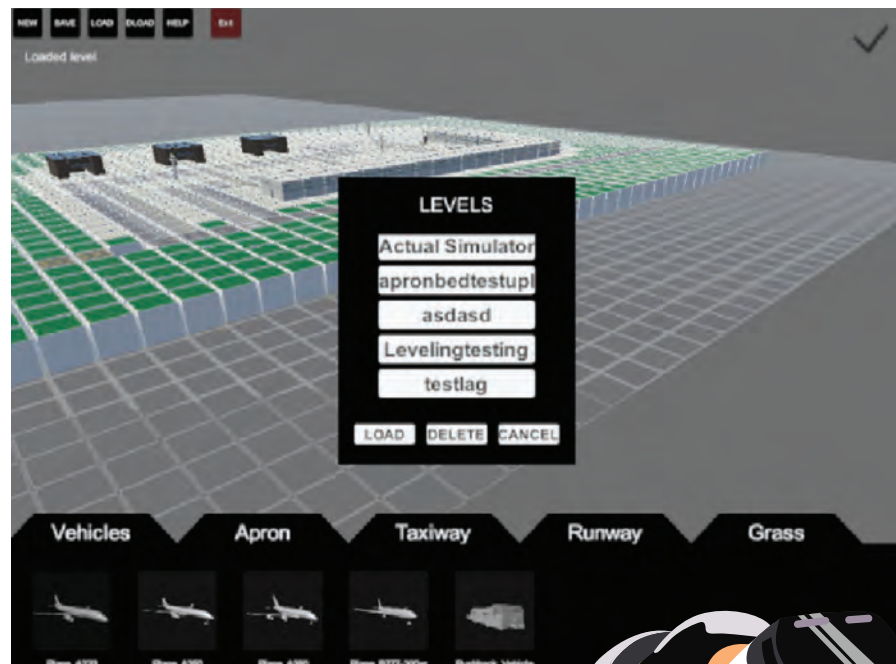


DRIS : DUAL REALITY INTERACTIVE SIMULATOR

The objective of this project is to design a training system for aircraft tow truck driving using VR headsets. The real world images are obtained from a camera mounted on the head-mounted display. Some of the predefined objects, such as game controllers and user's hands, are detected via deep learning algorithms and blended into the virtual reality images, providing a more comfortable and immersive user experience.



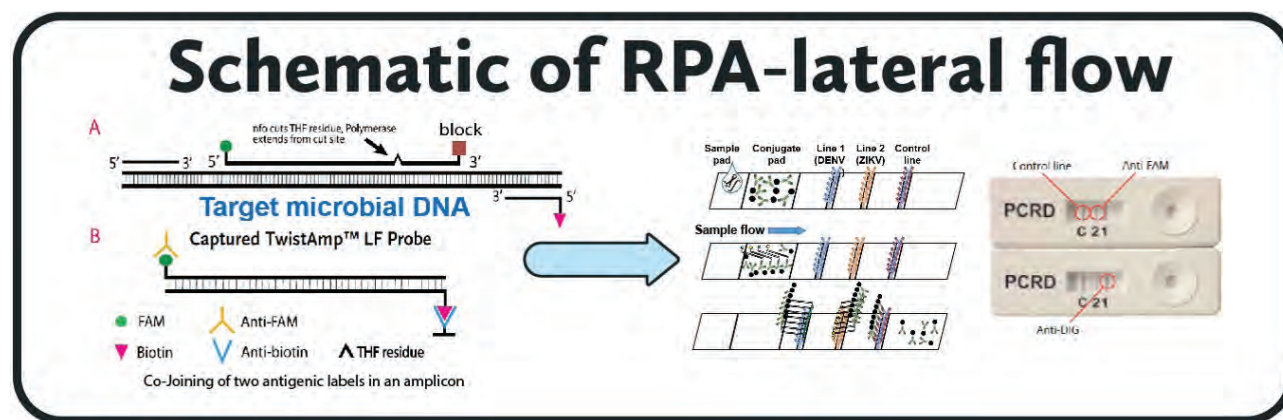
DRIS project.

