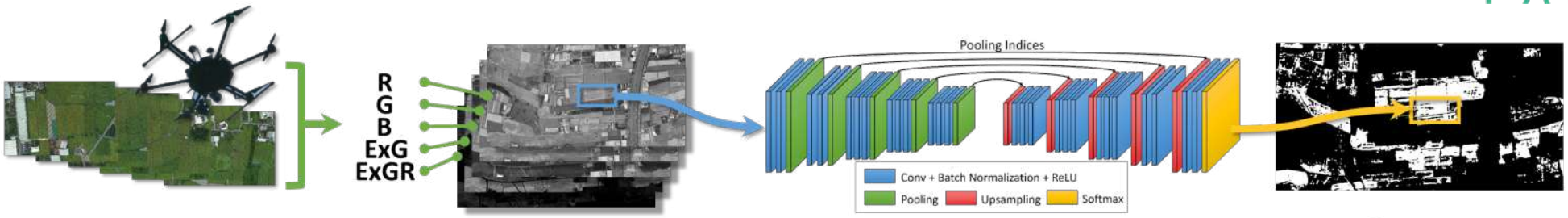
Culture systems influence effects of light and flow on corals



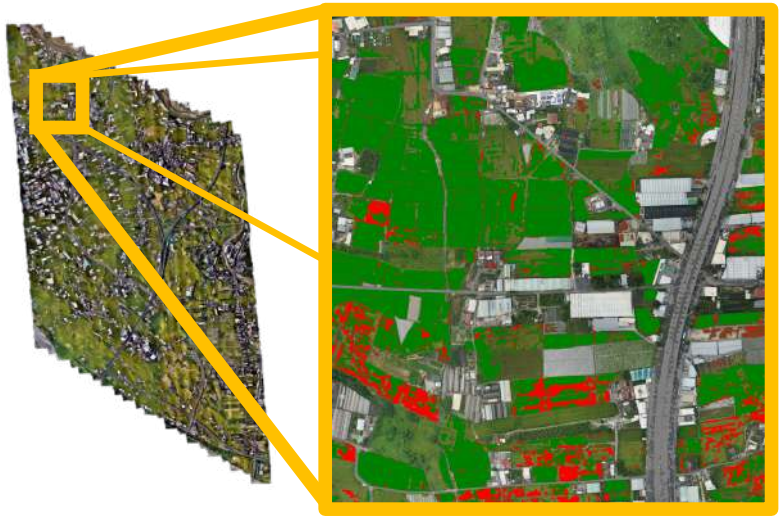
Parameter	RAS-B	RAS+B	FT
Specific growth rate	Light & Flow		Light & Flow
Oral disc diameter	Light		Flow
Organic weight			Flow
Oral disc diameter x Buoyant Weight		Correlation	
Oral disc diameter x Organic weight		Correlation	Correlation
Buoyant Weight x Organic weight		Correlation	

Application of Deep Learning Technique to Rice Lodging Identification through Drone Cam.

Hsin-Hung Tseng* & Yu-Chun Hsu (NCHU & PAIR Lab)

