FINAL PROGRAM

THE 5TH ASIA PACIFIC TELE-OPHTHALMOLOGY SOCIETY (APTOS) SYMPOSIUM

20
APTOS
20

APTOS
ASIA PACIFIC TELE-OPHTHALMOLOGY SOCIETY

IAPB

DEC 12, 2020   **ONLINE**

DISCOVER HARMONY

TURNKEY SOLUTION. PEACE OF MIND.

KEY FEATURES AT A GLANCE

VENDOR NEUTRAL CONNECTIVITY
Connect all your devices regardless of their type and brand.

TELEHEALTH PORTAL
Secure portal for 2nd opinion consulting and referrals.

REVIEW STATION
Easy access and analysis of all patient examination data in one single viewer.

BROWSER-BASED
Browser-Based access to all data from any computer at any time.

ARTIFICIAL INTELLIGENCE
Integrations to automatic image analysis tools to support early detection and accurate diagnosis.

INTEGRATIONS
Seamless integration to examination devices, EMR' s and other information systems such as PACS and National Health Records.

REPORTING AND ANALYTICS
Tools for clinical analytics and business intelligence.

Discover Harmony In Your Practice

Topcon Healthcare Solutions APAC
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TOPCON Healthcare
SEEING EYE HEALTH DIFFERENTLY

DISCOVER HARMONY

TURNKEY SOLUTION. PEACE OF MIND.

Increase efficiency

Harmony's integrated workflow enables patient information to flow seamlessly from an EMR directly to the device, through Harmony and back, reducing human errors and enhancing practice efficiency.

Easy Access and Excellent Usability

Easily access and analyse all patient examination data through your browser from anywhere at any time. The intuitive and feature-rich software design facilitates your data analysis and clinical decision making.

Save Time

Save time through integrated Artificial Intelligence tools that provide fast automatic image analysis and second opinion support.

Improve Communication

Facilitate communication, shared care opportunities and enable social distancing through Harmony's telehealth platform.

Learn more

TOPCON Healthcare
SEEING EYE HEALTH DIFFERENTLY

CONTENTS

FOREWORD

From President, Asia Pacific Tele-Ophthalmology Society

Dear Friends & Colleagues,

Welcome to the 5th Asia Pacific Tele-Ophthalmology Society (APTOS) Symposium online!

This year is really challenging for everyone – we are faced with nationwide lockdowns, gathering bans, stay-home orders, mask mandates and travel restrictions that we had not even thought of beforehand. In response, APTOS changed our physical meeting in Seoul, South Korea, to a hybrid one where local speakers from Seoul will gather at Yonsei University and international speakers will present from home. I would like to convey our deepest gratitude towards our co-hosts, the International Agency for the Prevention of Blindness, Yonsei University and Zhongshan Ophthalmic Center, whose support is crucial to making APTOS 2020 online happen. My special thanks to both Robert and Sangchul for engaging top-notch speakers from Korea and around the world to showcase the latest developments in both tele-ophthalmology and artificial intelligence.

The pandemic has drastically changed our way of living. Whether we like it or not, we have to adjust to the new normal and get used to virtual offices and virtual meetings. We are all familiar with the pros and cons of doing things online. With this in mind, virtual clinics enabled by telemedicine and streamlined by artificial intelligence are actually a lot closer than we think.

I hope you will enjoy APTOS 2020 online and join us in the journey towards the 5th Industrial Revolution brought about by AI and many such cutting-edge technologies.
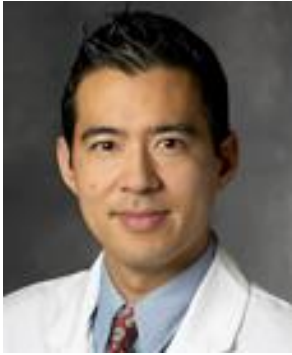
Yours sincerely,

Mingguang HE, MD, PhD
President, Asia Pacific Tele-Ophthalmology Society

FOREWORD
From Scientific Program Committee Chair

Dear Friends and Colleagues,

The 2020 pandemic has changed our world dramatically. In many ways, it has accelerated the adoption of telemedicine and AI. From virtual visits for remote disease management to scalable lower cost automated screening, there are many exciting possibilities to incorporate technology and computer vision / natural language processing algorithms into ophthalmology. The future is bright and exciting; however, there are still immense challenges in creating trust with the technology and in minimizing embedded bias from algorithms trained using real world data. What is the best use case, where should telemedicine and AI be deployed, and who would benefit the most with early adoption of this technology?