SUPERVISORS

M Fikret Ercan,
Cai Zhiqiang,
Allen Liu

DENZI : DENGUE-ZIKA VIRUS DIAGNOSTIC KIT

Dengue and Zika are mosquito-borne viral infections that co-circulate in Singapore. Current diagnostic methods take time and require high technical expertise. This project sets out to develop an integrated workflow that streamlines sample processing and molecular amplification of target sequences in Dengue and/or Zika viruses for the detection and differentiation of Dengue and/or Zika, through direct "Yes/No" visualization of test and control lines on a lateral flow-based test strip.



Lateral flow.

SUPERVISOR

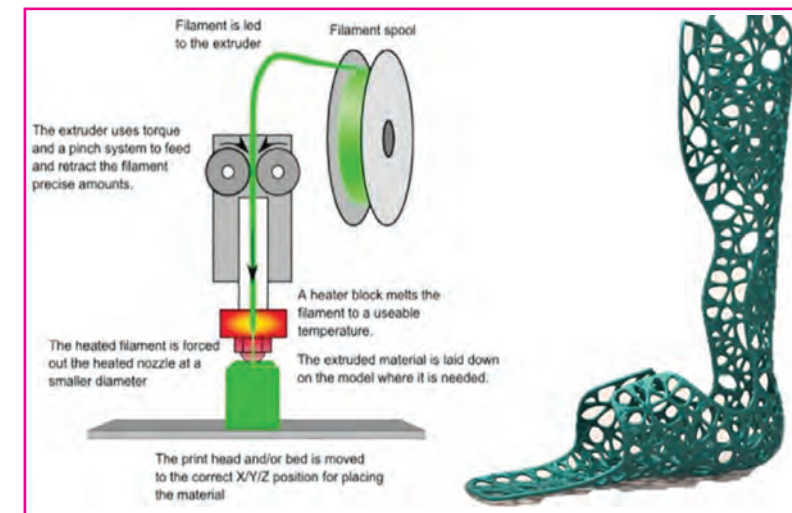
Joshua Teo

TEAM MEMBERS

Serena Song Meow Cheng,
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Lau Xue Ru

3D PRINTED ANKLE FOOT ORTHOSIS

For individuals suffering from foot drop, arthritis, nerve damage, or general muscle weakness, such that it affects their ability to walk properly, ankle foot orthoses (AFOs) are able to provide a stronger base, allowing them to walk better, enabling mobility and reducing the risk of falling. This TIE/CLS joint project aims to develop a novel, 3D printable composite material which could be used to fabricate lightweight, comfortable, and cost effective tailor-made AFOs for those in need of a mechanical advantage, in particular the elderly.



3D printed ankle foot orthoses.

SUPERVISORS

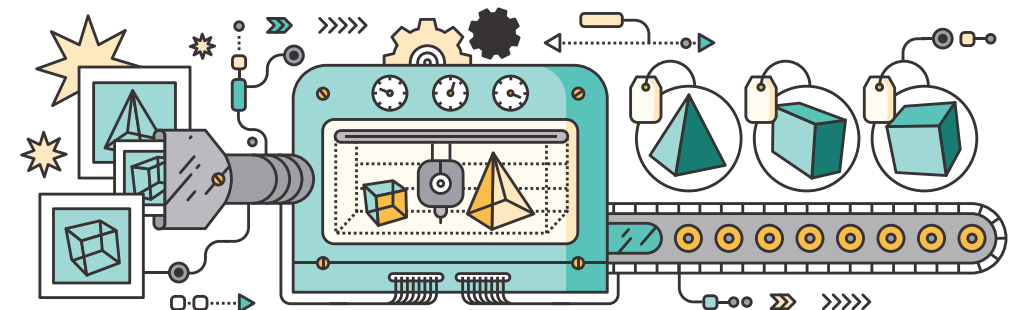
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Joel Lee Wah Ling

TEAM MEMBERS

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Toh Zi Yang, Xavier Tan Hang Gui

