2019 May BI FYP Titles

No	Supervisor	Co-supervisor	Final Year Project Title	Description/Objective/Scope	Equipment/ Hardware	IT Tools (Word processing */or specific software)	Special Requirement	Multi-disciplinary Project (Yes or No)	Industrial Links (specify company name)	Community Project (Yes or No)	Remarks (if any)
						Modern Tools					
1	Chai Tong Yuen		Alignment-Free Iris Cancellable Template Protection Scheme	The objective is to design a template protection scheme for iris data without the needs to go through the process of alignment and revokable. The proposed scheme should preserve the information of the template without much degradation caused to the recognition performance. The security of the proposed scheme will have to be analyzed based on non-invertibility, revocability and unlinkability to fulfil the criteria of a good template protection scheme. The schem will also be tested in different databases and benchmarked against state-of-the-arts.	PC/Laptop	Word, Powerpoint	No	No	No	No	Interested in programming and deep learning network
2	Chai Tong Yuen		Security Analysis and construction of Confidence Bits on A Secured Iris Recognition System	This research will first show the capbility of confidence bits in improving a secured iris recognition system. When recognition happens in a secured/hashed domain which is safer, it normally comes with the price of performance degradation. Despite the expected improvement, there is still a need to assess its impact on security and privacy when it is applied to the hashed iris templates. This can be conducted by simulating some potential attacks or by estimating the correspondence complexity involved to reconstruct the template. Finally, the performance of the scheme will be evaluated through various databases as well as its security impact on the hashed template.	PC/Laptop	Word, Powerpoint	No	No	No	No	Interested in programming and maths related to security application
3	Chan Siow Cheng	Tan Yin Qing	Effects of shoe stiffness on lower extremity during running	Running is an increasing popular competitive and recreational form of physical activity but it involves repetitive loading of the musculoskeletal system especially at lower extremities which can lead to running injuries. The cushioning system of running shoes is postulated to improve runner performance and to protect runners against high impact forces and therefore running injuries. However, there is currently no evidence that developments in running shoe emerging on the market helped to tackle running injuries as well as improve runner improvement. In this study, the student is required to investigate how the cushion stiffness affects the running biomechanics and injury risks.	PC/Laptop	Word, Powerpoint	No	No	No	No	
4	Chan Siow Cheng	Tan Yin Qing	The effect of load carriage while wearing high heeled shoes on ankle joint during level and uphill walking	Women of all ages wear high heels for variety reasons. However, evidence suggested changes in heel heights will affect the musculoskeletal system during walking e.g. pain and discomfort in the lower extremities and muscle fatigue. Many studies have investigated the effect of heel height on the kinematics of body movement during walking on a flat surface. The purpose of this study is to examine the kinematics and kinetic effects of high-heeled shoes wearing or/and asymmetrical load carrying during level and uphill walking.	PC/Laptop	Word, Powerpoint	No	No	No	No	
5	Chan Siow Cheng	Chong Yu Zheng	Human gait modelling and analysis	Gait analysis has been used in the clinical setting to assist surgical planning, abnormal gait diagnosis and gait rehabilitation. However, the forces produced by muscles and joint cannot be measured directly in experiments and cause-effect relationships in complex dynamic systems are hard to establish from experimental data alone. Therefore, human kinematic model is important to estimate the muscle and joint forces and produce insights into muscle function by launching the cause-effect relationships during running. Objective: 1. Build a human kinematic model to compute the joint moments of lower extremities using available software 2. Validate the modeling results with existing experimental data.	PC/Laptop	Word, Powerpoint	No	No	No	No	
