國立清華大學
NATIONAL TSING HUA UNIVERSITY

Colloquium

**Department of Engineering and System Science,
Institute of Nuclear Engineering and Science,
National Tsing Hua University**

Date: **Wed., Sep. 30th, 2020**

Time: **15:30-17:20 P.M.**

Venue: **NE69 ESS Building, NTHU**

101, Sec2, Kaung-Fu Rd., Hsinchu 30013, Taiwan

Preoperative Evaluations of Dental Implants and Bone Healing Prediction by Deep Learning Network

In the present study, we proposed a workflow comprised of a series of machine learning algorithms to be an alternative to mechano-regulatory method. This deep learning network (DLN) successfully predicted bone healing history around implants within seconds.

Moreover, by applying Deep Taylor decomposition, our DLN suggested that the upper and lower parts of dental implants have a higher influence on the overall bone healing compared to the middle part, having good agreement with the design strategy in the commercial implants.

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Dr. Tsou received his doctoral degree in Engineering Science from the University of Oxford, UK in 2012. He is currently an associate professor in the Department of Materials Science and Engineering, National Chiao Tung University, Taiwan.

Dr. Tsou's research interests are related to the design of 3D-printed bone implants and the numerical model for the prediction of bone growth, such as the mechano-regulation model. He has also been working on developing the algorithms for the optimisation of the healing chamber shapes in bone implants in order to improve the osseointegration.

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