This year, our online meeting will enable more people to join in on the discussion of the rapidly growing field of tele-ophthalmology and AI, with transformative advancements in natural language processing (NLP). On behalf of the organizing committee, we warmly welcome you to the 5th Annual Asia Pacific Tele-Ophthalmology Society (APTOS) hosted by South Korea. This year's program has been condensed into one day, covering global health, generative adversarial networks, and NLP text analysis. We are also thrilled to announce our second APTOS big data competition!

Yours sincerely,

Robert CHANG, MD
Scientific Program Chair, APTOS 2020
Vice-President, Asia Pacific Tele-Ophthalmology Society

WELCOME MESSAGE

From Organizing Committee Chair

Hello and welcome everyone!

On behalf of Yonsei University Health System, it is my great pleasure to welcome you to the 5th Asia Pacific Teleophthalmology Society Symposium being held at Yonsei University. I would also like to express my special thanks to our distinguished guests and speakers who are joining online today.

Since its establishment in 1885, Severance Hospital and Yonsei University College of Medicine have been leaders in medicine and medical education. In keeping with this tradition, we increased efforts to advance innovative medical sciences such as artificial intelligence. Thus, it is with great pleasure that we host this renowned symposium at our university. I believe that research using AI and ICT-based approaches holds enormous promises for advancement in the prevention, treatment, and diagnosis of a vast array of diseases. This innovation will touch virtually every realm of medicine. For example, AI research could also dramatically change the way we make diagnoses through various image modalities. Perhaps the most far-reaching potential application of AI is the achievement of universal eye health service that could be delivered to everyone, including very marginalized people in the world. Our efforts will assuredly open new frontiers in the field of eye health, including those that have so far proven to be unreachable.

Finally, I would like to thank all of the organizing committee members for making the 5th APTOS symposium possible. In particular, I would like to express my deepest thanks to the International Agency for the Prevention of Blindness for co-hosting the meeting with us and for advocating AI as a meaningful solution to preventing blindness in the world.

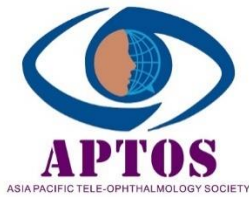Please make yourselves comfortable and enjoy the Symposium.

Yours sincerely,

Sangchul YOON, MD
Organizing Committee Chair, APTOS 2020

■ HOST

Asia-Pacific Tele-Ophthalmology Society

(APTOS)

Founded by a group of outstanding tele-ophthalmology specialists in the Asia-Pacific region in May 2016, the Asia Pacific Tele-Ophthalmology Society (APTOS) aims to bring together clinicians, researchers, technicians, institutes and organizations to form an alliance that promotes communication, exchange and collaboration in tele-ophthalmology. It provides a platform on which eye care or tele-medical professionals can share knowledge and collaborate to deliver efficient, accessible and quality universal eye care throughout the region.

As part of our response to the COVID-19 pandemic, we are hosting webinar series to share with the ophthalmic community how tele-ophthalmology is practiced in different parts of the world, especially in the Asia-Pacific region, on which COVID-19 has wreaked havoc. Check them out at https://asiateleophth.org/webinars/.

Contact us:
APTOS Secretariat
c/o State Key Laboratory (Ophthalmology)
Zhongshan Ophthalmic Center, Sun Yat-Sen University
1/F, No. 7 Jinsui Road
Zhujiang New Town, Tianhe District
Guangzhou, Guangdong, P.R. China
Webiste: www.asiateleophth.org
Email: secretariat@asiateleophth.org

■ CO-HOSTS

International Agency for the Prevention of Blindness

(IAPB)

IAPB was established as a coordinating, umbrella organisation to lead an international effort in mobilising resources for blindness prevention activities. IAPB aspired to link professional bodies, non-governmental organisations (NGOs), educational institutions and interested individuals with national programmes for the prevention of blindness.

