

應用運算與多媒體實驗室

Applied Computing and Multimedia Lab

ACM LAB528

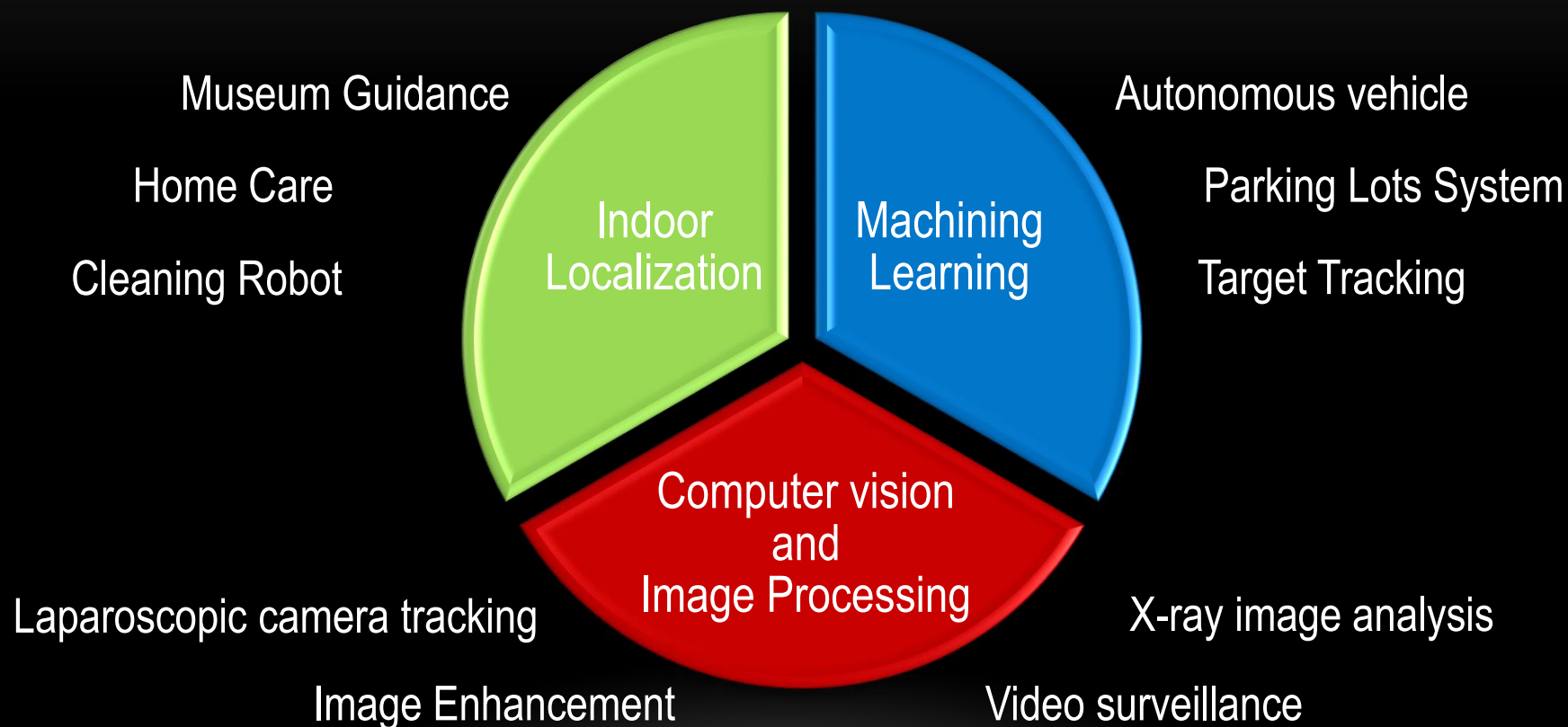
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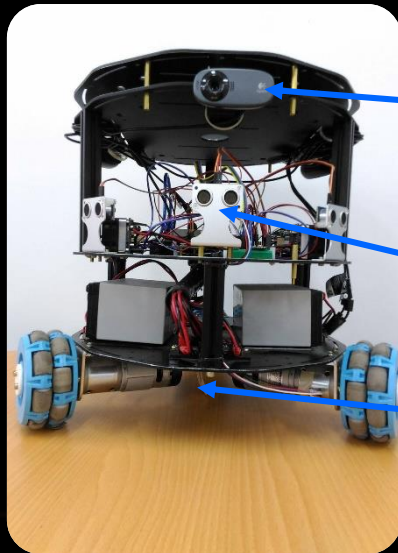
Lab Research Interests



CLEANING ROBOT

CLEANING ROBOT

- Simultaneous Localization and Mapping (SLAM)
 - Corrective deviation of localization by using multi-camera to detect the QR code pattern.
 - Recording the motion variable by using odometry.
 - Obstacle avoidance by using ultrasound.



