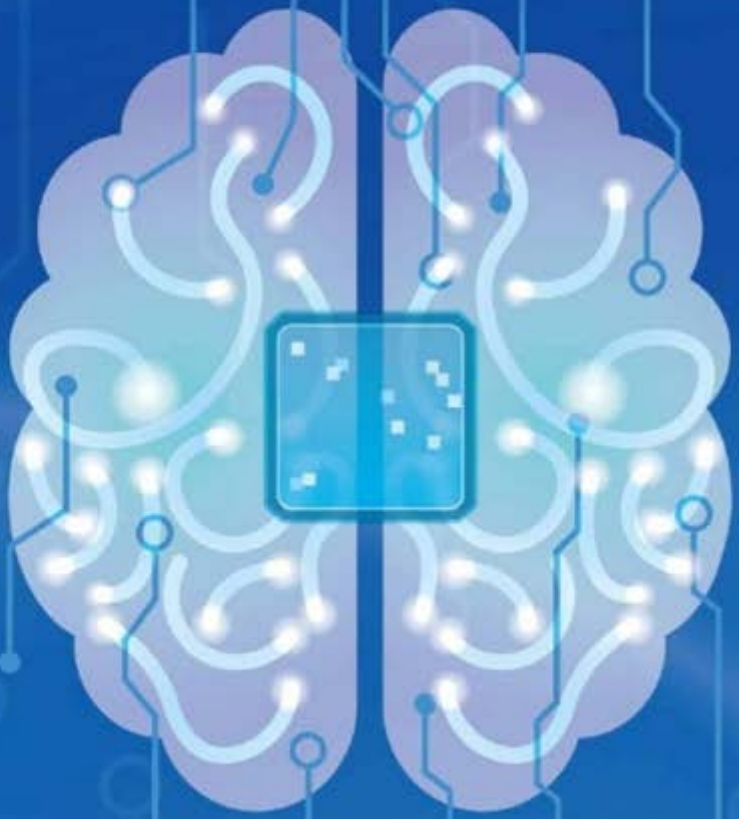
SEMBA 2022

Smart Health — From Bench to Market

第十一屆生醫工程應用研討會

2022 Symposium on Engineering, Medicine, and Biology Applications

2022 Sep.03 | 04



秀傳醫療社團法人
秀傳紀念醫院

智慧微創器械中心
Intelligent Minimally-Invasive Device Center

工業技術研究院
Industrial Technology Research Institute

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(1) ORGANIZERS

Organizers

National Chung Hsing University
http://www.nchu.edu.tw

Taiwan Engineering Medicine Biology Association
http://www.twemba.org.tw/

Co-organizers

College of Engineering,
National Chung Hsing University
http://www.engineer.nchu.edu.tw

Graduate Institute of Biomedical Engineering,
National Chung Hsing University
http://www.bme.nuhu.edu.tw

Taipei Medical University
https://www.tmu.edu.tw

Show Chwan Hospital

Intelligent Minimally-Invasive Device Center

智慧健康晶片系統與應用聯盟

Industrial Technology Research Institute

(2) GENERAL INFORMATION

The 11th Symposium on Engineering, Medicine, and Biology Applications (SEMBA 2022) will be held on 03-04 September 2022 at the Applied Science and Technology Building, National Chung Hsing University, Taiwan. The theme of SEMBA 2022 is "Smart Healthcare – From Bench to Market".

The 10th SEMBA was successfully held in National Yang Ming Chiao Tung University in 2021. Following the same goal of the past SEMBA, SEMBA 2022 will provide a high level forum platform for scholars, industry experts, and researchers from all over the world to share their research achievements, explore the hot issues and exchange the new experiences in the field of engineering and technology.

On behalf of SEMBA 2022 organizing committee, we sincerely welcome you for participating this symposium to share your experience and research results.

Committee

Honorary Chairs:

- Prof. Fuh-Sheng Shieu (President, National Chung Hsing University)
- Prof. Ming-Der Yang (Dean of College of Engineering, National Chung Hsing University)
- Prof. Chung-Yu Wu (The first and second chairman of Taiwan Engineering Medicine Biology Association)
- Dr. Yen-Y Hoi (The third chairman of Taiwan Engineering Medicine Biology Association)
- Prof. Ming-Dou Ker (The fourth chairman of Taiwan Engineering Medicine Biology Association)
- Prof. Shih-Ching Chen (The current chairman of Taiwan Engineering Medicine Biology Association)

Symposium Chairs:

- Prof Congo Tak Shing Ching (Chairman of Graduate Institute of Biomedical Engineering, National Chung Hsing University)

- Prof. Cheng-Chung Chang (Vice Dean of College of Engineering, National Chung Hsing University)

Organizing Chairs:

- Prof. David Hui-Min Wang (Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University)
- Prof. Shih-Hung Lin (Professor of Department of Electronic Engineering, National Yunlin University of Science & Technology, Taiwan)

Program Chairs:

- Prof. Po-Hung Chen (Professor and Director of Institute of Electronics, National Yang Ming Chiao Tung University)
- Prof. Kuo-Chih Liao (Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University)

Publishing Chair:

- Prof. Chian-Hui Lai (Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University)

Finance Chair:

- Prof. Bill Cheng (Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University)

Paper Competition Chair:

- Prof. Shu-Ping Lin (Professor of Graduate Institute of Biomedical Engineering, National Chung Hsing University)

Organizing Committee:

- Prof. Po-Liang Liu (National Chung Hsing University)
- Prof. Chin-Sung Hsiao (Asia University)
- Prof. Kahar Bin Osman (Universiti Teknologi Malaysia, Malaysia)
- Prof. Daniel Hung Kay Chow (The Education University of Hong Kong, Hong Kong)
- Prof. Nguyen Van Hieu (University of Science-VNU Ho Chi Minh City, Vietnam)

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- Prof. Fiona Yan-dong Yao (The Hong Kong Polytechnic University-Hong Kong Community College, Hong Kong)
- Prof. Yuan Wen Hau (Universiti Teknologi Malaysia, Malaysia)
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- Dr. Yu-Wei Wu (Academia Sinica, Taiwan)
- Prof. Pu-Wei Wu (National Yang Ming Chiao Tung University, Taiwan)
- Dr. Chih-Kuo Lee (NTUH Hsin-Chu Branch, Taiwan)
- Prof. Gwo-Bin Lee (National Tsing Hua University, Taiwan)
- Prof. Shuenn-Yuh Lee (National Cheng Kung University, Taiwan)
- Dr. Hsin-Hsin Shen (Industrial Technology Research Institute, Taiwan)
- Prof. Tsu-Wang Shen (Feng Chia University, Taiwan)
- Prof. Tsung-Hsien Lin (National Taiwan University, Taiwan)
- Prof. Ching-Po Lin (National Yang Ming Chiao Tung University, Taiwan)
- Dr. Chin-Fong Chiu (A-Neuron Electronic Corp., Taiwan)
- Prof. Li-Wei Ko (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Ming-Dou Ker (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Yeh-Liang Hsu (Yuan Ze University, Taiwan)
- Prof. Tian-Sheuan Chang (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Sheng-Fu Liang (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Jeng-Tzong Sheu (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Chien-Nan Kuo (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Guan-Yu Chen (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Huan Chen (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Hsiao-Chin Chen (National Taiwan University of Science and Technology, Taiwan)
- Prof. Sheng-Yu Peng (National Taiwan University of Science and Technology, Taiwan)
- Prof. Kevin C. Tseng (National Taipei University of Technology, Taiwan)
- Prof. Shin-Mu Tseng (National Yang Ming Chiao Tung University, Taiwan)
- Prof. Chih-Hsien Huang (National Cheng Kung University, Taiwan)
- Prof. Shih-Hung Yang (National Cheng Kung University, Taiwan)
- Prof. Hsiao-Lung Chan (Chang Gung University, Taiwan)
- Prof. Tsung-Heng Tsai (National Chung Cheng University, Taiwan)