6	Chee Pei Song		Development of a pressure sensor for pulse detection	The probabilty of the cardiovascular event occurence can be estimated by monitoring the pulse signal at the human wrist. Tradition chinese medicine (TCM) detects the pulse by manually pressing three finger tips on CUN, GUAN,CHI of the wrist. This method required a trained TCM specialist which has constrainted a long term pulse monitoring. This project aim to developed a pressure sensor which can be worned on human wrist and monitor the pulse. The objectives are: 1. Design a pressure sensor with flexible material. 2. Fabricate the sensor using MEMS technique. 3. Characterise the fabricated pressure sensor.	Elvis board, Lab coat	Word, Powerpoint, Matlab, Solid work	No	No	No	No	
7	Chee Pei Song		Development of a flexible electrode for ECG monitoring	ECG signal can be detected by placing the electrode across the body. Conventional electrode is made of silver/silver chloride (Ag/AgCl) material. These electrodes typically require electrolytic conductive gel and skin preparation to reduce the skin electrode contact impedance. However, the contact impedance increases when the conductive gel dries out over time, thereby resulting in measurement errors due to increase in both contact resistance and motion artifacts. In addition, several studies shown the patients could also develop skin irritation or allergic rashes with the conductive gel applied. In practice, it is very desirable to have a compliant electrode that have low electrical resistance with the skin surface. This project develops a flexible ECG electrode with the objective of: 1. Design a compliance ECG electrode 2. Fabricate the electrode using soft-lithogaphy. 3. Characterise the output from the fabricated electrode	Elvis board, Lab coat	Word, Powerpoint, Matlab, solid work	No	No	No	No	
8	CHONG Yu Zheng		Development of modular Upper Extremities Exoskeleton System for Activities of Daily Living	The advancement in technology made it possible to develop modular exoskeleton system. Modular design will be desirable whereby different subsystem may be developed, and be combined together to form the complete system. The project aims at developing such system utilising customisable subsystem for upper-extremities exoskeleton system. Daily living activities could range from grasping of glasses to movements for rehabilitation of the upper extremities.	Mechanical components, microcontrollers	Word, Powerpoint	No	No	No	No	
9	CHONG Yu Zheng		Development of upper and lower extremities rehabilitation system for individual with movement disorders.	Movement disorders such as cerebral palsy, stroke, spinal cord injuries and others will require dedicated rehabilitation equipment for respective rehabilitation regime. This project aims in developing such rehabilitation system that is capable of assisting in rehabilitation of the upper and lower extremities.	Mechanical components, microcontrollers	Word, Powerpoint	No	No	No	No	
10	CHONG Yu Zheng		Development of a telerehabilitation system for Activities of Daily Living (ADL) monitoring	As telemedicine technologies speculated to embrace 5G technologies in the near future, one of the established application of this telecommunication technology is telerehabilitation monitoring. As such development of telerehabilitation technology will enable home-based rehabilitation monitoring by healthcare professional possible. Hence, the project will utilise such telemedicine-technology in developing solution to monitor ADL of individuals that require them.	Mechanical components, microcontrollers	Word, Powerpoint	No	No	No	No	
11	Chua Sing Yee	Chai Tong Yuen	Investigation Into Single Pixel Imaging: Images Without a Camera	This research aims to explore into single pixel imaging as an alternative to conventional imaging techniques. The objectives and scope of this project: 1. Simulation study on single pixel imaging 2. Analysis on light modulation and sampling methods 3. Analysis on the reconstructed images	PC/laptop	Simulation software like Matlab/Python	No	No	No	No	Background/interest in programming and simulation software
12	Chua Sing Yee	Chai Tong Yuen	Vision Approach for Product Coding Inspection	Product coding information i.e. expiry date, serial numbers etc represents important information for products consumption. This information must be labelled clearly on the product. This project aims to propose and implement a solution based on machine vision approach to inspect the printed product coding in terms of correctness and quality. The scope of this project: 1. Implement machine vision algorithms to detect, segment and recognize the product coding automatically 2. Verify the quality of the printed product coding We aim to provide a simple, fast and accurate solution which can practically solve this industrial problem.	PC/laptop	Matlab/Python/ Verilog	No	No	No	No	Background/interest in programming and simulation software