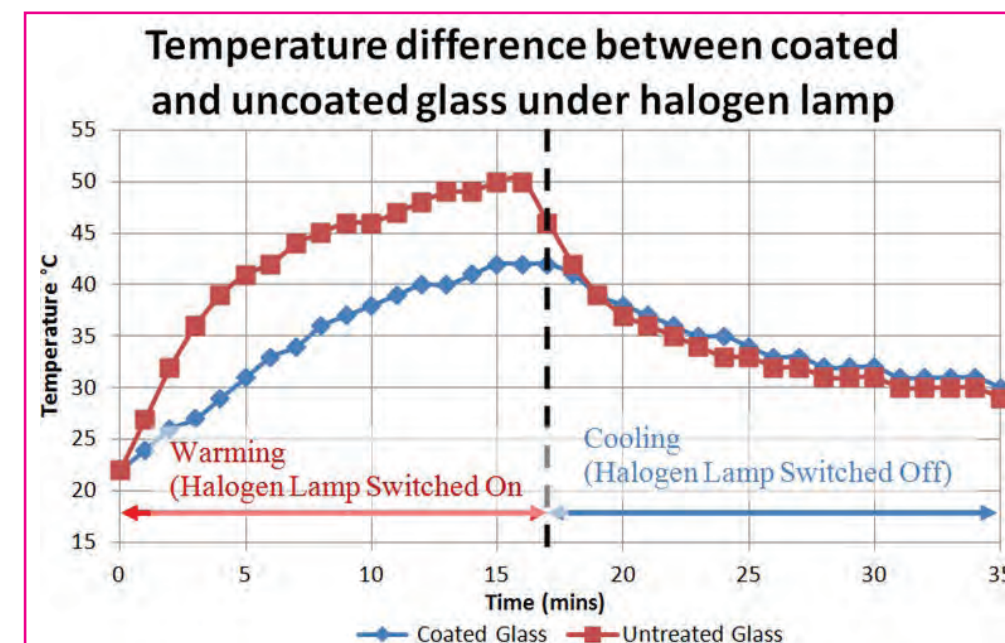
INDUSTRY PARTNER

Tan Tock Seng Hospital



NANO-GLASS COATING

In the tropical region, buildings are under hot climate and constant exposure to high levels of solar radiation all year round. As such, a lot of electric energy is spent to cool down buildings. Therefore, there is a high demand by industrial and residential consumers to effectively reduce the effects of solar radiation to the indoor ambient temperature. The formulated glass coating prevents the solar heat from entering the buildings. The temperature can be reduced by 8 to 9 degree Celsius.



Graph 1.

SUPERVISORS

Zhen Yongda, Li Yongjia

TEAM MEMBER

Tan Zong Zhi Shaun

SMART ROBOTIC CAFE PREFAB FOR RAPID DEPLOYMENT

The Food & Beverage (F&B) sector is fast growing in Singapore. However, it faces manpower shortage, an issue that is likely to worsen given the twin problems of a rapidly greying and a slower-growing population. According to the Singapore Statistics Bureau figures, remuneration stands as one of the top 3 business costs of any F&B outlet. The team designed and fabricated a pilot prototype of an integrated rapid deployment robotic AI F&B solution to address this issue.



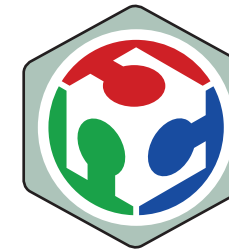
Robotic Cafe.

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SP FABLAB

FabLab@SP began in 2011 and is the result of collaboration among School of Electrical and Electronic Engineering (EEE), School of Mechanical and Aeronautical Engineering (MAE), and Singapore Maritime Academy (SMA). It was conceived to allow staff and students to make "almost anything".



VAST : VESSEL FOR AUTOMATED SEA-BURIAL TRIBUTE

This is an Engineering Academy (EA) Multi Disciplinary Project (MDP) done in SUTD's Design Odyssey program. The objective of the project is to design and develop a system and necessary contraption to address the scarcity of land used for burial purposes. A set of hardware and software comprising of semi-autonomous watercraft, a container for a payload, a release mechanism and visualization options were developed.