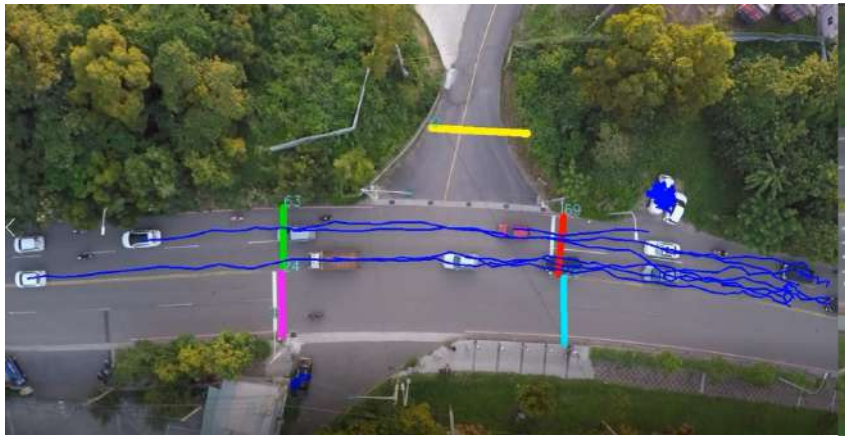


2600 ha area
Investigation & Process
within 1 day



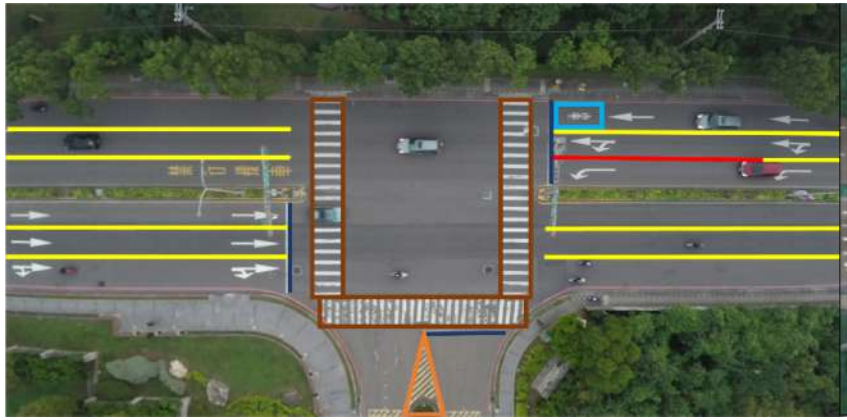
80ha for 2 min

Microscopic Traffic Analytics through Drone Cam

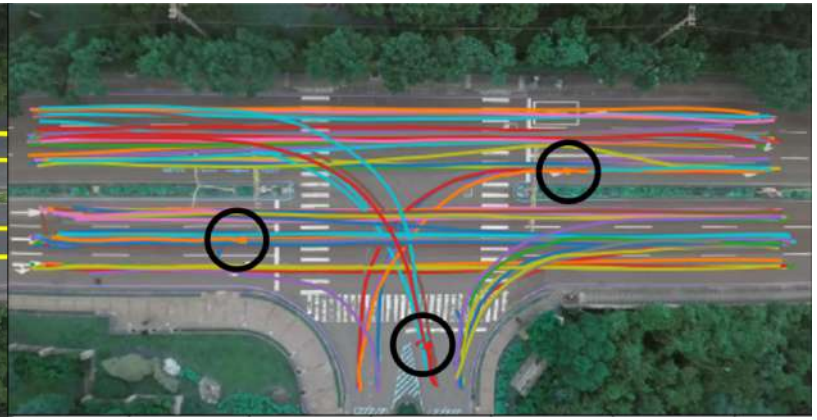


Virtual Gate for Traffic Flow

Macroscopic Traffic Flow

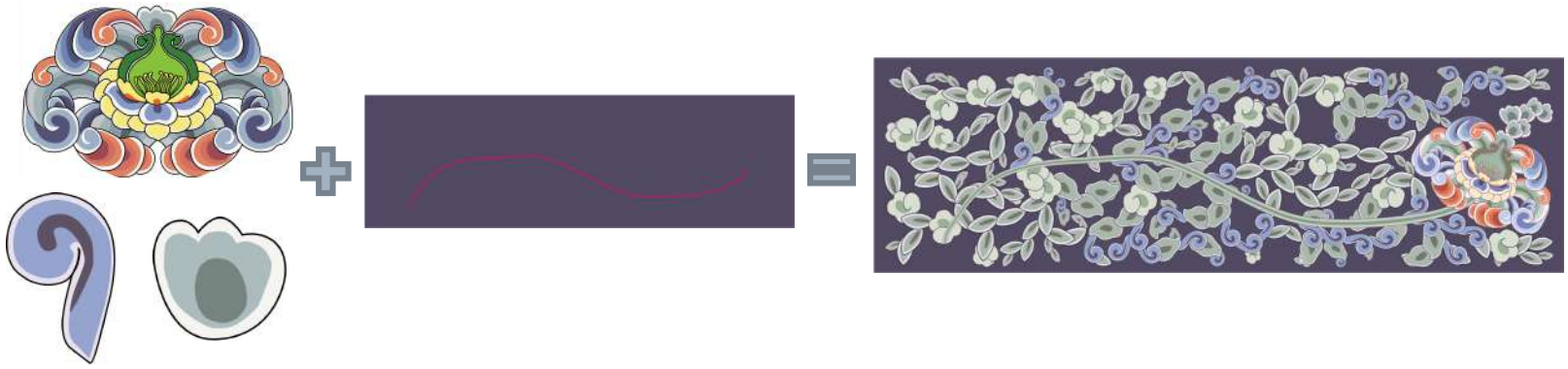


Lane-level Digital Maps



Microscopic Traffic Flow