13	Chuah Yea Dat	Lee Jer Vui	Development of a remote monitoring system for old folks home	In this project, An Android based safety monitoring system is going to develop and tested. This system consists of three sensors. First sensor is accelerometer, second sensor is heart beat sensor and third sensor is temperature sensor. If any one of these sensors has crossed threshold level then a buzzer is turned on and at the same time a warning intimation is sent to an android mobile using a Bluetooth technology. Wireless communication technology is used to send message to the Android mobile. The aim of this project is to design a remote monitoring system for old folks home	1) Microcontroller/ development board. 2) Accelerometer, heart rate sensor and temperature sensor. 3) Wireless module 4) An Andriod-based Smart phone 5) PC/ laptop	Word, Powerpoint	No	Yes	No	No	
14	Danny Ng Wee Kiat		Development of an autonomous differential drive robot base for a ROS based service robot	This project focuses on developing a fully autonomous robot capable of performing services useful to the well-being of humans. The robots developed should be capable of making decisions and reacting autonomously in real and unpredictable environments to accomplish pre-determined tasks. This part of the project focuses on the development of the robot base for the service robot. A standard platform will be created in this project for use in the further development of the service robot.	PC with Ubuntu	Word, Powerpoint	No	No	No	No	
15	Danny Ng Wee Kiat		Development of a robotic arm for a ROS service robot	This project focuses on developing a fully autonomous robot capable of performing services useful to the well-being of humans. The robots developed should be capable of making decisions and reacting autonomously in real and unpredictable environments to accomplish pre-determined tasks. This part of the project focuses on the development of a general purpose robotic arm for use in a service robot. The arm should be capable of picking up a daily object below the weight of 1Kg.	PC with Ubuntu	Word, Powerpoint	No	No	No	No	
16	Danny Ng Wee Kiat		Simulation model of a service robot for use in ROS	This project focuses on developing a fully autonomous robot capable of performing services useful to the well-being of humans. The robots developed should be capable of making decisions and reacting autonomously in real and unpredictable environments to accomplish pre-determined tasks. This part of the project focuses on the design of a simulation model in Gazebo which is capable of interacting with ROS. The model must be tunable with different parameters depending on the input robot design.	PC with Ubuntu	Word, Powerpoint	No	No	No	No	
17	Hum Yan Chai		Real Time classification of gender using convolutional neural network	This project involves machine vision human detection technique and gender classification technique. Gender classification is to dictate a person's gender, e.g., male or female, depending on his or her biometric properties. Normally facial images are adopted to obtain features and then a classifier is adopted to the obtained features to construct a gender recognizer. It remains an active research topic in Computer Vision and Biometrics fields. Gender recognition is essentially a two-class classification problem.	PC/Laptop with GPU	Word, Powerpoint	No	No	No	No	

No.	Supervisor	Co-supervisor	Title	Description	Hardware	Software					Remarks
18	Hum Yan Chai		Objective Quality Assessment for Images with contrast Change	This project aims to design a new objective, no-reference metrics to gauge the quality of contrast changes for image. For most natural images, suitable contrast enhancement improves subjective quality. However, contrast change has always been neglected in the current research of image quality assessment (IQA).The research of image quality assessment (IQA) serves the purpose to design an image quality metric that correlates well with the human subjective scores. Contrast enhancement, despite being an active topic in image processing , there is no systematic review on IQA nor there is any IQA that correlates well with human visual system in the literature. And this may be partially because there lacks of a dedicated and large IQA database of images with contrast-change.Since the subjective quality test is always laborious and impractical for real-world image processing systems, an objective, no-reference metrics is useful.	PC/Laptop	Word, Powerpoint	No	No	No	No	