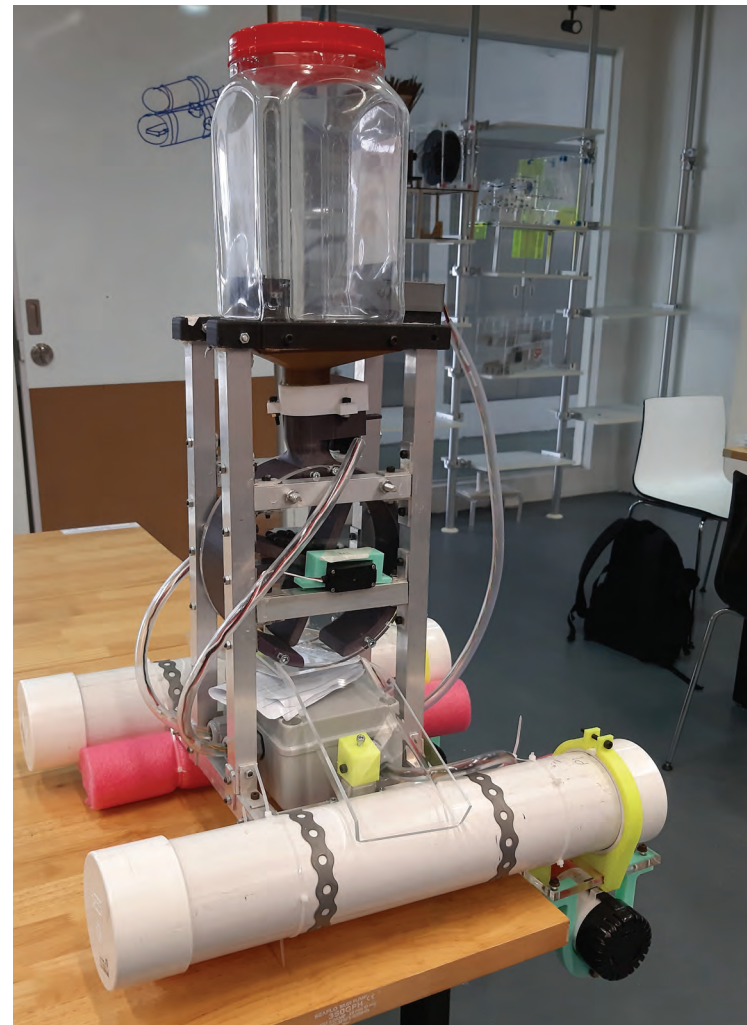
Watercraft in action.

SUPERVISOR
Teo Shin Jen

TEAM MEMBERS
Lee Teng Yi Nicholas,
Goh Qian Zhe,
Christopher You Yi Rui

FUSH'D, THE AUTOMATIC FISH FEEDER

Currently, in the market, fish feeders are only manufactured for small-scale use, such as in home aquariums and ponds. FUSH'D is an automated platform that is designed to feed fishes in large fish farms. The fish will be fed at fixed timings when the owner is away on holiday or is too busy to follow the feeding schedule.