IAPB's history began in the mid-1970s when the late Sir John Wilson amongst others, began to draw the international community's attention to the problem of global blindness. These efforts led to the setting up of the International Agency for the Prevention of Blindness (IAPB) on January 1, 1975, with Sir John Wilson as the Founder President. The founding members were the World Blind Union (WBU) and the International Council of Ophthalmology (ICO).

At IAPB, we believe in a world in which no one is needlessly visually impaired, where everyone has access to the best possible standard of eye health; and where those with irreparable vision loss achieve their full potential.

Our key priorities are:
- Global advocacy: Our objective will be to raise the profile of eye care with key international institutions, so it receives the attention and resources needed to achieve universal access to eye health.
- Connecting knowledge: Underpinning our activities is our role in providing authoritative data and information and enabling access to up-to-date knowledge, information and practice.
- Strengthening the network: We will support active partnership building both between members and with other key sectors to tackle the barriers to delivering eye care for all.
- Providing services: We will aim to provide high quality, economically viable services which add value to members.

Contact us:
The International Agency for the Prevention of Blindness (IAPB)
Office 6068, Aldgate Tower
2 Leman St., London, E1 8FA, United Kingdom
Website: www.iapb.org
Email: communications@iapb.org

■ CO-HOSTS

Yonsei University

Yonsei University has persevered through the waves of modern Korean history, leading the country's industrialization, democratization, and informatization eras. Now, Yonsei will pioneer into the Fourth Industrial Revolution to face new challenges and lead innovation in higher education.

Nations around the world are currently at a crossroads where they must make many choices and advances as they face a time of great civilizational transition for humankind. We now face a new civilization where the explosive development of science and technology completely surpasses human biology, and democracy must meet expectations to benefit people's lives and the community. Each individual yearns to enjoy the age of peace while keeping his or her dignity and identity.

Yonsei University aims to ultimately contribute to the peace and development of humankind. On a smaller scale, it will provide a platform for solidarity and innovation where the many youths who come to Yonsei University can pursue dreams and build their future. Yonsei will bring light to the world by fostering in-depth academic research, inspirational education, and the spirit of community service.

Yonsei University takes on a multi-dimensional approach to innovating education by utilizing cutting-edge technology and learning systems. It reforms supporting administration, campus space, and university policies to initiate more innovative knowledge and technology on campus.

Since its establishment, Yonsei University has strived to realize its vision of truth and freedom based on the spirit of Christian love. Missionaries Horace Grant Underwood and Horace Newton Allen were both only 26 years old when they ended their long voyage at sea and first laid foot on Korean soil. Yonsei University is thus forever destined to be a pioneer, sustaining the youthful spirit and vision of its founders.

Contact us:
10 Tongil-ro Jung-gu, Seoul
Website: https://www.yonsei.ac.kr/en_sc/index.jsp#

■ CO-HOSTS

Zhongshan Ophthalmic Center
(ZOC)

Zhongshan Ophthalmic Center (ZOC), as an affiliated hospital to the Sun Yat-sen University, is located in Guangzhou, the third largest city and the southern gateway of China.

In 1965, the Eye Hospital was founded by famous ophthalmic experts Professors Eugene Chan and Winifred Mao. In 1983, Zhongshan Ophthalmic Center was established as the very first modern multifunctional vision center in China. Since then, ZOC has been ranked the nation's best eye hospital for many years.

ZOC manages a total of 750,000 outpatient visits annually and more than 43,000 surgical cases. With its 196 consultant ophthalmologists, ZOC provides a full spectrum of tertiary subspecialty care for common and more complicated eye diseases. ZOC has about 220 postgraduate students and more than 100 clinical fellow trainees.

The State Key Laboratory (SKL) of Ophthalmology of ZOC is the only SKL in the field of Ophthalmology in China. The SKL has recently launched an ambitious campaign to step up its research efforts by expanding its research programs into Developmental Biology, Regenerative Medicine, Molecular Pathology, Neuroscience, Genetics, Gene Therapy, Immunology, Biomaterial and Artificial Vision, Stem cell, and Ocular Pharmacology.