19	Kwan Ban Hoe		Image classification using Neural Network	This project aims to classify the input images into different classes using neural network. A database with different classes of images will be identified and separated into training and testing sets. A muti layer neural network will be developed to train the training images. The accuracy of the classification on the testing images will be compared with the results produced by other researchers.	Personal Computer	Word, Powerpoint	No	No	No	No	
20	Lee Jer Vui	Chuah Yea Dat	Development of an Automatic Car Parking System	This project is about a parking system that is specially designed for car vehicles and can park the vehicles automatically. This automatic car parking system will ultimately improve the traffic condition in the parking area. This system will be developed in desktop/laptop application and preferably in C# programming language. The system will include sensors which acquire information from the environment, a physical directory board that provides guidance to the users and the algorithm for parking control management.	PC/laptop	Word, Powerpoint	No	No	No	No	
21	Lee Poh Foong	Tan Yin Qing	Virtual reality training on cognitive function improvement for stress reduction	Objectives: 1. Develop the virtual reality system that incorporated with kinect system for cognitive improvement 2. Study the effect of virtual reality on human physiology based on the developed system in in no.1	Laptop/PC	Word, Powerpoint	No	No	No	No	
22	Lin Horng Sheng	Phua Yeong Nan	Design of Liquid Level Sensing Based on Optical Fiber Sensor	Objectives: 1. Design liquid level sensor 2. Sensor fabrication using fiber tapering Jig 2. Characterization of liquid level sensing performance	Fiber tapering Jig, Laptop/PC	Word, Powerpoint	No	No	No	No	
23	Lin Horng Sheng	Phua Yeong Nan	Design of Fiber Bragg Grating Sensor Interrogation Technique	Objectives: 1. Characterization of FBG sensor incorporated into parametric optimization 2. Design and develop optical power measurement (interogation technique)	FBG, Fabry-Perot Tunable Filter, Laptop/PC	Word, Powerpoint	No	No	No	No	
24	Lin Horng Sheng	Phua Yeong Nan	IoT based Palm Oil Mill Automation in Monitoring Oil Extraction Rate	Objectives: 1. Design IoT based system to collect information from crude palm oil storage tank. 2. Integration with cloud server for OER and oil storage monitoring.	Laptop/PC, PLC	Word, Powerpoint	No	No	No	No	
25	Lin Horng Sheng	Phua Yeong Nan	Array Based Plug"N"Sense system for Pipeline Health Monitoring	Objectives: 1. Develop array based Plug"N"Sense system. 2. Implement predictive machine learning model for pipeline health monitoring.	Laptop/PC, PLC	Word, Powerpoint	No	No	No	No	
26	Loo Joo Ling	Phua Yeong Nan	Integration of IoT in Aquaponic -A feasibility study	IoT could be useful decision tools for affordable monitoring and automation in aquaponics. A reiciculating aquaponic system is where fish and crops feed each other through their emitted substances in the sharing water. Intensive care and monitoring are required to ensure stable and healthy environment inside the tanks. The proposed system may include water quality monitoring system base on wireless sensor network; on-site and remote monitoring system and central cloud processing platform. The tools and sensors involved are pH, temperature, dissolved oxygen, nitrogen/ammonia and water level sensors; flowmeter and pump control. The aims of this proposal are to: 1.To develop a microcontroller-based real-time monitoring system for aquaponic. 2. To review the feasibility (advantag/disadvantage) of IoT based system in aquaponics.	PC, smart phone	Word, Powerpoint, solidworks, python or visual basic	No	No	No	No	
27	Loo Joo Ling	Danny Ng Wee Kiat	Development of Surveillance and Remediation Programme for Water Quality Monitoring System	A real-time monitoring and controlling system for aquaculture system would be meaningless if it merely works on collecting water quality data and communicate them to end user. An effective and efficient monitoring system should encompass a surveillance and remediation programme that ensures fail-safes in the form of emergency alarms, backup power and pump systems, and instant corrective actions for water quality problems. The purpose is to increase the quality of water quickly and efficiently while minimising any risk to the fish. This project proposes respond or feedback system for a real-time monitoring system of aquaculture that integrates with smart remediation program when the sensor data is not within desirable range. This system is expected to compose of sensor module, smart remediation system for controlling system, local network system, cloud computing system and client visualization data. Sensor module may consists of sensors for dissolved oxygen, pH, water temperature and water level. Alarm-and-trigger system to execute custom actions (remediation) according to the needs of the aquaculture system (fishes).	Sensors, microcontoller, PC, smart phone	Programming	No	No	No	No	