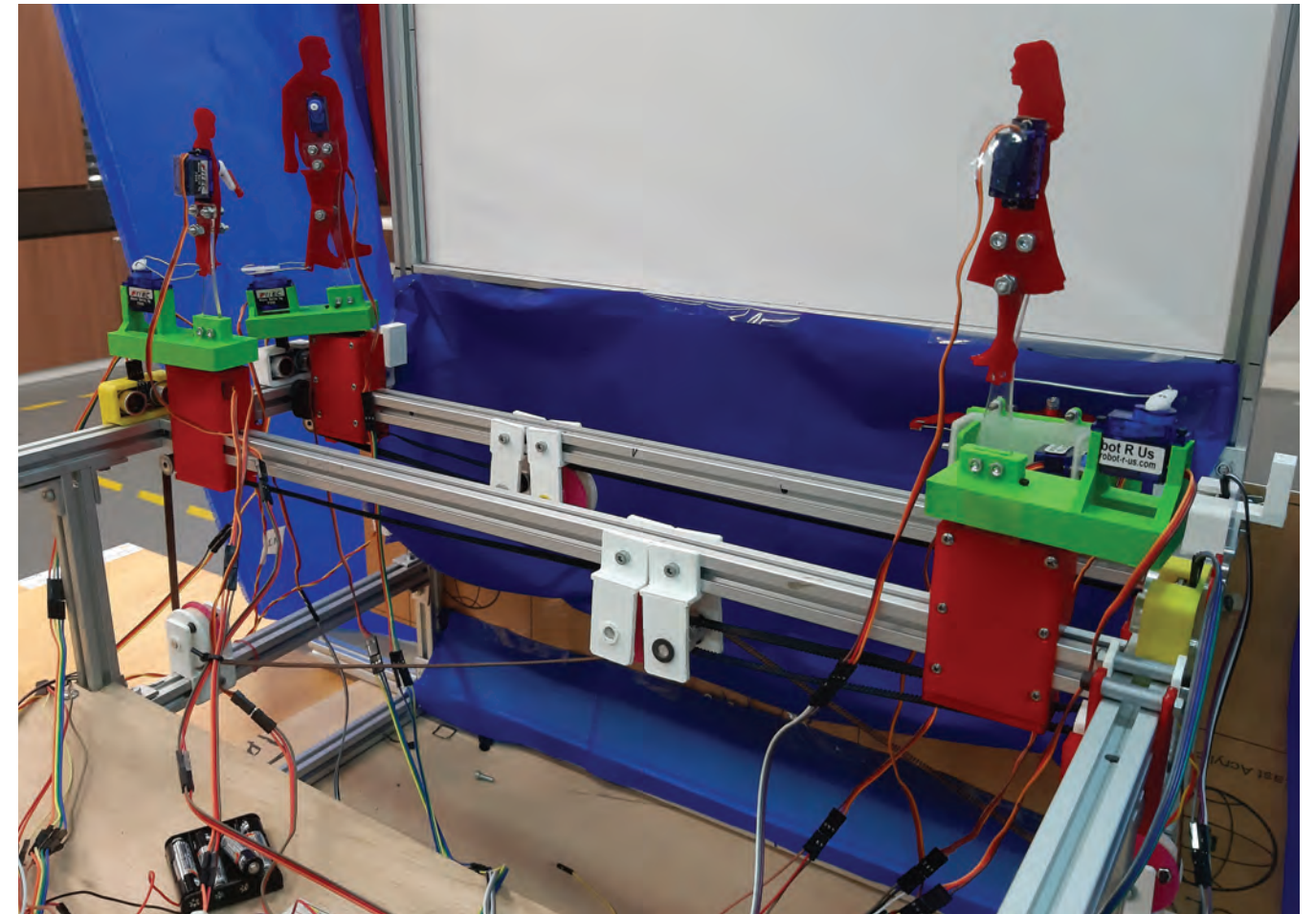
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Muhamad Irfan Bin Zaid,
Koh Rui Wen Tammy

Fish Feeder assembly.

SHADOW PUPPET

The Shadow Puppet Show is a centuries-old method of telling stories brought to life using modern day mechanisms and computer controls. This is the first integrated project by the Engineering Academy students. Students were introduced to a cultural theme which had to be implemented in the 21st century. The students' solution was to use mechanical and electrical components controlled by automation to tell a story of a mother's love for her prodigal son. The project is part of a module which introduces concepts of mechanical design and mechanisms, motors, sensors and microcontroller applications.



Shadow Puppet.

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Jolyon Caplin

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Chung Teik Lim

OTHER EEE PROJECTS



CleanTech & Built Environment

- Cyger Port
- Electric Car
- Energy Meter for Solar-Battery Systems
- Solar car SunSPEC project
- Solar Cone (SCONE)
- SP Group - Cloud 9 energy from rainwater



Healthcare & Wellness

- Development of low cost and efficient Controller and IoT Interface for Upper Limb Rehabilitation
- Near-Infrared Combi Therapy for arteriovenous fistulae (AVF) healing and maturation.
- Stand up assistive device



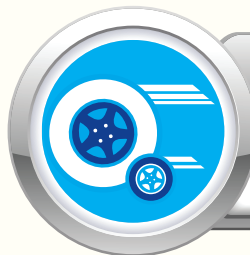
Industrial & Automation

- Advanced Manufacturing - Computer Vision for Object Recognition
- Components tracking System
- Delivery Robot
- Digital Twin of MMs 4.0
- Fish Farm - Control Monitoring System
- FPGA smart application
- Hit Sensor Smart Target
- Impedance tester robotic system
- IoT Monitoring & Automation for Cleaning up EcOasis
- IoT sensors with Data Analytics
- KLASS Engineering Probing Robot
- Sensors Application Using FPGA
- SP-IMDA Service Robot
- Temperature Sensor Controlled Fans