Webcam

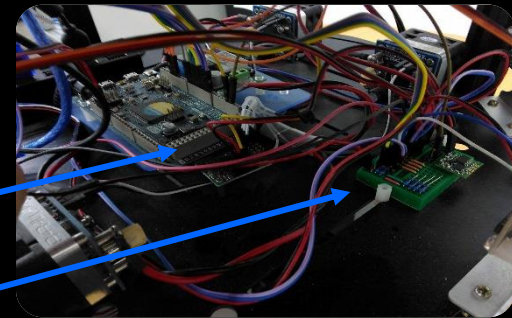
Arduino DUE

Gyroscope & Accelerometer

Ultrasound

XBEE module

Odometry



CLEANING ROBOT

- iGlobaEd
 - JAVA communication GUI



Information UI

Connection

Com Port: COM3 [Search]

Baud Rate: 115200 [STOP]

Data Bits: 8

Stop Bits: 1

Parity: NONE

Mode

[Start] [Reset] [Stop]

[Safe] [Full]

[Clean] [Max] [Seek Dock] [Power]

Actuator Command

Control

[Up] [Left] [X] [Right] [Down]

Drive Mode

☒ Drive

☐ Drive direct [Run]

☐ Drive PWM

Velocity: 0 mm/s

Radius: 0 mm

LED Mode

☒ LED Blue [Run]

☐ LED Red

Motors

☒ SIDE BRUSH [Run]

☐ VACUUM

Sensor Packet ID Read

☒ IR Bumps and Drops

☒ IR Guide Sensors

☒ IR Bumps Signal Level

☐ IR Guide Signal Level

☒ Motor Overcurrent

☒ Charging Source State

☒ Battery Voltage

☒ Operate Mode

☒ Requested Velocity

☒ Requested Radius

☒ Requested Velocity LR

☒ LR Encoder Counts

☒ LED State

☒ Motors Current

[Stream]

Seeting

Wheel1: 39 [Save]

Wheel2: 33

Control UI

[Start to get Data]

Information

IrbumpFlag : 0 0 0 1 0 0 0

IrdropFlag : 1 0 0

IrguideFlag : 0 0 0 0

IrbumpValue : 15 13 279 657 48 12 30

Left_Right_Wheel_oval : 0 0

Left_Right_SideBrush_oval : 0 0

Vaccum_rectangle : 0

ChargeStatus : Charge Complete

ChargePad_rectangle : 1

PowerJack_oval : 0

Battery_Voltage : 13.7

OperateMode : FULL

Drive_Velocity : 0

Drive_Radius : 0

DriveDirect_Velocity_LR : 0

Encoder_Left_Value : 0

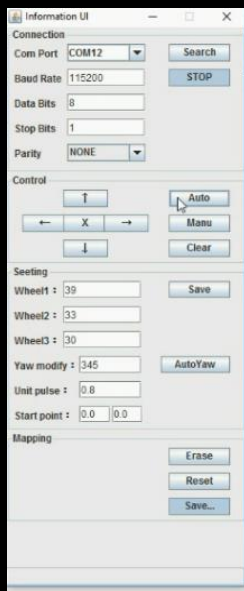
LED : 1

MotorsCurrent : 4 5 8 5

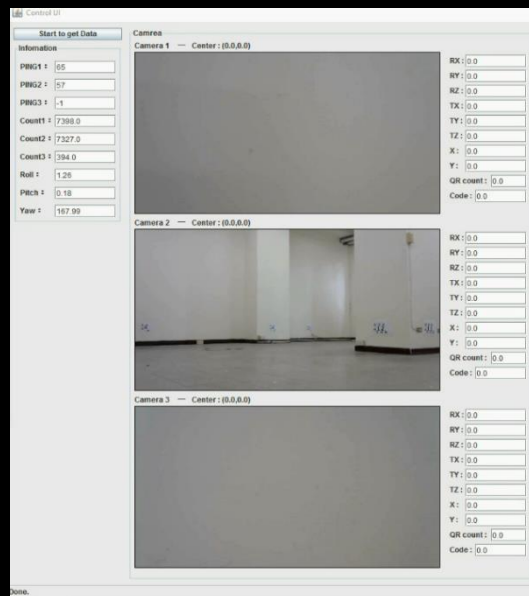
Done.