28	Mok Siew Ying	Tang Pek Yee	Identify EEG biomarkers of schizophrenia disorder	Schizophrenia is one of the most common neuropsychiatric disorders worldwide. It is typically diagnosed through symptomatic evidence collected from personal interviews with the patients. There have been significant recent advances to develop a more objective measure to aid with the diagnosis of the disorder using techniques such as imaging and electrophysiological measures. This project aims to study the difference in the EEG of schizophrenic patients compared to healthy control to identify potential biomarkers that signify susceptibility to schizophrenia. This project will use the datasets collected by Laboratory for Neurophysiology and Neuro-Computer Interfaces which are made publicly available.	PC	Word, Powerpoint, MATLAB	No	No	No	No	
29	Mok Siew Ying	Tang Pek Yee	Modelling learning and memory in zebrafish larvae uisng NMDA antagonist MK801	Impaired learning and memory are common symptoms of neurodegenerative and neuropsychiatric diseases. Although atypical functional brain lateralization has been associated with neuropsychiatric conditions, spanning from schizophrenia to autism,few animal models are available to study this phenomenon in learning and memory deficits. A visual lateralization NOR model (VLNOR) will be used in zebrafish larvae as an assay that combines brain lateralization and novel object recognition (NOR) after the zebrafish larvae are treated with NMDA antagonist MK801.	PC, camera/ mobile phone, fish tank	Word, Powerpoint	No	No	No	No	
30	Ng Oon-Ee		3D Reconstruction using aerial video	Structure-from-motion involves using different images/perspectives of a scene and/or object to build a structre (3d representation) of the scene/object. This project aims to build on existing work in order to robustly construct a 3-D point cloud (from the PointCloud Library). The resulting software should be tested on a variety of objects and include images from different angles/perspectives (e.g of a drone flying around a structure). Aims and objectives:- 1. Record a series of well-taken (in focus, significant overlap) flying videos of a structure. 2. Implement existing structure-from-motion software workflows on the videos to generate point clouds. 3. Identify and enumerate the parameters/decisions which will result in the best generated point clouds Expected Deliverables: - A summary of the related state of the art in this field - A working software prototype - A final thesis properly documenting accomplishments and methodology - A summary paper suitable for submission as a conference and/or journal paper	Personal laptop and/or computer (preferably with an Nvidia GPU)	Word, Powerpoint, Python or C++, SSH for remote access	No	No	No	No	Programming heavy. Students should be comfortable with programming (python or C++) in general. Experience in PCL is a bonus. Linux knowledge (at least basic SSH) will be very advantageous, but can be learnt quickly from supervisor if the student is willing.
31	Ng Oon-Ee		Object Localization in 3D Point Cloud	3D Point clouds are a data-rich way of representing scenes and locations. However processing and using such clouds is expensive, and object localization in such clouds is not as mature as in 2D images/videos. This project aims to explore methods for locating and measuring objects within a 3D point cloud. Aims and objectives:- 1. Identify existing rich (scene, not single-object) 3D Point Cloud datasets for use in this project. 2. Develop a method for matching an object (2D or 3D) to objects within the point cloud. 3. Measure the main dimensions of the located object. Expected deliverables:- 1. A literature review of related technologies 2. A final thesis documenting the system, it's development, and it's functionality 3. A research paper on the methods used (for journal/conference publication)	Personal laptop (preferably with an Nvidia GPU)	Word, Powerpoint, Python or C++, SSH for remote access	No	No	No	No	Programming heavy. Students should be comfortable with programming (python or C++) in general. Experience in PCL is a bonus. Linux knowledge (at least basic SSH) will be very advantageous, but can be learnt quickly from supervisor if the student is willing.