Over the years, ZOC has established strong regional and international connections with major eye centers and research institutes in the USA, the UK, Europe, Australia, India and Singapore. ZOC has housed the Central Secretariat of the Asia-Pacific Academy of Ophthalmology (APAO) since 2015 and the Secretariat of the Asia Pacific Tele-Ophthalmology Society since 2019.

Contact us:
No. 54 Xian Lie South Road, 510080 Guangzhou, Guangdong, China
Website: http://www.gzzoc.com/

■ ORGANIZING COMMITTEE

Congress President
Prof. Mingguang HE

Chair
Dr. Sangchul YOON

Scientific Committee – Chair
Dr. Robert CHANG

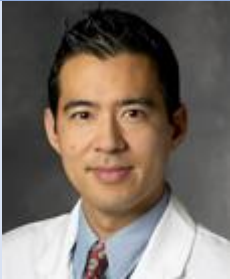**Members - Organizing Team**
Ms. Jiwon CHANG
Ms. Florence CHUNG
Mr. Mungyu KIM
Ms. Jiyeon KEE
Ms. Hanwool YOON

■ SCIENTIFIC PROGRAM COMMITTEE & FACULTY

Chair:	Co-Chair:
Robert CHANG (United States)	Sangchul YOON (South Korea)

Guests of Honor		
Alarcos CIEZA (World Health Organization)	Kyoung Yul SEO (Yonsei University)	Yizhi LIU (Zhongshan Ophthalmic Center)

Plenary Speakers	
Amanda DAVIS (Australia)	Jongmin LEE (South Korea)

COUNCILS AND COMMITTEES

Invited Speakers & Chairs			
Hyun Seok CHOI (South Korea)	Aloknath DE (India)	Fabrizio D'ESPOSITO (Australia)	Phil HOARE (United Kingdom)
Drew KEYS (Papua New Guinea)	Mingyu KIM (South Korea)	Namkuk KIM (South Korea)	Jinhyuk LEE (South Korea)
JoonHo LEE (South Korea)	Young Han LEE (South Korea)	Jayanth RASAMSETTI (United States)	Yi Rang SHIN (South Korea)
Chaehan SO (South Korea)	Danli SHI (China)	Yuan SHI (Singapore)	Sophia WANG (United States)
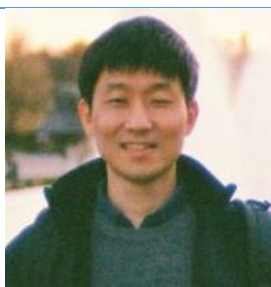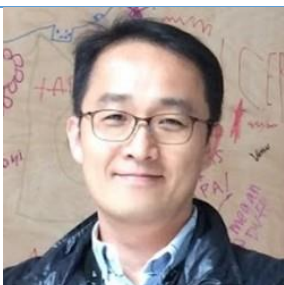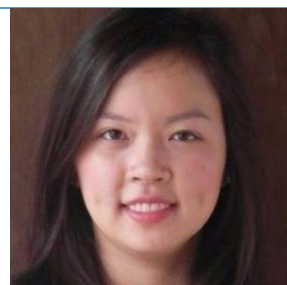
Invited Speakers & Chairs			
So Young SOO (South Korea)	Sangchul YOON (South Korea)		

COUNCILS AND COMMITTEES

■ **THE APTOS COUNCIL**
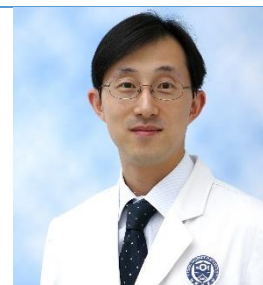
Office Bearers

President
Minguang HE
(Australia)

Secretary-General
Andreas Müller
(Australia)
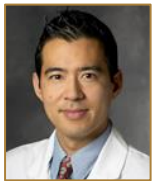
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(US)

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(India)

Assistant Secretary-General
Ryo KAWASAKI
(Japan)

Treasurer
Carol CHEUNG
(Hong Kong)

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Joanthan CROWSTON (Australia)

Wei HE (China)

Hae Min KANG (Korea)

Keunheung PARK (Korea)

Paisan RUAMVI-BOONSUK (Thailand)

Senthil TAMILA-RASEN (India)

Gavin TAN (Singapore)

Raba THAPA (Nepal)

Ching-Yao TSAI (Taiwan)