- Prof. Ching-Hwa Cheng (Feng Chia University, Taiwan)
- Prof. Chao Sung Lai (Chang Gung University, Taiwan)
- Prof. Jun-Chau Chien (National Taiwan University, Taiwan)
- Prof. Vincent K.S. Hsiao (National Chi Nan University, Taiwan)
- Prof. Yi-Jung Chen (National Chi Nan University, Taiwan)
- Prof. Meng-Lieh Sheu (National Chi Nan University, Taiwan)
- Prof. Shih-Hung Lin (National Yunlin University of Science & Technology, Taiwan)
- Prof. Kang-Ming Chang (Asia University, Taiwan)
- Prof. Yung-Kai Lin (National Taiwan Ocean University, Taiwan)
- Prof. Ben-Yi Liau (HungKuang University, Taiwan)
- Prof. Yi-Yo Kuo (Ming Chi University of Technology, Taiwan)
- Mr. Thien Luan Phan (University of Science-VNU Ho Chi Minh City, Vietnam)

Keynote Speakers

- Prof. Chii-Wann Lin
  Department of Biomedical Engineering, National Taiwan University, Taiwan
  cwlinx@ntu.edu.tw

- Dr. Hau Yuan Wen
  School of Biomedical Engineering and Health Sciences, Universiti Teknologi Malaysia, Malaysia
  hauyuanwen@biomedical.utm.my

- Prof. J.-C. Chiao
  Southern Methodist University, Dallas, TX, USA
  Fellow of American Institute for Medical and Biological Engineering
  jchiao@smu.edu

- Prof. Allen Ming-Lun Hsu
  School of Dentistry, National Yang Ming Chiao Tung University, Taiwan
  President of Association for Dental Education, Asia Pacific (ADEAP)
  President of Taiwan Association of Dental Education (TADE)
  mlhsu@nycu.edu.tw

Invited Speakers

- Dr. Ding-Han Wang
  College of Dentistry, National Yang Ming Chiao Tung University, Taiwan
  dhwang@nycu.edu.tw

- Dr. Nguyen Van HIEU
  University of Science (Vietnam National University Ho Chi Minh City), Vietnam
  nvhieu@hcmus.edu.vn

- Prof. Shuenn-Yuh Lee
  Department of Electrical Engineering, National Cheng Kung University, Taiwan
  ieesyl@mail.ncku.edu.tw

Special Talks

- Y.S. Kuo, Ph.D.
  CEO & Founder of Comdek Industrial Corp., Taiwan
  yskuo@comdek.com

- 尤景良
  高昌生醫股份有限公司，臺灣
  yujohn.growtrend@gmail.com

- Hsu Fu-Shun M.D.
  CEO of Heroic Faith Medical Science Co., Taiwan
  fshsu@heroic-faith.com

Workshop Speakers

- 陳維聆 WEI-LING CHEN
  衛生福利部食品藥物管理署醫療器材及化粧品組，台灣
  lynnchen.k@gmail.com

- SZU-YU LEE
  Taiwan Food and Drug Administration
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- Acacia Yu 俞亭君
  Asia Pacific Biomedical Device Association, Taiwan
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- 溫瑾婷
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(3) MAP TO NATIONAL CHUNG HSING UNIVERSITY

中興大學地址: 40227 台中市南區興大路 145 號(本校校門口位於興大路與學府路交叉口)

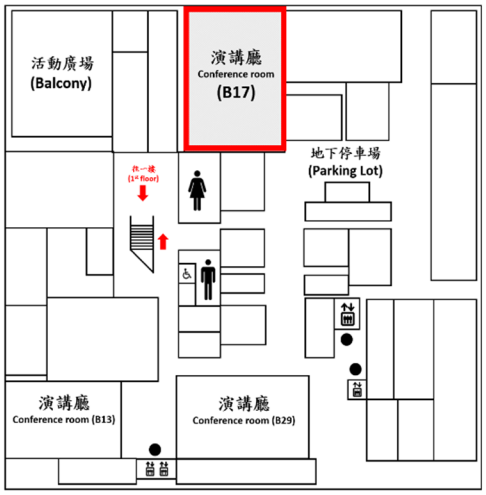
1. Orange Line from Wucyuan West Road Interchange: Wucyuan W Rd. tuurn right → Wucyuan S.Rd. turn left → Cingda Rd. go straight → NCHU
2. Blue Line from Taichung Port Rd Interchange : Taichung Port Rd turn right → Yingcai Rd. → Guoguang Rd.→ turn right → NCHU
3. Green Line from Taichung Train station : Taichung Rd. turn right → Xingda Rd. → NCHU

※ Bus: Taichung Bus No. 33 & No. 35 / Ubus No. 50 & No. 59 & No. 73 / Chbus No. 58 & No. 65

(4) CAMPUS MAP OF NATIONAL CHUNG HSING UNIVERSITY

應用科技大樓
Applied Science and Technology Building

【地下一樓(B1 Floor)平面圖】



(5) MAP TO BANQUET RESTAURANT

餐廳：台中美食家海鮮碳烤餐廳
地址：412台中市大里區永隆路528號
會場→餐廳：步行13分鐘

(6) PROGRAM SCHEDULE

▶ Day 1—2022/09/03

Time	Day 1 –Sep. 03, 2022 (Saturday)
08:00 ~ 08:50	**Conference Registration** Lobby, 1st Floor
08:50 ~ 10:20	**Workshop #1** **醫療器材由研發驗證查驗登記到上市** 座長：張健忠教授 (國立中興大學) Auditorium B17, B1 Floor
	醫療器材管理架構及法規 陳維聆博士 / 衛福部食品藥物管理署醫粧組
	The Regulations of Quality Management Systems for Medical Devices in Taiwan 李思鈺科長 / 衛福部食品藥物管理署監管組
	Eco-system to Accelerate Medical Devices Innovation 俞亭君秘書長 / 亞太生醫器材協會
	Q&A
10:20 ~ 10:40	Coffee Break Lobby, 1st Floor
10:40 ~ 12:10	**Workshop #2** **醫療器材由研發驗證查驗登記到上市** 座長：王國禎教授 (國立中興大學) Auditorium B17, B1 Floor
	醫療器材安全性驗證規劃 吳秉泫 / 財團法人塑膠工業技術發展中心
	醫療器材品質管理系統(ISO 13485 與 QMS)及委託製造要求介紹 溫瑾婷 / 財團法人金屬工業研究發展中心
	醫療器材查驗登記與廣告法規要求介紹 鍾宜榛 / 財團法人金屬工業研究發展中心
	Q&A
12:10 ~ 13:50	Lunch Lobby, 1st Floor
	TWEMBA 第五屆第 4 次會員大會 地點：學術交誼廳，7th Floor
13:50 ~ 14:00	**Opening Ceremony** Auditorium B17, B1 Floor