32	Ng Oon-Ee		Multi-image-source object tracking	Object tracking in a single video is an interesting and well-explored area of machine vision research. Tracking of objects across multiple video sources is also of interest, but is inherently a more complex process. However the utility of such systems are obvious. This project aims to explore and implement multi-video-source object tracking without any fixed cues or markers. Aims and objectives:- 1. Implement existing method(s) for object tracking. 2. Extend such methods to operate on multiple video sources, with correlation/matching between sources. 3. Optimise for near-realtime performance. Expected deliverables:- 1. A literature review of related technologies 2. A final thesis documenting the system, it's development, and it's functionality 3. A research paper on the methods used (for journal/conference publication)	Personal laptop (preferably with an Nvidia GPU)	Word, Powerpoint, Python or C++	No	No	No	No	Programming-heavy
33	Ng Oon-Ee		Automated processing of mechanical system drawings	This project aims to automatically process mechanical system drawings to identify and measure various features, in particular those to do with ducting. The finished product should be able to extract important features and provide accurate measurements for the purpose of costing and/or manufacturing the required materials. A 3D model of the features would be helpful for both tasks. Expected deliverables: 1. Machine vision system capable of identifying important features in mechanical system drawings 2. Robust method of measurement for features identified.	Laptop or computer for machine vision task	Word, Powerpoint, Python or C++	No	No	SriCool Engineering Sdn. Bhd.	No	Programming-heavy

No	Supervisor	Co-Supervisor	Title	Description	Facilities	Software	CCTV	Programming	Industry	Other
34	Tan Lee Fan	Danny Ng Wee Kiat	Obstacle avoidance control for an autonomous wheelchair using ultrasonic sensors	Our current brain-computer interface (BCI) wheelchair comprises of a five-selection steady-state visual evoked potential (SSVEP)-based BCI system and an autonomous wheelchair with a distributed controller. The BCI detects SSVEP signals from the electrode placed on the scalp of the subject during the frequency periodic presentation of visual stimuli. Once a destination is selected, the wheelchair navigation system will control the wheelchair autonomously to the destination. The current study aims to determine the obstacles using ultrasonic sensors mounted at certain positions of the wheelchair for providing a safe autonomous navigation. The tasks to be completed include installation of hardware, development of algorithm, and testing of prototype.	PC/Laptop	Word, Powerpoint, Programming	No	Yes	No	No
35	Tan Lee Fan		Finite element model analysis of vibro-acoustic behavior of table tennis racket	Finite element (FE) modelling has been shown to be a useful tool in optimizing performance characteristics. It is also a useful technique that can be used to reduce the time and financial cost of designing and manufacturing a sport equipment. The FE models of table tennis blades can have very different levels of complexity depending on the modelling techniques used. This project will examine if a relatively simple FE model can adequately represent the mechanical properties of the manufactured blade. The tasks include developing a method that is capable of determining the accuracy and hence validity of a computational FE model by comparing its modal properties to the manufactured table tennis racket that it stated. Based on the validity of the FE model, the techniques used to construct the FE model will be evaluated to determine the suitability of using such techniques.	PC/Laptop, Instron Tester	Word, Powerpoint, 3D simulation software	No	Yes	Star Elite Sports Sdn Bhd	No
36	Tan Lee Fan		Simulation of elasticity of table tennis composite wood blades using 3D model	Table tennis racket blades are usually made of plywood composed of several plies of different woods. It appears that the blade performances are closely linked to the behavior of blades such as speed, stiffness, flexibility, elasticity, etc. This project aims to understand the elasticity behaviour of the table tennis composite wood blades and to find its relations with other properties. The tasks to be completed include experiments to gain some data of mechanical properties, then modeling, simulation and analysis on the mechanical properties.	PC/Laptop, Instron uniaxial testing machine	Word, Powerpoint, 3D simulation software	No	Yes	Star Elite Sports Sdn Bhd	No
37	Tan Yin Qing	Chan Siow Cheng	Development of a plantar pressure sensing system	Plantar pressure is an essential biomechanical parameter which can be applied in many situations, from daily life to industrial production. Plantar pressure measurement insole system can be incorporated into shoes without causing any discomfort or affecting the natural gait by matching its softness, elasticity, and compliance. This study aim to develop an in-sole device to monitor plantar pressure distribution for gait analysis.	PC	Word, Powerpoint	No	No	No	No
