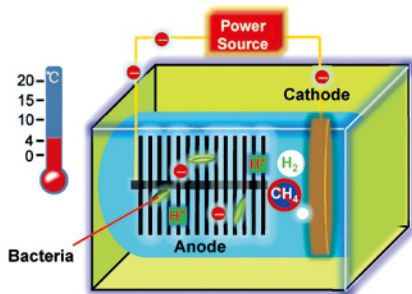


## ENVIRONMENTAL SCIENCE AND ENGINEERING RISING TO GLOBAL CHALLENGES



Hydrogen production by microbial electrochemical system at low temperature (4°C)

Committed to education and research on environmental protection and ecological safety, HIT's School of Environment (SE) has a 100-year history. Thousands of outstanding graduates have passed through its high-level faculties, including four members of the Chinese Academy of Engineering.

Housing eight national research platforms for creating sustainable solutions to the world's challenges, the SE has become an important base for the cultivation of high-level innovative talents and scientific research in ecological environment. The SE is well known in many research specialisms, including wastewater treatment, drinking water safety, waste disposal and recycling, causes and control technologies of air pollution, and environmental functional materials. Their innovative technologies have been used in treating wastewater from the pharmaceutical, printing, and chemical engineering industries.

The SE is also ambitious in emerging research directions, including sponge city theory and technology, bioresource and bioenergy recovery from waste streams, and microbial electrochemical technology. From studying the global migration of atmospheric pollutants, to exploring emergency measures for environmental crises, SE researchers have applied big data and other emerging technologies to safeguard environment and human health.

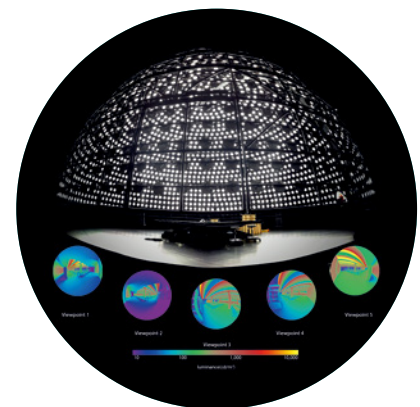
## ARCHITECTURE A MODEL FOR SUSTAINABLE LIVING

With a drive to improve living environments by developing sustainable human settlements, HIT's School of Architecture (SA) is a leading institution in architectural research and education.

As one of China's oldest architecture schools, SA was formed to respond to the construction needs of the Chinese Eastern Railway. Its efforts in cultural heritage protection for towns along the rail line were recognized by an honourable mention at the 2018 UNESCO Asia-Pacific Awards for Cultural Heritage Conservation.

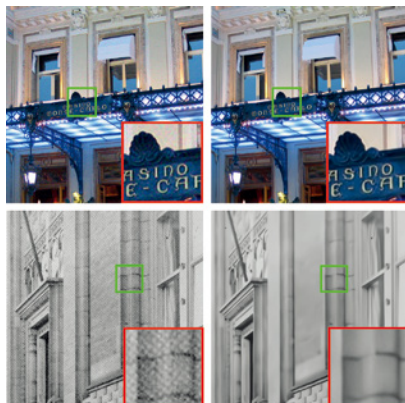
Specializing in architectural design for cold climates, in the 1980s, SA led the construction of China's first energy-saving urban community, a demonstration project for energy efficient heating. It is now leading a design project for the 2022 Winter Olympics.

A trailblazer at putting green architecture and computational design into practice, SA established an architectural computational design system that integrates artificial neural networks, and building information parametric models, to optimize design for green buildings. It also launched a new training programme in intelligent architecture.



Daylight in an artificial sky to inform building design

## COMPUTER SCIENCE A NEW LANGUAGE IN COMPUTATIONAL POTENTIAL



Real Noisy Image

DnCNN Result

Deep image denoising network (DnCNN)

Research at HIT's School of Computer Science and Technology (SCST) ranges from computing theory, artificial intelligence, and software engineering, to cyber security, bioinformatics and natural language processing. Since its founding in 1956, the school's work has contributed to the aerospace industry, national security and economy, and social development.

The inputting of thousands of Chinese characters needed for computers to process language presents a challenge. SCST's sentence-level pinyin input exploits contextual information for intelligent spelling-character conversion, becoming the most popular Chinese input tool. SCST researchers have developed a comprehensive Chinese Language Technology Platform (LTP), providing word segmentation and syntactic analysis for natural language processing. Used by hundreds of corporations and universities, LTP has won many awards.

SCST focuses on computer image enhancement and compression, visual understanding, and multimedia analytics. Some of its image/video compression techniques have become Chinese national standards. SCST's image denoising method, based on convolutional neural networks has gained more than 1,700 citations in the past three years, and has been included in the Matlab R2017b Image Processing Toolbox and Deep Learning Toolbox.