<table>
<tr><td>14:00 ~ 14:40</td><td colspan="4">Keynote Speech #1
Enabling Precision Health with Biomedical Electronics
Prof. Chii-Wann Lin
Department of Biomedical Engineering, National Taiwan University, Taiwan
座長：吳重雨教授 (國立陽明交通大學)
Auditorium B17, B1 Floor</td></tr>
<tr><td>14:40 ~ 15:20</td><td colspan="4">Keynote Speech #2
An intelligent heart rhythm monitoring device for early heart disease detection and prevention: From Algorithm towards Commercialization
Dr. Hau Yuan Wen
School of Biomedical Engineering and Health Sciences, Universiti Teknologi Malaysia, Malaysia.
座長：吳重雨教授 (國立陽明交通大學)
Auditorium B17, B1 Floor</td></tr>
<tr><td>15:20 ~ 15:40</td><td colspan="4">Coffee Break
Lobby, 1st Floor</td></tr>
<tr><td rowspan="5">15:40 ~ 17:10</td><td>Special Talk
醫材由研發到上市：談成功之道
座長：陳適卿教授
(臺北醫學大學)
Auditorium B17, B1 Floor</td><td rowspan="5">[Oral Session 1]
Biomedical Circuit and Instrumentation
座長：洪崇智教授
(國立陽明交通大學)
Room 644, 6th Floor</td><td rowspan="5">[Oral Session 2]
Biosensor
座長：賴千蕙教授
(國立中興大學)
Room 655, 6th Floor</td><td rowspan="5">[SRP/Regular Poster #1]
座長：程德勝教授
(國立中興大學)
Lobby, 1st Floor</td></tr>
<tr><td>經驗分享：Value Creation in New Product Development
郭義松董事長
康定股份有限公司</td></tr>
<tr><td>經驗分享：呼吸照護創新產品 CDMO
尤景良總經理
高昌生醫股份有限公司</td></tr>
<tr><td>經驗分享：醫療獨角獸國際市場與取證查驗登記臨床試驗之路
許富舜總經理
聿信醫療器材科技股份有限公司</td></tr>
<tr><td>論壇</td></tr>
<tr><td>17:45 ~ 19:45</td><td colspan="4">Banquet</td></tr>
</table>

▶ Day 2 — 2022/09/04

<table>
<tr><th>Time</th><th colspan="5">Day 2 –Sep. 04, 2022 (Sunday)</th></tr>
<tr><td>09:00 ~ 09:40</td><td colspan="5">Keynote Speech #3
Miniature Wireless Devices for Closed-loop Health Management
Prof. Jung-Chih Chiao
Fellow of American Institute for Medical and Biological Engineering,
Southern Methodist University, Dallas, TX, USA
座長：柯明道教授 (國立陽明交通大學)
Auditorium B17, B1 Floor</td></tr>
<tr><td>09:40 ~ 10:20</td><td colspan="5">Keynote Speech #4
Engineering Medicine Biology – A Win-Win strategy to face the challenge of Super-Aged Society
Prof. Allen Ming-Lun Hsu
School of Dentistry, National Yang Ming Chiao Tung University, Taiwan
座長：柯明道教授 (國立陽明交通大學)
Auditorium B17, B1 Floor</td></tr>
<tr><td>10:20 ~ 10:40</td><td colspan="5">Coffee Break
Lobby, 1st Floor</td></tr>
<tr><td rowspan="3">10:40 ~ 12:10</td><td>Invited Talk
座長：張健忠教授
(國立中興大學)
Auditorium B17, B1 Floor</td><td rowspan="3">[Oral Session 3]
Biomedical SoC Design and Application
座長：陳柏宏教授
(國立陽明交通大學)
Room 644, 6th Floor</td><td rowspan="3">[Oral Session 4]
Clinical Diagnosis and Therapy
座長：程華強教授
(國立中興大學)
Room 655, 6th Floor</td><td rowspan="3">TWEMBA 最佳碩博士論文發表
座長：廖國智教授
(國立中興大學)
學術交誼廳, 7th Floor</td><td rowspan="3">[SRP/Regular Poster #2]
座長：程德勝教授
(國立中興大學)
Lobby, 1st Floor</td></tr>
<tr><td>Invited Talk #1
Application of patient-specific mobile extended reality (MXR) system
Prof. Ding-Han Wang
School of Dentistry, National Yang Ming Chiao Tung University, Taiwan</td></tr>
<tr><td>Invited Talk #2
A smart farming approaches for Cucumis Melo L. leaf diseases detection
Dr. Nguyen Van HIEU
University of Science</td></tr>
</table>

	(Vietnam National University Ho Chi Minh City), Vietnam				
	Invited Talk #3 **Cardiovascular Disease Detection, Analysis and Evaluation System-On-Chip and Platform** Prof. Shuenn-Yuh Lee Department of Electrical Engineering, National Cheng Kung University, Taiwan				
12:10 ~ 12:25	最佳論文頒獎典禮 Auditorium B17, B1 Floor				

Keynote Speakers 1

Professor Chii-Wann Lin

Department of Biomedical Engineering, National Taiwan University, Taiwan

Title of Keynote Speech:

Enabling Precision Health with Biomedical Electronics

Abstract of Keynote Speech:

Biomedical electronics has been the corner stone of the healthcare with numerous innovative medical devices. Advances in miniaturization, heterogeneous integration, and hard/software co-development have enabled digital transformation of modern healthcare system. Artificial intelligence, big data analytics, cloud computing, low latency communications, and immersive interactions, all these emerging technologies will help to facilitate novel service models in healthcare for better clinical outcomes and in preventive care toward precision health. I will share a few current statuses of research projects from my laboratory, e.g. complex phase space differential (CPSD) for arrythmia detection, automation of surface plasmon resonance (SPR) biosensing system, reinforcement learning (RL) algorithm for closed-loop stimulator.

Keynote Speakers 2

Dr. Hau Yuan Wen

School of Biomedical Engineering and Health Sciences, Universiti Teknologi Malaysia, Malaysia

Title of Keynote Speech:

An intelligent heart rhythm monitoring device for early heart disease detection and prevention: From Algorithm towards Commercialization

Abstract of Keynote Speech:

Cardiovascular diseases (CVDs) are the top silent killer in the world which cause 17.9 million people die every year and contribute to 31% of all global deaths. One approach to improve the heart care quality is by deploying "homecare monitoring" to reduce the risk of fatality, so that the public could acquire electrocardiogram (ECG) signal at anywhere and anytime for frequent monitoring of cardiac conditions. Arrhythmia is one of the important precursors for cardiovascular disease that can be diagnosed via ECG. This presentation discusses a design of an intelligent heart rhythm monitoring device which able to detect and self-classify multiple life-threatening arrhythmias as a strong indicator of various CVDs based on single-lead ECG. The invention is designed based on integration of multi-stage artificial intelligent (AI) machine learning algorithms, Multi-Processor System-on-Chip (MPSoC) architecture, field-programmable-gate-array (FPGA), and Internet-of-Things (IoT) technology. The sharing includes the algorithm exploration based on the consideration of targeted accuracy and computation performance, the design of the intelligent heart monitor using hardware/software co-design technique, as well as the functionalities supported by mobile app for the purpose of real-time heart rhythm monitoring and arrhythmia detection. In addition to that, the challenge and R&D experience of the invention along the journey from algorithm modelling towards commercialization throughout different stages of Technology Readiness Level (TRL) will also be discussed.