40	Tan Yin Qing	Tee Shiau Foon	Association of variants in DRD2 with cognition functions among university students	Many pharmacological and clinical studies have demonstrated the importance of the dopaminergic (DA) system for cognitive. Dopamine acts as a key neurotransmitter in the brain. The propose study aim to study the influence of DRD2 gene on cognitive level (attention, memory, reasoning, executive, social cognition etc.).	PC	Word, Powerpoint	No	No	No	No
41	Tang Pek Yee	Mok Siew Ying	Modelling learning and memory in zebrafish larvae uisng dopamine antagonist L741626	Impaired learning and memory are common symptoms of neurodegenerative and neuropsychiatric diseases. Although atypical functional brain lateralization has been associated with neuropsychiatric conditions, spanning from schizophrenia to autism,few animal models are available to study this phenomenon in learning and memory deficits. A visual lateralization NOR model (VLNOR) will be used in zebrafish larvae as an assay that combines brain lateralization and novel object recognition (NOR) after the zebrafish larvae are treated with dopamine antagonist L741626.	PC, camera/ mobile phone, fish tank	Word, Powerpoint	No	No	No	No
42	Tang Pek Yee	Mok Siew Ying	Modelling learning and memory in zebrafish larvae uisng dopamine antagonist domperidone	Impaired learning and memory are common symptoms of neurodegenerative and neuropsychiatric diseases. Although atypical functional brain lateralization has been associated with neuropsychiatric conditions, spanning from schizophrenia to autism,few animal models are available to study this phenomenon in learning and memory deficits. A visual lateralization NOR model (VLNOR) will be used in zebrafish larvae as an assay that combines brain lateralization and novel object recognition (NOR) after the zebrafish larvae are treated with dopamine antagonist domperidone.	PC, camera/ mobile phone, fish tank	Word, Powerpoint	No	No	No	No
43	Tee Yee Kai		Machine learning for histopathological image analysis	Pathology diagnosis has been performed by a human pathologist observing the stained specimen on the slide glass using a microscope. In recent years, attempts have been made to capture the entire slide with a scanner and save it as a digital image (whole slide image, WSI). As a large number of WSIs are being accumulated, attempts have been made to analyze WSIs using digital image analysis based on machine learning algorithms to assist tasks including diagnosis. Digital pathological image analysis often uses general image recognition technology (e.g. facial recognition) as a basis. However, since digital pathological images and tasks have some unique characteristics, special processing techniques are often required. 1. To design a machine learning model specifically for histopathological images 2. To compare the performance of the developed model with the existing methods in the literature	PC/Laptop	Word, Powerpoint	No	No	No	No
44	Tee Yee Kai		Baby crying detection with machine learning	Automatic detection of a baby cry in audio signals is an essential step in applications such as remote baby monitoring. It is also important for researchers, who study the relation between baby cry patterns and various health or developmental parameters. 1. To design a machine learning model for baby crying detection 2. The developed model should be able to perform real time detection	PC/Laptop	Word, Powerpoint	360 CCTV camera	No	No	No
45	Tee Yee Kai		Multi-class artefact detection in video endoscopy	Endoscopy is a widely used clinical procedure for the early detection of numerous cancers (e.g., nasopharyngeal, oesophageal adenocarcinoma, gastric, colorectal cancers, bladder cancer etc.), therapeutic procedures and minimally invasive surgery (e.g., laparoscopy). During this procedure an endoscope is used; a long, thin, rigid or flexible tube having a light source and a camera at the tip which allows to visualize inside of affected organs on a screen. A major drawback of these video frames is that they are heavily corrupted with multiple artefacts (e.g., pixel saturations, motion blur, defocus, specular reflections, bubbles, fluid, debris etc.). These artefacts not only present difficulty in visualizing the underlying tissue during diagnosis but also affect any post-analysis methods required for follow-ups (e.g., video mosaicking done for follow-ups and archival purposes, and video-frame retrieval needed for reporting). Accurate detection of artefacts is a core challenge in a wide-range of endoscopic applications addressing multiple different disease areas. The importance of precise detection of these artefacts is essential for high-quality endoscopic frame restoration and crucial for realising reliable computer assisted endoscopic tools for improved patient care. This project aims to address the following key problems inherented in video endoscopy: 1) Multi-class artefact detection 2) Multi-class artefact region segmentation 3) Multi-class artefact generalisation	PC/Laptop	Word, Powerpoint	No	No	No	No