



Interdisciplinary Distinguished Lectures on Medical Innovations and AI

Date 2024.12.27

Venue R505, Classroom,
Cosmology Bldg., NTU

Aim & Scope

The NCTS Interdisciplinary Distinguished Lecture series aims to introduce important research directions in sciences to the Taiwan mathematical community. And at the same time create a platform that people with different backgrounds can meet, discuss and develop interdisciplinary collaborations. Each Interdisciplinary Distinguished Lecture is designed to be a half day activity with lectures, discussions and a close up. The exact format will take some time to fix, or can vary according to the needs.

We are very happy to have Professor Weichung Wang to give the NCTS Interdisciplinary Distinguished Lecture on Medical Innovations and AI. He will introduce the latest developments in mathematical theories and methods in deep learning for artificial intelligence, and the applications in the biomedical field.

Organizers

Yng-Ing Lee
National Taiwan University

Tai-Chia Lin
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Invited Speaker

Weichung Wang
National Taiwan University

Agenda

09:30-09:50 Registration
09:50-10:50 Lecture (1hr)
10:50-11:20 Q&A/ Informal Discussion
11:20-11:50 Tea Break
11:50-12:10 Conclusion

Title

**Advancing Medicine with AI
from Interdisciplinary Research
to Real-World Impact**

Abstract

Medical technologies such as computed tomography and digital pathology generate vast amounts of data, allowing us to visualize and explore intricate internal structures of the human body in rich digital formats. These datasets offer an unprecedented opportunity to enhance healthcare and improve patient outcomes. However, transforming these high-dimensional, noisy, and heterogeneous datasets into actionable insights remains a significant challenge. This presentation will showcase how artificial intelligence (AI), combined with interdisciplinary expertise across natural sciences (medicine, mathematics, statistics, computation) and social sciences (business, management, regulatory and legal affairs), is transforming healthcare through more intelligent and more precise solutions. We will share our journey in developing PANCREASaver—the world's first AI system for early pancreatic cancer detection—tracing its evolution from fundamental research to a groundbreaking real-world application. This talk will highlight key insights, challenges overcome, potential research directions, and the transformative role of AI in addressing critical medical needs, providing theoretical predictions, practical solutions, and actionable guidance.