Keynote Speakers 3

Professor J.-C. Chiao

Southern Methodist University, Dallas, TX, USA
Fellow of American Institute for Medical and Biological Engineering

Title of Keynote Speech:

Miniature Wireless Devices for Closed-loop Health Management

Abstract of Keynote Speech:

Mobile technologies have changed our lifestyle significantly. Personalized tools such as wearable and implantable devices through wireless communication and power transfer have been utilized in healthcare to provide unique functions and reduce costs. Individuals can be empowered with tailored solutions without limitation in mobility or daily activities. Quantitative documentation of physiological parameters presents more accurate assessment. Direct electrical stimulation on tissues or organs can restore or improve body functions. Continuous monitoring and adaptive administration of therapy to treat symptoms via wireless body networking can adaptively optimize the closed-loop health management.

This presentation discusses the development of wireless micro devices and integrated systems for clinical applications. The systems are based on batteryless, wireless implants with enhancement in miniaturization and functionalization. Miniaturization owing to flexible substrates and the elimination of bulky batteries allows endoscopic or minimally invasive procedures to deploy the implants without painful surgeries. Several diagnosis and therapeutic treatment examples for management of gastric and neural disorders, particularly as closed-loop systems, will be introduced. These examples aim to inspire new system application ideas to address the implementation and cost challenges in healthcare and enable integration of electronics and medicines to improve human welfare and assist better living.

Keynote Speakers 4

Distinguished Professor Allen Ming-Lun Hsu

School of Dentistry, National Yang Ming Chiao Tung University, Taiwan
President of Association for Dental Education, Asia Pacific (ADEAP)
President of Taiwan Association of Dental Education (TADE)

Title of Keynote Speech:

Engineering Medicine Biology – A Win-Win strategy to face the challenge of Super-Aged Society

Abstract of Keynote Speech:

We are facing the challenge of super aged society in Taiwan. To live longer, our aim is to live better. Chewing is one of the basic requirements to live better and longer.

The human mandible is connected to the skull by two temporomandibular joints (TMJ). The articulating surfaces of these joints are incongruent, which provides the mandible with a wide range of movability respected to the skull. In between the articulating surfaces, a cartilaginous articular disc is situated. Generally, impaired of the TMJ function maybe due to different etiologies, such as injury to the jaw, muscle hypertonicity of the head and neck, grinding or clenching the teeth, displacement of the disc and different kind of arthritis. Some surveys have reported that 20-25% of the population exhibit one or more symptoms of temporomandibular disorders (TMD).

Our team has devoted for a long time in the etiology and management of TMD. But the success rate remains not satisfied. To be the bridge from basic research to clinical application, engineering medicine biology may be applied in clinic as dawn in the dark to face the challenge of super aged society for future demand.

Invited Speakers 1

Dr. Ding-Han Wang

College of Dentistry, National Yang Ming Chiao Tung University, Taiwan

Title of Invited Speech:

Application of patient-specific mobile extended reality (MXR) system

Abstract of Invited Speech:

In recent years, the remarkable development of digital dentistry has created a requirement for the clinician to process three-dimensional (3D) images of each patient specifically. These popular 3D images can be teeth models – acquired from intra-oral scanner (IOS), bone models – acquire from CT or MRI scanning, and designed objects such as surgical guides, teeth- or implant-supported prosthesis. After plenty of image processing steps supported by computer-aided design software (CAD), those models can be physically presented following the computer-aided manufacturing (CAM) process such as milling or printing. This manufacturing process is compulsory in many medical and dental applications such as surgical plans, surgical simulations, surgical guides, or final prosthesis. On the other hand, virtual 3D model is an alternative format that can be applied in a variety of applications in dentistry such as dental education, communication between dentists - dental technicians, patient education and consultation, telemedicine, etc. Mobile extended reality (MXR) are burgeoning technology that has the potential to greatly enhance patient care. Visualizing patient-specific 3D imaging data in these enhanced virtual environments may improve surgeons' understanding of anatomy and surgical pathology, thereby allowing for improved surgical planning, superior intra-operative guidance, and ultimately improved patient care. It is important that radiologists are familiar with these technologies, especially since the number of institutions utilizing extended reality is increasing. This topic gives an overview of MXR and describes the workflow required to create anatomical 3D models for use in MXR using smartphone devices.

Invited Speakers 2

Dr. Nguyen Van HIEU

University of Science (Vietnam National University Ho Chi Minh City), Vietnam

Title of Invited Speech:

A smart farming approaches for Cucumis Melo L. leaf diseases detection

Abstract of Invited Speech:

Agriculture industry is moving toward autonomy due to shortage of manpower in recent years and it will soon become much worse as time passes. Advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT) can provide realistic solutions to the challenges are facing. Therefore, this research focuses on applying an AI&oT approach regarding smart farming for the detection of Muskmelon (Cucumis melo L.) leaf diseases. Powdery mildew, has been a long concern to farmers and has always been among the first studied plant pathogen, along with anthracnose and verticillium wilt diseases were included in the scope of this study.

In this work, a system for autonomous collection of leaf photos and environmental parameters was built. The microcontroller reads values from sensors (temperature, air humidity, soil moisture and lux) from the environment of the cantaloupe orchard. NodeMCU ESP8266 receives and transmits data to Output devices and displays it via Blynk App of smart phone. The camera captures images of Cucumis Melo L leaves and stems that will be displayed on a smartphone and automatically saved in Google Drive. The photos will then be uploaded to a cloud storage embedded with an AI model to determine whether the pictured leaf contains any of the included diseases. The result will then be sent to the farm manager/workers and suggest management solutions. The deep learning model has been trained to achieve up to 90% of accuracy while detecting healthy and unhealthy leaves with the included pathogens. The developed system is among the first steps of smart farming in developing countries with many challenges.

Invited Speakers 3

Prof. Shuenn-Yuh Lee

Department of Electrical Engineering, National Cheng Kung University, Taiwan

Title of Invited Speech:

Cardiovascular Disease Detection, Analysis and Evaluation System-On-Chip and Platform

Abstract of Invited Speech:

There are several medical devices are made to monitor their heart to avert the heart diseases. Moreover, body sensor networks (BSNs) based applications or wearable devices have become more acceptable to the people for monitoring the real-time health information, such as the electrocardiogram (ECG) and phonocardiogram (PCG). In order to early detect and diagnose, a low-power wireless system on a chip (SOC) stuck on the body or as a wearable/portable device for heart disease diagnosis is required. In this forum, the bio-signal acquisition SOC and platform with the features of low power consumption, wireless transmission, on-time monitoring and diagnosis with artificial intelligence (AI) will be presented. Moreover, it is efficient to electrically generate neural action potential to control dysfunctional organs. Therefore, the telemetry integrated circuits will be required because they can transmit or receive data to or from according to implantable body sensor network. In this forum, a closed-loop implantable micro-stimulator system on chip (IMSoC), which possesses the sensing of a physiological signal, disease identification, micro-stimulation, and wireless data/command transmission, will be also presented.