Angus TURNER (Australia)

Ningli WANG (China)

Tien-Yin WONG (Singapore)

Sangchul YOON (Korea)

PROGRAM OVERVIEW

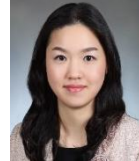| 09:00 - 09:20 (20')		Registration
09:20 - 09:35 (15')	Welcoming Speech	Mingguang HE (APTOS) Kyoung Yul SEO (Yonsei University) Yizhi LIU (Zhongshan Ophthalmic Center)
09:35 - 09:40 (5')	Opening Speech	WHO Perspectives on AI and Telemedicine Alarcos CIEZA (WHO)
		Plenary Talk Chair Mingguang HE (APTOS), Sangchul YOON (Yonsei University)
09:40 - 10:10 (30')		AI and Healthcare: A Perspective of Digital Transformation Jong Min LEE (Samsung Electronics)
10:10 - 10:40 (30')		Digital Technology and Avoidable Blindness Amanda DAVIS (IAPB)
10:40 - 10:50 (10')		Q&A
		AI & Global Health Chair Aloknath DE (Samsung India), Drew KEYS (IAPB)
10:50 - 11:00 (10')		AI and Teleophthalmology as an Innovative Device for the Global Eye Health Phil HOARE (IAPB)
11:00 - 11:15 (15')		AI Solution for DR in LMICs Fabrizio D'ESPOSITO (Fred Hollow Foundation)
11:15 - 11:30 (15')		Deep Learning Approach for Screening Retinal Diseases JoonHo LEE (Samsung SDS)
11:30 - 11:45 (15')		Trash to Treasure: Digital Approach in LMIC with Galaxy Upcycling - Novel Low-Cost Fundus Camera with Upcycled Smartphone Sangchul YOON (Yonsei University)
11:45 - 12:00 (15')		Non-Invasive Eye Care with Sensor-Rich Smart Devices and Wearables Aloknath DE (Samsung India)
12:00 - 12:30 (30')		Luncheon Symposium: Topcon
		Technical Updates in AI: Generative Adversarial Network (GAN) Chair Nam-kuk KIM (Asan Medical Center), Young Han LEE (Yonsei University)
12:30 - 12:45 (15')		An Introduction to Generative Adversarial Networks and an Overview of State-of-the-Art GANs Chaehan SO (Yonsei University)
12:45 - 13:00 (15')		Realistic High-Resolution Retinal Image Synthesized by a Style-Based Generator Architecture of Generative Adversarial Network Mingyu KIM (Asan Medical Center)
13:00 - 13:15 (15')		Deep Generative Adversarial Networks: An Overview in Radiology Yi Rang SHIN (Yonsei University)
13:15 - 13:30 (15')		Ethical and Legal Issues to Consider on GAN So Young YOO (Asan Medical Center)
13:30 - 13:40 (10')		Coffee Break
		Natural Language Processing (NLP) in Medicine Chair Robert CHANG (Stanford University), Hyun Seok CHOI (Yonsei University)
13:40 - 13:55 (15')		The Weight of Words: Natural Language Processing for Ophthalmology Electronic Health Records Sophia WANG (Stanford University)
13:55 - 14:10 (15')		From Open-Domain to Biomedical Question Answering Jinhyuk LEE (Korea University)
14:10 - 14:25 (15')		Amalgamating Natural Language Processing and Computer Vision in Health Sciences Jayanth RASAMSETTI (Sgmoid)
14:25 - 14:40 (15')		Medical Visualizing Question Answering : Multi-Disciplinary Problems of Computer Vision and Natural Language Processing Danli SHI (Zhongshan Ophthalmic Center)
14:40 - 14:55 (15')		AWS in Smart Healthcare System - A Breid Introduction of Amazon Textract and Comprehend Medical Yuan SHI (Amazon)
14:55 - 15:10 (15')		Ophthalmology Fun Quiz Mingguang HE
15:10 - 15:25 (15')		Closing Remarks: APTOS 2021 & 2nd Big Data Competition Mingguang HE / Paisan RUAMVIBOONSUK
15:30 - 16:30 (60')		AI Workshop

■ CONGRESS INFORMATION

Name of Event
The 5th Asia Pacific Tele-Ophthalmology Society Symposium (APTOS 2020)