CLEANING ROBOT

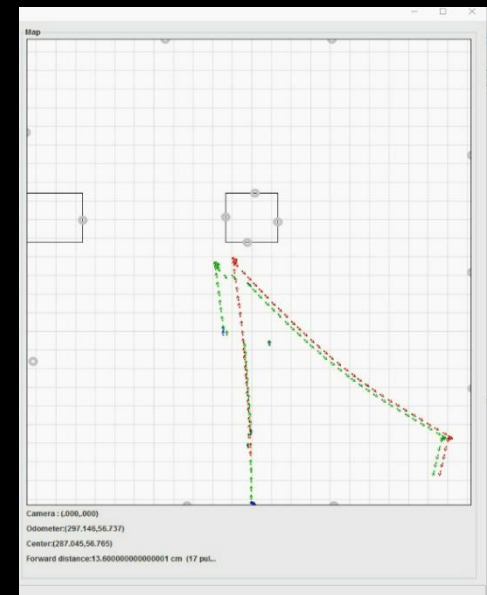
- iGloEd
 - JAVA communication GUI



Control interface



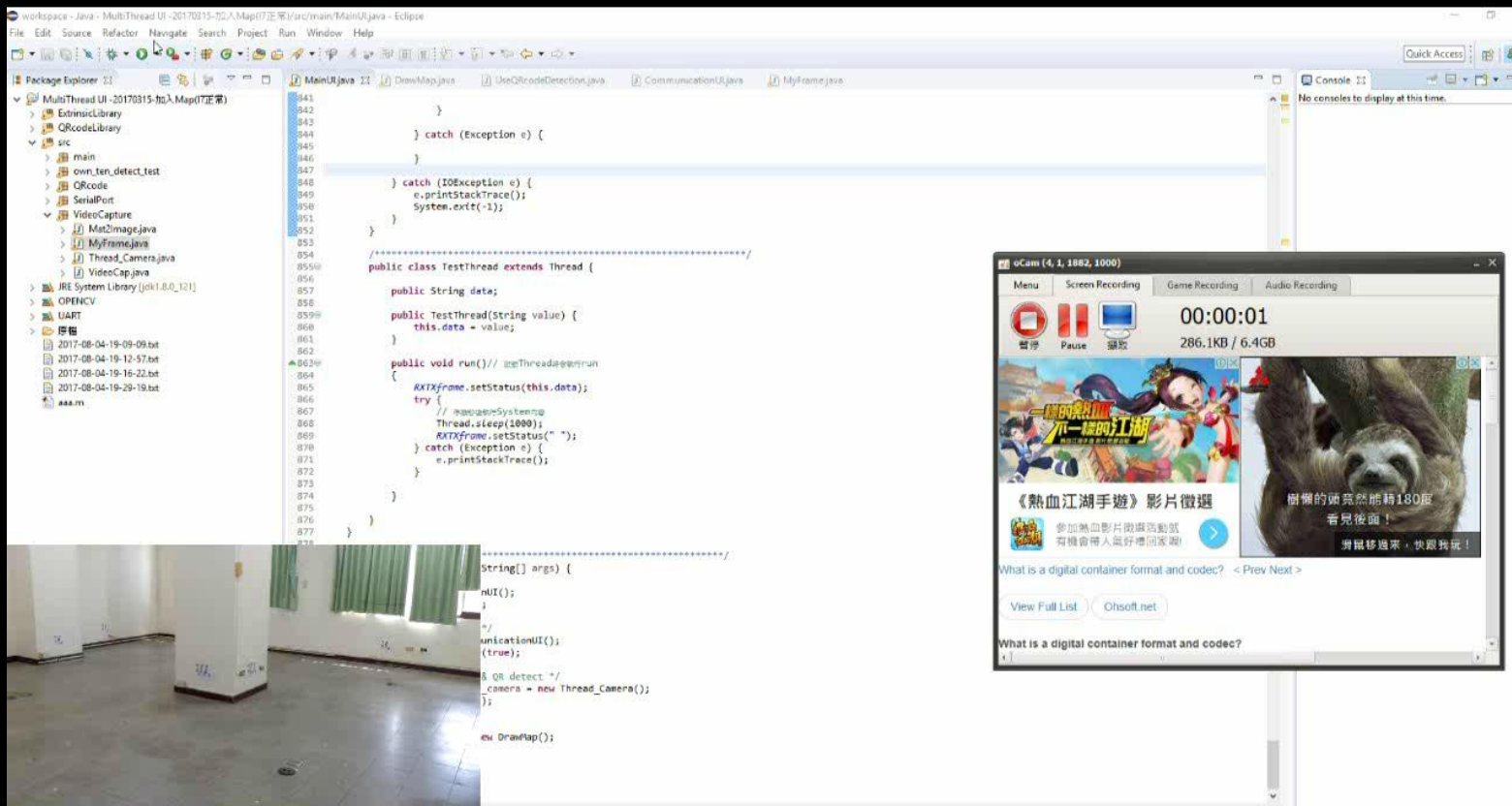
Return information



Path of robot

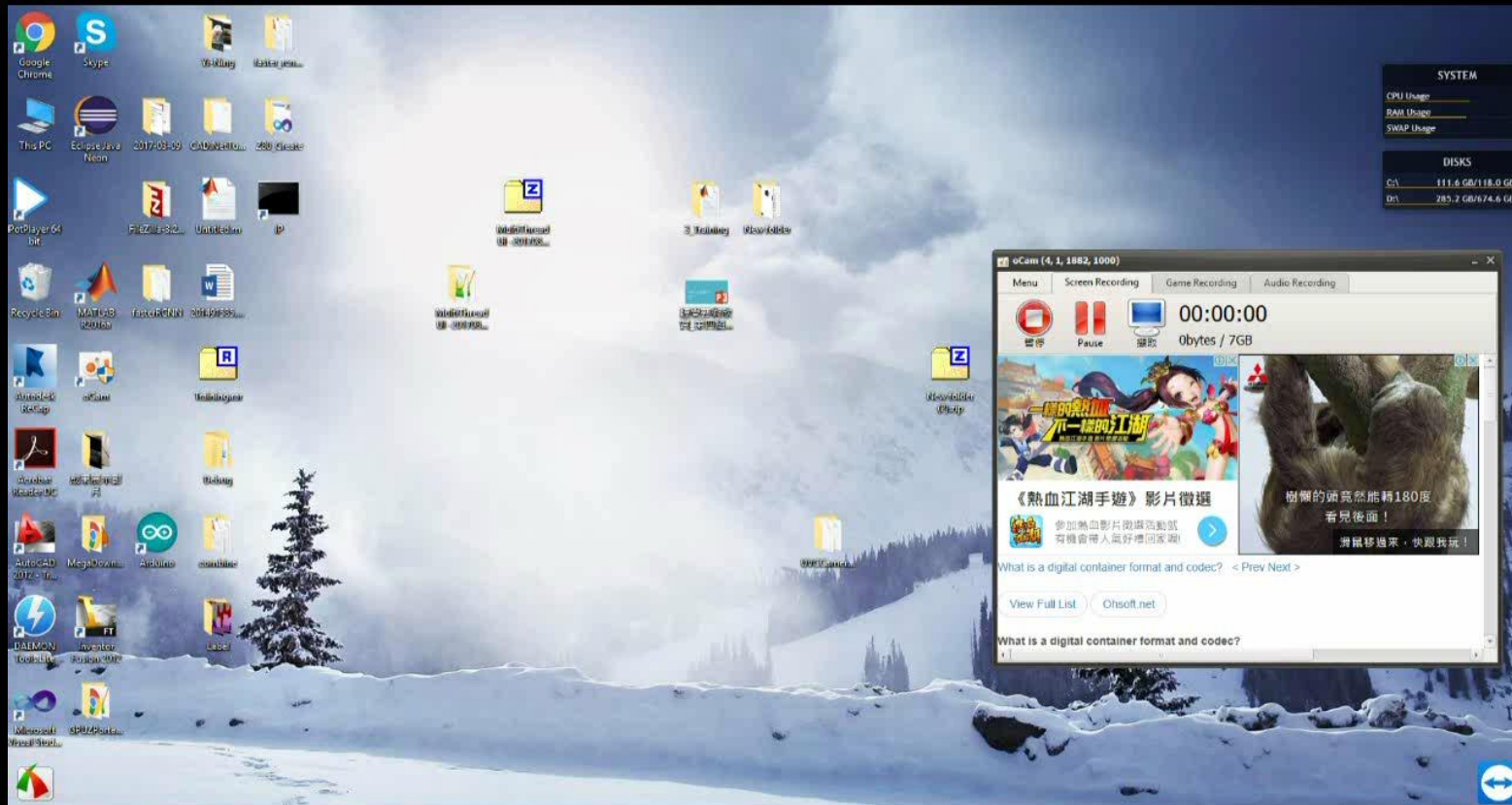
CLEANING ROBOT

- Experiment results



CLEANING ROBOT

- Experiment results

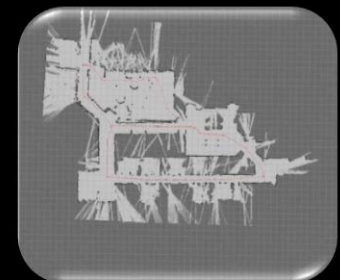
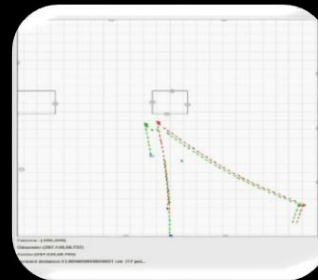


CLEANING ROBOT

- Software:

- Now : **Simultaneous Localization**

- Future : **Mapping**



- Hardware:

- Now : **Cleaning robot**

- Future : **iGlobaEd**