Special Talks 1

Y.S. Kuo, Ph.D.

CEO & Founder of Comdek Industrial Corp., Taiwan

Title of Special Talk:

Value Creation in New Product Development

Abstract of Special Talk:

In order to have a successful project of New Product Development, there are several important elements that must be considered during the research and development process. It includes technical innovation, product positioning, and market planning. In this session, I will emphasize project management and market studies are the key components of value creation. I will use an existing case to echo my perspective even under limited resources.

Special Talks 2

尤景良

高昌生醫股份有限公司，臺灣

Title of Special Talk:

呼吸照護創新產品 CDMO

Abstract of Special Talk:

以正壓呼吸器核心技術，衍生睡眠呼吸器(MiniCPAP)/主動式面罩(LungProT)等系列產品，提供呼吸照護三段五級市場的 CDMO 方案。

Special Talks 3

Hsu Fu-Shun M.D.

CEO of Heroic Faith Medical Science Co., Taiwan

Title of Special Talk:

醫療獨角獸國際市場與取證查驗登記臨床試驗之路

Abstract of Special Talk:

聿信醫療是全球領先的醫療級呼吸音辨識技術公司，擁有抗噪科技、連續呼吸音海量資料庫及終端裝置深度學習高速推論的技術，這三項成果已轉化成專門為麻醉鎮靜病患安全而設計的呼吸監測產品。

而產品逐漸走向國際，一個新的醫療科技面對保守的產業，從法規申請、臨床試驗規範、各國審計單位等挑戰之時，仍須兼顧使用者需求與期待，如何積極快速地邁入國際市場的取證之路。

Workshop Speaker 1

陳維聆 WEI-LING CHEN

衛生福利部食品藥物管理署醫療器材及化粧品組, 台灣

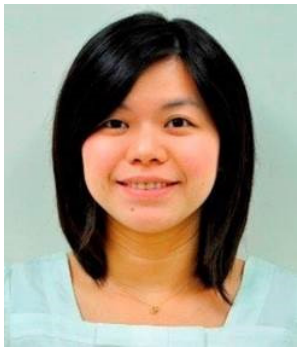
Workshop Topic:

醫療器材管理架構及法規

Abstract of Workshop:

隨著科技日新月異及全球高齡化世代的來臨，對於醫療器材的需求大增，致使醫療器材產業蓬勃發展，為順應國際潮流，配合我國新政策方案，110 年 5 月 1 日開始實施醫療器材管理法，將原本醫療器材管理由過去「藥事法」中抽離，建立醫療器材追溯性，對醫療器材製造與販賣業者規範管理。專法建構更完整之醫療器材全生命週期管理制度，並針對醫療器材之產品特性，規劃相關管理制度，包含醫療器材之維修管理、販賣及供應型態之限制、強化醫療器材品質系統及運銷管理、部分低風險產品之電子化登錄制度、許可證彈性效期之核給、醫療器材臨床試驗制度及醫療器材安全監控、主動通報等，保障消費者安全，精進醫療器材之管理機制。未來我國醫療器材管理制度將持續與國際接軌，透過法規協和降低我國產業面對國際市場之法規障礙，強化保護消費者使用醫療器材之安全並兼顧產業發展，以提升我國醫療器材產業之國際競爭力。

Workshop Speaker 2



SZU-YU LEE

Taiwan Food and Drug Administration

Workshop Topic:

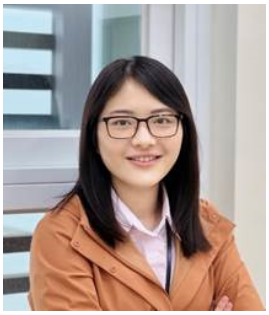
The Regulations of Quality Management Systems for Medical Devices in Taiwan

Abstract of Workshop:

In order to improve the management system of medical devices, the Ministry of Health and Welfare of Taiwan promulgated a new Medical Devices Act in 2021, and further revised the quality management system regulations for domestic and foreign medical devices manufacturers. Before providing medical devices to the market, it is necessary for manufacturers to establish the quality management system in the factory according to the regulations of the quality management system. All activities of the medical device life-cycle, including design and development, production, storage and distribution, installation, or servicing of a medical device and design and development or provision of

associated activities, are controlled by the quality management system to ensure the safety, quality and effectiveness of medical devices for the public.

Workshop Speaker 3



Acacia Yu 俞亭君

Asia Pacific Biomedical Device Association, Taiwan

Workshop Topic:

Eco-system to Accelerate Medical Devices Innovation

Abstract of Workshop:

In recent years, the healthcare industry has experienced tumultuous change. As healthcare costs escalate on an unsustainable trajectory, a high priority is being placed on medical technologies that deliver good outcomes at an affordable cost. The global medical technology landscape is evolving rapidly, with large-scale demand for improved healthcare and a new focus on frugal innovation for developing economies. In this changing environment, we need a reliable innovation process and eco-system to overcome the complex and challenging landscape.

Workshop Speaker 4

吳秉泫

財團法人塑膠工業技術發展中心，台灣

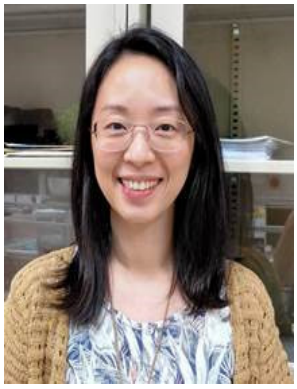
Workshop Topic:

醫療器材安全性驗證規劃

Abstract of Workshop:

目前醫療器材在上市申請之前要進行哪些的風險分析，除了收尋相關參考指引或透過已上市產品的資訊收集，如何從分析當中規劃醫療器材相對應的驗證走向，如何選擇適合的執行方法以及參數條件，驗證結束後的結果確認以及問題分析要怎麼知道是否正確，讓醫療器材的安全性的評估是完整的且符合相關法規要求。

Workshop Speaker 5



溫瑾婷

財團法人金屬工業研究發展中心，臺灣

Workshop Topic:

醫療器材品質管理系統(ISO 13485 與 QMS)及委託製造要求介紹

Abstract of Workshop:

針對甫進入醫療器材領域的設計及製造業者，說明該如何從醫療器材生命週期的角度，去安排及建置公司內部品質管理系統。另說明當產品部份製程涉及委託製造時，應如何符合臺灣法規相關要求。

Workshop Speaker 6

鍾宜榛 Yvonne

財團法人金屬工業研究發展中心，臺灣

Workshop Topic:

醫療器材查驗登記與廣告法規要求介紹

Abstract of Workshop:

你我從出生到死亡都會接觸並使用的醫療器材，主管機關是如何把關？完成查驗登記才可販售，但可以隨意宣傳廣告嗎？產品暢銷的背後，如果未注意相關法規要求，可能在產品上市銷售時誤觸法網。以一貫之，醫療器材的安全性及有效性為主軸，讓我們一起揭開這層神秘的面紗。

Oral Sessions

Saturday 3rd, September 2022

15:40~17:10 Oral Session 1 Room 644, 6th Floor

Biomedical Circuit and Instrumentation

Session Chair: Prof. Chung-Chih Hung

15:40~15:55

#1 A Low-cost Sensoring System for Estimating Motion State from PPG Signals (Paper #: 6333)

Yao-Feng Liang[1] , Pei-Fen Chang[1] , Min-Yi Hsu[1] , Ying-Hsiu Hung[2] , Szu-Ting Wang[2] , and Shin-Chi Lai[3,4,*]

[1] Department of Computer Science and Information Engineering, Nanhua University, Taiwan
[2] Doctor's Program of Smart Industry Technology Research and Design, National Formosa University, No. 64, Wunhua Rd., Huwei Township, Yunlin County 632301, Taiwan
[3] Department of Automation Engineering, National Formosa University, No. 64, Wunhua Rd., Huwei Township, Yunlin County 632301, Taiwan
[4] Smart Machinery and Intelligent Manufacturing Research Center, National Formosa University, No. 64, Wunhua Rd., Huwei Township, Yunlin County 632301, Taiwan

15:55~16:10

#2 A wearable UVC goggle capable of disinfecting coronavirus of nasal-oral area (Paper #: 6395)

Po-Kang Lin[1,3,*], Yueh-Chun Tsai[2] , Meng-Jiun Sui[1,3], and Jorn-Hon Liu[4]

[1] School of Medicine, National Yang Ming Chiao Tung University
[2] A-Neuron Electronic Corp
[3] Department of Ophthalmology, Taipei Veterans General Hospital
[4] Department of Ophthalmology, Cheng Hsin General Hospital

16:10~16:25

#3 The Research and Development of Flexible Drug Delivery System for Smart Contact Lens (Paper #: 6596)

Chien-Wei Lu[1] , Cheng-Wei Tsai [2] and Jin-Chern Chiou[3,]

16:25~16:40

#4 Development of a Real-Virtual Integrated System for Liver Surgery (Paper #: 8225)

Jun-Xuan Zhong, Bing-Feng Shi, Yu-hsi Kuo, Da-Guang Hong, Don-Gey Liu, Ching-Hwa Cheng

Department of Electronic, Feng Chia University, Taichung, Taiwan

16:40~16:55

#5 Digital Controller on Biphasic Stimulator with Gradually Increasing / Decreasing Electrical Stimulation for Parkinson's Disease Application (Paper #: 9176)

Yu-Chun Chen, Chia-Chi Hsieh, and Ming-Dou Ker

Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

16:55~17:10

#6 NAND Flash Based In-Memory Computing for Medical Imaging In-Memory Computing (Paper #: 5240)

Chih-Yen Chang, Ming-Yan Fang

[1] National Cheng Kung University, Taiwan
[2] National Cheng Kung University, Taiwan

15:40~17:10 Oral Session 2 Room 655, 6th Floor

Biosensor

Session Chair: Prof. Chian-Hui Lai

15:40~15:55

#1 Detection of HER2 Breast Cancer Marker in Diluted Serum via an Optimized Extended Gate Field-Effect Transistor (EG-FET) Biosensing System (Paper #: 1690)

Chi-Wei Chen [1], Rui-Ni Liu [2] , Chen-Ning Jiang [2] and Jeng-Tzong Sheu [2,3*]

[1] Taiwan Intelligent Pollutant Sensing Inc.
[2] Institute of Biomedical Engineering, College of Electrical and Computer Engineering, National Yang-Ming ,Chiao Tung University, 300093, Taiwan,
[3] Department of Electrical Engineering, College of Electrical and Computer Engineering, National Yang-Ming

15:55~16:10

#2 Software-Defined Radio (SDR) Enabled Non-Contact Vital Signs (NCVS) Monitoring on Subjects Lying on Backs (Paper #:2267)

Liang-Wei Ouyang[1], Donald Y. C. Lie[2]

[1] Dept. of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX
[2] Dept. of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX

16:10~16:25

#3 A CMOS-MEMS IL-6 Sensing System with Area Efficiency

Improvement Integrated MEMS Capacitive Sensor

(Paper #: 9734)

Tsung-Wen Sun[1] , Chun-Hung Tsai [2] , Yi-Xian Chen[3] , and Tsung-Heng Tsai [4,*]

Department of Electrical Engineering, National Chung Cheng University

16:25~16:40

#4 A Gold Wire Electrode in Impedimetric Immunosensor for label-free SARS-CoV-2 nucleocapsid protein detection (Paper #: 9870)

Sheng-En Wu[1] , Chia-Ming Yang[1,*], Ching-Chou Wu[2,*]

[1] Department of Electronics Engineering, Chang Gung University
[2] Department of Bio-industrial Mechatronics Engineering, National Chung Hsing University

16:40~16:55

#5 An Electrochemical Impedance Spectroscop System-on-Chip with a Printable, Fractal Root Textile Sensor for Perspiration Analysis (Paper #:5211)

WeiCheng, Liu, Yi-Jie Lin, Liang-Jie Lu, Yu-Te Liao

National Yang Ming Chiao Tung University, Taiwan

Sunday 4th, September 2022

10:40~12:10 Oral Session 3 Room 644, 6th Floor

Biomedical SoC Design and Application

Session Chair: Prof. Po-Hung Chen

10:40~10:55

#1 A Low-Power Sensing System of VEGF Concentration with Monolithic Electrodes (Paper #:2650)

Tsung-Wen Sun[1] , Ren-Wei Cheng [2] and Tsung-Heng Tsai [2,*]

Department of Electrical Engineering, National Chung Cheng University

10:55~11:10

#2 The Biomedical Signal Measurement Results of a Buffer Amplifier with Self-Adapted Current (Paper #:5209)

Zu-Jia Lo, Yuan-Chuan Wang, Yun-Jie Huang, Ren-Yong Hung, Yi-Heng Wu, Sheng-Yu Peng

Department of Electrical Engineering, National Taiwan University of Science and Technology, Taiwan

11:10~11:25

#3 Design of CMOS Analog Front-End ECoG Amplifier with +1.2-V Common-mode and ±11-mV Differential-mode Artifact Removal and Electrode-Tissue Impedance Measurement Circuits for Epilepsy Control Applications (Paper #:6483)

Chia-Chien Shih [1] , Chi-Wei Huang, and Chung-Yu Wu

Department of Electronics Engineering and Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu City, Taiwan

11:25~11:40

#4 A Single-ended to Fully-Differential Delta Sigma Incremental Analog-toDigital Converter for Biosensor Interfaces(Paper #:8498)

Hao-Chun Chang [1] , and Chia-Hung Chen[2,*]

[1] National Yang Ming Chiao Tung University
[2] National Yang Ming Chiao Tung University