Venue
Yonsei University & Zoom

Registration
Free

Time
09:20 – 15:30 (GMT+9)

■ AI WORKSHOP

The Asia Pacific Tele-Ophthalmology Society will host its 2nd Big Data Competition at its 6th Annual Symposium in 2021. More information will be disclosed in due course. In order to better equip our contestants for the Competition, we will be conducting an **AI workshop** online immediately after APTOS 2020. Details are given as follows:

Date: December 12, 2020
Time: 15:30 – 16:30 (GMT+9)
Venue: Online via Zoom
Course Instructor: Zongyuan GE @ Monash University

■ SOCIAL PROGRAM

Ophthalmology Fun Quiz

Date: December 12, 2020
Time: 14:55 – 15:10 (GMT+9)
Venue: Online via Zoom
Format: 10 Multiple-Choice Questions

The winner will receive a prize.

■ **CORPORATE PARTNERS**

Diamond Sponsor:

About Topcon Healthcare:
Topcon Healthcare sees eye health differently. Our vision is to empower providers with smart and efficient technologies for enhanced patient care. Keeping pace with the ever-changing landscape of the healthcare industry, we offer the latest integrated solutions, including advanced multimodal imaging, vendor-neutral data management, and ground-breaking remote diagnostic technology.

A globally oriented business, Topcon is focused on developing solutions towards solving societal challenges in the mega-domains of healthcare, agriculture, and infrastructure. In healthcare, these challenges include increasing eye disease, rising medical costs, access to healthcare, and physician shortages. By investing in value-driven innovations, Topcon works to enable people to enjoy good health and high quality of life.

About Topcon Healthcare Solutions Asia Pacific:
Topcon Healthcare Solutions Asia Pacific, a solution arm of Topcon in Asia, is dedicated to providing a world-class software solution for the eye-care industry and beyond in APAC region. Our products enable the collection and visualization of a wide range of imaging data from multiple devices with vendor-neutral connectivity on the cloud service. We also have an integrated service that connects practitioners to an extensive network of reading services to assist in the detection of sight-threatening eye diseases.

Products of Topcon Healthcare Solutions:
- Harmony RS
  Solve your data management and communication challenges, and streamline your practice workflow, with Topcon Harmony Referral Systems (Harmony RS), the next-generation software application. Harmony allows you to connect all of your diagnostic instruments, regardless of manufacturer, in one secure, web-based platform, while providing a variety of features to fit your needs.
1. Minimize Errors & Save Time
   With Harmony's integrated workflow, patient information flows seamlessly from an EMR directly to the device. It also reduces human errors and time spent on entering patient information at the instrument.

2. Unlimited Device Connections & Reduced Costs
    Harmony supports connectivity to a variety of instruments, regardless of device type and brand, allowing you to centrally view relevant data on a single screen and eliminating the need for third party software.

- RDx
    Now more than ever, you need to grow your practice beyond your physical location and deliver quality eye exams from virtually anywhere. Topcon RDx® is an innovative ocular telehealth platform that allows you to connect to your office remotely and conduct comprehensive eye exams, without sacrificing the quality care you provide.

1. Remote Access to Quality Care
    Topcon's CV-5000 automated phoropter integrates with RDx remotely, allowing you to perform refractions from anywhere.
2. Patient Convenience
    Deliver quality eye exams for your patients at a time and place that is convenient and safe for them.
3. Automation and Practice Efficiency
    Utilize the benefits of integrated remote video conferences between you, your staff and patients while connecting and controlling the devices within your practice; in real-time.

Contacts:
Topcon Healthcare Solutions Asia Pacific Pte. Ltd.
1 Jalan Kilang Timor, #09-01 Pacific Tech Centre, Singapore 159303
Email: THSAP@topcon.com

THE 6TH ASIA PACIFIC TELE-OPHTHALMOLOGY SOCIETY CONGRESS

2021

APTOS

BANGKOK, THAILAND   NOVEMBER 5-6, 2021

Host

APTOS
ASIA PACIFIC TELE-OPHTHALMOLOGY SOCIETY

Co-hosts

MINISTRY OF PUBLIC HEALTH

RAJAVITHI HOSPITAL