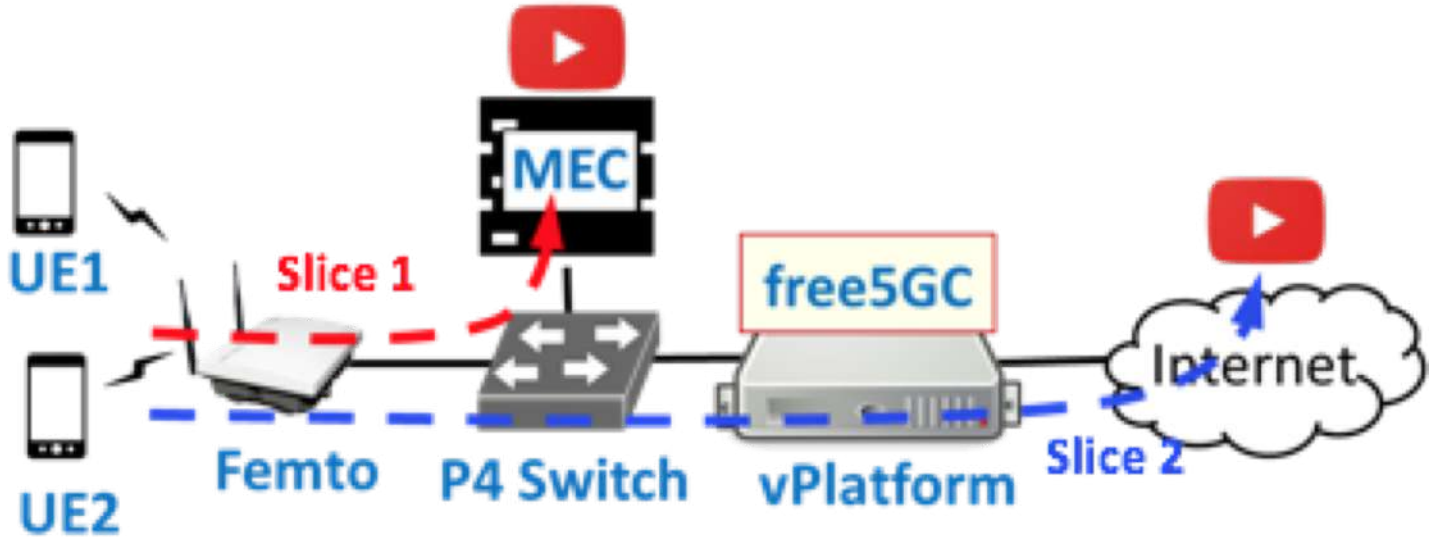
Grammar of Pattern: Automatic Process of Ancient Chinese Architecture & Mosaic Art (NTUST)



prepared pattern hand-painted path result

5G Mobile Platform with P4-enabled Network Slicing and MEC

- ❏ Compliant with ETSI MANO
- ❏ NCTU free5GC as VNFs
- ❏ Traffic Redirection for MEC with P4 Switch
- ❏ P4-enabled Network Slicing