11:40~11:55

#5 Design of CMOS Analog Front-End Local-Field-Potential Amplifier with Commonmode and Differential-mode Stimulation Artifact Removal and Monopolar ElectrodeTissue Impedance Measurement Circuits for Closed-Loop Deep Brain Stimulation SoC Applications (Paper #:9772)

Chin-Kai Lai[1] , Chi-Wei Huang[1], Yu-Wei Chen[1], Chung-Yu Wu[1]

[1] Department of Electronics Engineering and Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu City, Taiwan

10:40~12:10 Oral Session 4 Room 655, 6th Floor

Clinical Diagnosis and Therapy

Session Chair: Prof. Bill Cheng

10:40~10:55

#1 Systematic Review and Meta-Analysis of Portable Upper-Limb Rehabilitation Robots (Paper #:2781)

Chunkai Hsieh[1,2], Le Wang[2,3], Alice M. Wong[2,4], and Kevin C. Tseng[1, 2,*]

[1] Department of Industrial Design, National Taipei University of Technology, Taipei, Taiwan, ROC
[2] Product Design and Development Laboratory, Taoyuan, Taiwan, ROC
[3] Department of Design, National Taiwan Normal University, Taipei, Taiwan, ROC
[4] Department of Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital at Taoyuan, Taoyuan, Taiwan, ROC

10:55~11:10

#2 Objective Identification of Music Preference through the Proposed Quadrant Chart of Heart Rate Variability for Health Promotion and Music Therapy Applications (Paper#:3104)

Chia-Ying Charles Wu[1] , Xiaoci Yang [2] and Yu-Chen Hung [3,*]

[1] Adjunct Assistant Professor, Department of Music, Fu Jen University
[2] Student in the Master of Music Program, Chinese Culture University
[3] Adjunct Instructor in Music, Taipei Fuhsing Private School

11:10~11:25

#3 Construction of a clinical database to develop artificial intelligence automatic diagnostic/prediction systems for Hypertension. (Paper #: 5456)

Chun-Kai Chen[a] , Chih-Kuo Lee[a] , Benny Wei-Yun Hsu[b] , Yu-Chan Chen[b] , Vincent S. Tseng[b]

[a] Division of Cardiology, Department of Internal Medicine, National Taiwan University Hospital and National Taiwan University College of Medicine, Hsinchu branch.
[b] Department of Computer Science, National Yang Ming Chiao Tung University, Hsinchu

11:25~11:40

#4 Using Image AI Software to Improve and Optimize the Efficiency of ICH's Clinical Process in Emergency Room Operations (Paper #: 8722)

Yen Yu. Chen; Hung-Wei Chang Chien; Tsung-Lung Yang; Wang-Chuan Juang; Chih-Yu Chen; Yu-Chuan (Jack) Li

11:40~11:55

#5 Therapeutic Effect of Adaptive Deep Brain Stimulation in Parkinson's Disease(Paper #: 2033)

Yi-Hui Wu[1], Hsiao-Chun Lin[1] and Ming-Dou Ker [1,*]

[1] Biomedical Electronics Translational Research Center (BETRC), National Yang Ming Chiao Tung University (NYCU), Taiwan

11:55~12:10

#6 Establishment of the Parkinsonian Swine Model for Development of Deep Brain Stimulation (Paper #:1550)

Hsiao-Chun Lin[1] , Yi-Hui Wu[1] and Ming-Dou Ker [1,*]

[1] Biomedical Electronics Translational Research Center (BETRC), National Yang Ming Chiao Tung University (NYCU), Taiwan

Poster Sessions

Session Chair: Prof. Congo Tak Shing Ching

Venue: Lobby, 1st Floor

#1 A Multi-Input Energy Harvesting Interface with MPPT for Environmental Monitoring Applications (Paper #: 0307)

Cong-Sheng Huang[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#2 A Single-Inductor Dual-Output DC-DC Converter with Dual-Mode Control (Paper #: 0344)

Yu-Chi Chen[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#3 Design of CMOS Analog Front-End Electroencephalography (EEG) Amplifier with ±3-V Common-mode and ±30-mV Differential-mode Artifact Signal Removal and Electrode-Tissue Impedance Measurement Circuits for Dementia Disease Applications (Paper #: 0417)

Yi-Cheng Liao, Chung- Chih Hung [1] ,Yi-Cheng Liao

#4 A Fully Synthesizable Digital Low Dropout Regulator (LDO) w ith fast transient response (Paper #: 0792)

Wei-Cheng Wang[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#5 Design of CMOS Analog Front-End Electrocorticography (ECoG) Amplifier with +2-V Common-mode and ±11-mV Differential-mode Artifact Signal Removal (Paper #: 1822)

Sheng-Di Liao and Chung-Chih Hung

#6 Radio Frequency (RF) and Photovoltaic (PV) Dual-Source Energy Harvesting Power Management IC (Paper #: 2208)

Yen-Yun Huang[1] and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#7 eFuse Protection Mechanism Against Biomedical Device Failure (Paper #: 2269)

Hui-Chiao Chen[1] , Ming-Yan Fan[2]

[1] National Cheng Kung University
[2] National Cheng Kung University

#8 A fast transient response power management IC for biomedical applications (Paper #:2766)

Bo-Ray Chen[1] , Ming-Yan Fan[2]

[1] National Cheng Kung University
[2] National Cheng Kung University

#9 晶片級銫原子鐘電子系統架構模型的建立 (Paper #:2793)

佩穎 郭 [1], 銘彥 范 [2]

[1] National Cheng Kung University
[2] National Cheng Kung University

#10 Dual-Output Regulating Rectifier with Automatic Digital Offset Compensation (Paper #: 3587)

Chen-Yu Wen[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#11 Design of CMOS Analog Front-End Electroencephalography (EEG) Chopper-Stabilized Amplifier with Dual Positive Feedback Loops for Impedance Boosting (Paper #: 4660)

Jui-Che Chou[1] , Chung-Chih Hung [2]

#12 Power Factor Correction (PFC) Circuit for EV charger (Paper #: 4771)

Shuang-Quan Cai[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#13 A Pulsed Electrochemistry Readout IC for Single-Transistor-based Biosensor Portable (Paper #:4791)

Cheng-Tse Tsai[1], Kuan-Yu Lin[1], Liu-Hsin Yang[1], Yu-Te Liao[1]

[1] Taiwan National Yang-Ming Chiao-Tung University

#14 A low quiescent power and wide output range power management ic for Biomedical applications

(Paper #: 4859)

Yi-Fu Chen[1] , Ming-Yan Fan[2]

#15 Energy Harvesting Interface for Soil Energy Harvesting with Maximum Power Point Tracking (Paper #: 5370)

Po-Hung Chen[1] , Chia-Wei Kuo[2]

#16 One-time-programmable Electrical Fuse Memory enabling security of biomedical devices (Paper #: 5564)

CHEN-ANCHEN[1] , Philex Fan[2]

[1] National Cheng Kung University
[2] National Cheng Kung University

#17 A Wireless Multimodality System-on-a-chip with Time-based Resolution Scaling Technique for Chronic Wound Monitoring (Paper #: 9233)