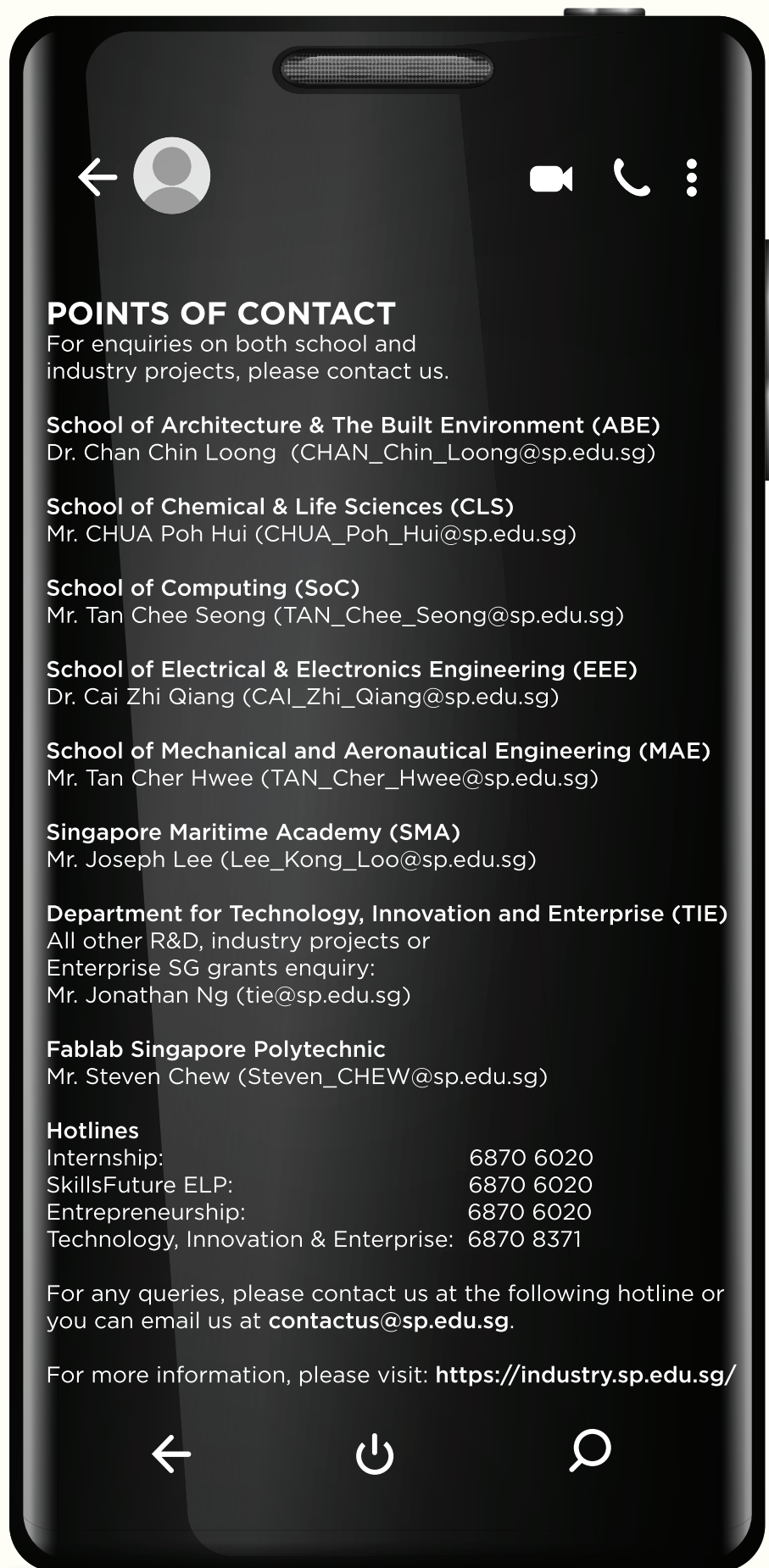
Infocomm & Media

- 2nd Gen Pigeon Hole
- AR Display sensor
- Blazer Tracking and Inventory System
- Control system using Mobile App
- Deep learning for Human motion detection
- EEE Kiosk @ School Office
- Mobile Cloud-based Clock-in/clock out System
- Peer Tutoring System
- QR attendance@events
- Smart Registration System



Transport & Mobility

- AGV and Robot coordination and communication using PLC
- SMART SERVICE AGV - MASTER PLC SCADA SYSTEM
- UAV Surveillance - Automated detection and classification of threats
- UAV-Virtual Parameters



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