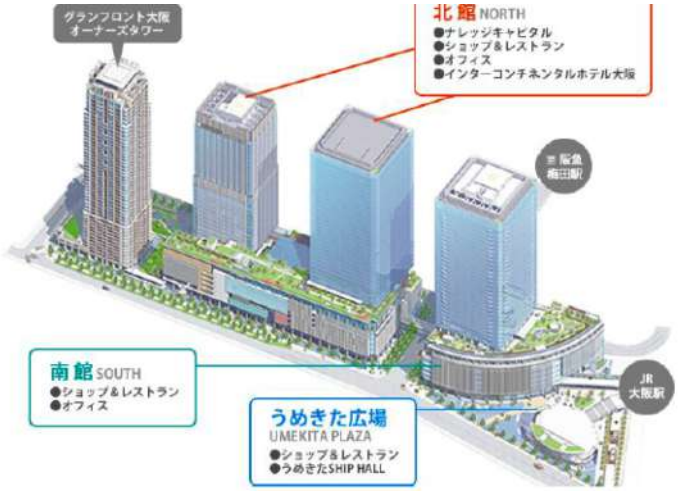


図 2.1-1　グランフロント大阪　全体図

出所）施設提供画像

WINDOW AREA

DOWNTOWN AREA

MAINHALL AREA

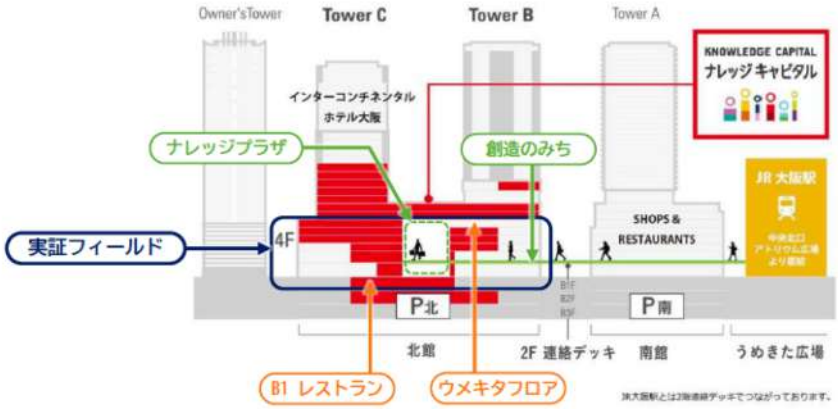


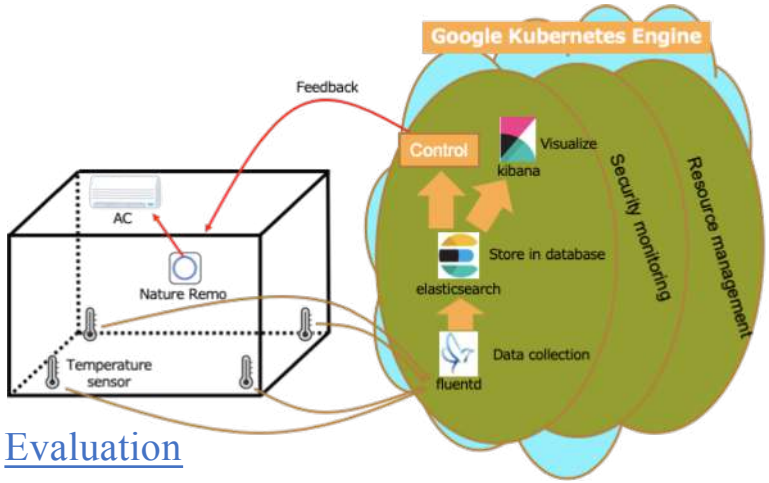
図 2.1-2　実証フィールドの位置

Realizing robust and secure IoT service with microervices

Miyagoshi Kazuki[1], Shimojo Shinji[2]
Graduate School of Information Science and Technology[1], Osaka University, Japan
Cybermedia Center[2], Osaka University, Japan

Collect and analyze data from IoT devices in real time, and develop a platform for optimal control of ACs on Kubernetes.

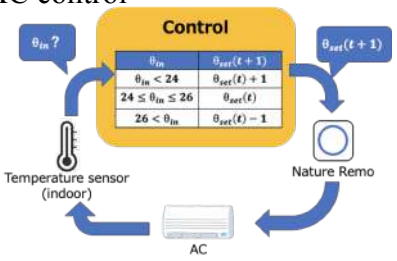
The aim is to build a robust system that can cope with security and load imbalances.



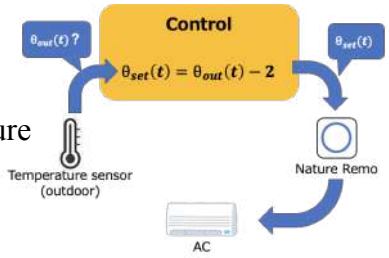
AC Controls

As PoC, two types of AC control

1. Maintain the indoor temperature where there are people located.

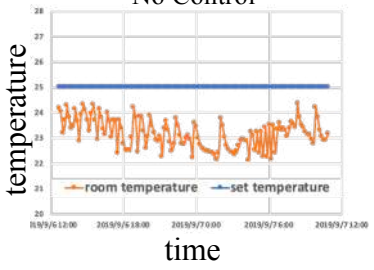


2. Maintain the difference between outside temperature and room temperature.

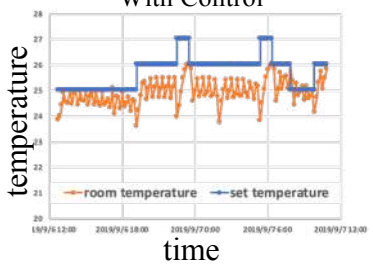


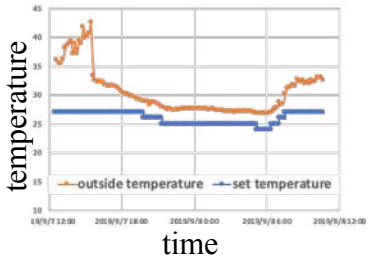
Evaluation

No Control



With Control





Cybermedia Center