Ting-Heng Lu, Yi-Jie Lin, Yu-Chiao Huang, Yu-Te Liao, Shu-Ping Lin

Taiwan National Yang Ming Chiao Tung University
Taiwan National Chung Hsing University

#18 Design of 50-mA Linear Battery Charger for Implantable Neuromodulation Medical Devices (Paper #: 1056)

Yu-Chun Chen, Ching-Tang Wei, and Ming-Dou Ker

Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

#19 Investigation into Memory Behavior on van der Waals Heterostructure for the Development of Neuromorphic Device (Paper #: 2707)

Advaita Ghosh[1] , Yen-Fu Lin[2] and Shu-Ping Lin[1*]

[1] Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taichung 40227, Taiwan
[2] Department of Physics, National Chung Hsing University, Taichung 40227, Taiwan

#20 A Wireless Power System-on-chip For Biomedical Application pulsewidth modulation (PWM) (Paper #: 2732)

Chih-Cheng Huang; Philex Fan

Chih-Cheng Huang, Taiwan National Cheng Kung University

Philex Fan, Taiwan National Cheng Kung University

#21 Detection of Lactate in Human Sweat via Better Surface-Modified ScreenPrinted Carbon Electrodes (Paper #:4591)

Nitish Kumar[1] , Yu-Te Liao[2] and Shu-Ping Lin[1*]

[1] Graduate Institute of Biomedical Engineering, National Chung Hsing University , Taichung 40227, Taiwan
[2] Department of Electrical and Computer Engineering, National
[3] Yang Ming Chiao Tung University, Hsinchu 300093, Taiwan

#22 Single crystal Piezoelectric Composite High Frequency Micro Needle Transducer Development (Paper #:4831)

Yi-Ju Tsai [1, *] , Yi-En Tsai [1] and Huihua Kenny Chiang, Ph.D.[1]

[1] Department of BioMedical Engineering, National Yang Ming Chiao Tung University

#23 6.78-MHz Wireless Power Transfer System with Structure-Reconfigurable Power Amplifier and 0X/1X Regulating Rectifier (Paper #: 5588)

Tzu-Ning Liu[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#24 Design of CMOS Analog Front-End Local-Field-Potential (LFP) Amplifier with Auxiliary Impedance Boosting Loop and with ±1-V Common-mode and±50-mV Asymmetrical Differential-mode Artifact Signal Removal for Parkinson's Disease Control SoC Applications (Paper #: 5596)

Yao-Tsung Tsai[1] , Chung-Chih Hung[2]

#25 Design of the Analog Front-End Circuit for ECG Signal (Paper #: 5697)

Wen-Yu Liu, Chung- Chih Hung

#26 A Wireless Power Transfer System for Implantable Medical Devices (Paper #:6002)

Wen-Po Lo[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#27 Non-contact Detection of Steel Tube Weld Area Based on Photoacoustic Effect (Paper #:6288)

YUEH-HUNG LI[1], TSU-WANG SHEN[2*], YU-CHENG LIU[3]

[1] Department of Automatic Control Engineering, Feng Chia University, Taiwan
[2] Department of Automatic Control Engineering, Feng Chia University, Taiwan
[3] Master's Program of Electroacoustics, Feng Chia University, Taiwan

#28 Phase-sensitive PatchMatch-based Randomized Searching for Motion Estimation in Ultrasound Imaging (Paper #:6468)

Li-Fu Lee, Po-Syun Chen, Geng-Shi Jeng*

國立陽明交通大學電子所, Institute of Electronics, National Yang Ming Chiao Tung University

#29 The Prototype of 915MHz Wireless Power Transfer Stimulator Module. (Paper #:7168)

Chien-Ju Yang[1], Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#30 Design of CMOS Analog Front-End Electrocorticography (ECoG) Amplifier with 1.85V Common-mode Artifact Signal Removal (Paper #:8315)

Ting-Yi Shen, Chung- Chih Hung

#31 A Single-Inductor Triple-Output Buck-Boost Converter with Output Ripple Control for Wearable Devices (Paper #: 9019)

Hui-Long Guo[1], and Po-Hung Chen[1]

[1] National Yang Ming Chiao Tung University

#32 Low-Power Bandgap Reference Design (Paper #:9162)

Yu-Sin Chang1 , Po-Hung Chen1

[1] National Yang Ming Chiao Tung University

#33 High-sensitivity glucose detection tool fabricated on SERS substrates coated with AgNP layer (Paper #:9825)

Hsing-Yu Wu[1,2,3] ,Chen-Wei Kuo[1,2*] , Chung-Hung Hong[4] , H ung-Chun Lin[5] , Jin-Cherng Hsu[5,6]

[1] System Manufacturing Center, National Chung-Shan Institute of Science and Technology, New Taipei City 237209, Taiwan
[2] Department of Electro-Optical Engineering, National TaipeiUniversity of Technology, Taipei 10608, Taiwan
[3] Center for Astronomical Physics and Engineering, National Central University, Taipei 320317, Taiwan
[4] Kidney Research Center, Department of Nephrology, Chang Gung Memorial Hospital, College of Medicine, Chang Gung University, 5 FuShing St., Taoyuan 33333, Taiwan
[5] Department of Physics, Fu Jen Catholic University, Taiwan
[6] Graduate Institute of Applied Science and Engineering, Fu Jen Catholic University, New Taipei City 242062, Taiwan

##34 Sex Identification of Fertilized Eggs by electrical impedance spectroscopy. (Paper #:6633)

Yi-Tai Chen[1], Deng-Yun Jheng[1], Thien Luan Phan[2], Congo Tak Shing Ching[1,2]

1 Department of Electrical Engineering, National Chi Nan University, Taiwan

2 Graduate Institute of Biomedical Engineering, National Chung Hsing University, Taiwan

##35 Development of an electrical impedance device for cell culture viability monitoring. (Paper #:8319)

Yi-Tai Chen[1], Deng-Yun Jheng[1], Thien Luan Phan[2], Congo Tak Shing Ching[1,2]

3 Department of Electrical Engineering, National Chi Nan University, Taiwan

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TWEMBA 碩博士論文得獎名單

Session Chair: Prof. Kuo-Chih Liao

Venue: 學術交誼廳, 7th Floor

時間	報告者	論文題目	畢業學校
10:40~10:55	吳易忠	應用於次世代基因定序之變體識別硬體加速系統設計與實現	臺灣大學
10:55~11:10	徐緯勳	應用於植入式生醫裝置之 6.78- MHz 無線電力與資料傳輸系統	陽明交通大學
11:10~11:25	鄒孟融	應用於植入式生醫裝置之單電感單輸入雙輸出直流-直流降壓轉換器	陽明交通大學
11:25~11:40	趙偉如	不同厚度 PEDOT/Pt/IrO2 複合 膜特性分析和電化學性質研究應用於多巴胺感測	陽明交通大學
11:40~11:55	張晨恩	應用於生醫具比較器前景校正之 12 位元循序漸進式類比數位轉換器設計	陽明交通大學
11:55~12:10	吳秉真	應用於植入式生醫裝置之 6.78- MHz 無線電力傳輸系統	陽明交通大學

2022 Symposium on Engineering, Medicine, and Biology Applications
SEMBA 2022

2022 Sep. 03-04

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