

分钟

THE MINUTES

The Official Newsletter of Peking University



北京大学
PEKING UNIVERSITY

Issue 4

April, 2020

P02

Spotlights

Welcome Back HEROES!

COVID-19 Relief Teams Come Home



P17 | Learning Worldwide!
A Glimpse of Peking University Online Teaching Strategies

Contents

Issue 04 April, 2020

01 → News Express

02 → Spotlights

Welcome Back, Heroes!
COVID-19 Relief Teams Come Home
Peking University speaks at World Economic Forum

Peking University speaks at World Economic Forum

11 → Global

Peking University hosts video conference with Cairo University on online teaching

Fighting COVID-19: Peking University strengthens online communication with global universities

14 → Campus

French master painter Eugene Delacroix's works at Peking University

18 → Media

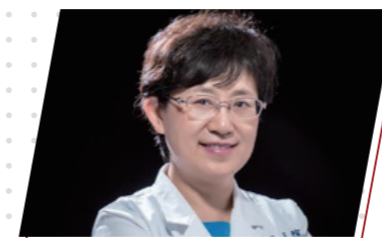
Peking University students set up app for stray cats on campus

20 → People

Li Liuyi: 42,000 Relief Medics' Protector

24 → Research

Zhan Xiaowei's group develops fused-ring electron acceptor with 3D exciton and charge transport



Peking University Qiao Jie elected new member of American Academy of Arts and Sciences

On April 24, the American Academy of Arts and Sciences announced that 276 outstanding individuals had been elected to the Academy in 2020. Qiao Jie is among the recipients. Qiao is a member of the Chinese Academy of Engineering (CAE), executive vice director of the Peking University Health Science Center (PUHSC), and president of the Peking University Third Hospital.

Qiao has been working on reproductive biology and the pathology of infertility since 1990. Her reproductive research focuses on the molecular mechanism of human gametogenesis and embryo development, infertility causes and clinical treatments, the protection and preservation of female fertility as well as assessing the safety of assisted reproductive technology and developing new pre-implantation diagnosis methods.



Peking University Chen Zheng receives 2020 Hiroshi Tsuji Early Career Researcher Award

On April 23, the Combustion Institute and Elsevier, with the assistance of an award committee, have selected two members to receive the annual Hiroshi Tsuji Early Career Researcher Award. Dr. Chen Zheng from the College of Engineering, Peking University is one of the two recipients this year. He is recognized for significant contributions and research in fundamental or applied combustion or combustion-related fields. Dr. Chen will be recognized for receiving the Hiroshi Tsuji Early Career Researcher Award during the 38th International Symposium on Combustion in Adelaide, Australia, to be held in January 2021.



Professor Wang Rong elected Director of IIEP Council of UNESCO

Professor Wang Rong, director of China Institute for Educational Finance Research of Peking University, was elected director of IIEP Council of UNESCO on April 15, with the tenure of four years. Founded in 1963, the International Institute for Educational Planning (IIEP) is one of the six permanent organizations of UNESCO. As the only specialized organization that supports education policy, planning and management tasks, it mainly carries out training in education planning and administration, and conducts cooperative research on education planning, evaluation methods of education reform, education and employment.

Editorial Office
Office of Global Communications
Peking University

Chief Editors
Luo Ling, Zhang Jiang

Edited by
Chen Xueji, Huang Weijian
Amanda Hu, Pu Hairui

Follow Peking University on



English Wechat

Website: english.pku.edu.cn

Contact Us

Email: ogc.media@pku.edu.cn



Phone: 86-10-62766280



Welcome Back, Heroes!

COVID-19 Relief Teams
Come Home

On April 6, Peking University welcomes the return of 405 members of the relief teams from Peking University-affiliated hospitals, who have been stationed in Wuhan for the last 72 days.

 **405**  **72**





① Medical teams from PKU's affiliated hospitals return to Beijing on April 6

On January 26, the very day after the biggest holiday in China, the first group of nurses and doctors from Peking University set out to Wuhan to help control what was then the biggest battleground against the emerging novel coronavirus, COVID-19. As the fight raged on, more groups were organized and dispatched to help deal with the urgent demand for healthcare professionals on the front lines. In total, 454 people from the Peking University First Hospital, PKU People's Hospital, PKU Third Hospital, PKU Sixth Hospital, and PKU International Hospital selflessly toiled against the disease for two long months.

The plane, which carried 557 members of the Chinese national medical teams (including 405 from PKU-affiliated hospitals), arrived in Beijing in the afternoon of the day. They were greeted by a three-fold "water arch" in the airport, for their heroic efforts to the fight against the pandemic and their contributions to saving lives over

the past 72 days in Wuhan. Prior to this, a team of 20 medical workers from Peking University International Hospital aiding Ezhou, Hubei Province returned to Beijing on March 31.

These frontline medics worked tirelessly despite difficulties and threats to their lives. Chinese President Xi Jinping highly appraised the selfless devotion and effort of young medics of PKU's medical teams in particular, as he wrote in a reply to a letter from 34 Party members of the post-90 generations.

Their gruelling efforts, thankfully, have not been in vain. Though we cannot say that we are completely in the clear yet, especially as COVID-19 has since become a global



② President of PKU Third Hospital Qiao Jie

pandemic, the situation in Wuhan and Hubei has at least been brought under control. The temporary hospitals constructed to combat the disease have been taken down, and the brave doctors and nurses from around the country that travelled to Wuhan to aid the fight can finally return home knowing that their colleagues in Wuhan can handle wrapping up this battle on their own.

At Peking University, everyone is thrilled to announce that our relief teams made it back, safe and sound, to Beijing today! Every Peking University member wishes to express the heartfelt appreciation for the work they do, and for their willingness to put their own health at risk to keep people safe. Wish them a good rest with their families. 🍀



Peking University speaks at WORLD ECONOMIC FORUM

On April 8, Professor Hao Ping, president of Peking University, attended the World Economic Forum's Global University Leaders Forum through a video conference where he, on behalf of universities in China, talked about the role and responsibilities universities should take amidst the COVID-19 epidemic. PKU Executive Vice President Zhan Qimin and Vice President Wang Bo were also in attendance.

Representatives of over 40 universities from 18 countries and regions in the world, including University of Oxford, Yale University, National University of Singapore and so forth, attended the forum.

At the beginning of the conference, Suzanne Fortier, principal and vice-chancellor of McGill University and the GULF community Chair, delivered a welcome speech. President of University of Pennsylvania Amy Gutmann and President of The University of Cape Town Mamokgethi Phakeng then shared their thoughts on the management of students and local communities.



北京大学
PEKING UNIVERSITY



⌚ Executive Vice President Zhan Qimin (left), President Hao Ping (central) and Vice President Wang Bo (right)

Tan Eng Chye, president of National University of Singapore, and Subra Suresh, president of Nanyang Technological University, both discussed how to effectively develop national ecosystems. Wei Shyy, president of the Hong Kong University of Science and Technology, offered his prospects for the future.

Hao Ping pointed out that, in the face of this crisis, universities must make it their mission to strengthen research into disease prevention and control, and to promote mutual understanding and aid among people of different countries.

In response to the outbreak of COVID-19 in Wuhan, the presidents of Peking University's three affiliated hospitals led teams totaling more than 400 people to support the former worst-hit city in Central China. They successfully completed their mission two days ago, having preserved Peking University's tradition of serving society and serving people, and making their contribution to epidemic prevention in China.



⌚ University leaders from 18 countries and regions exchange views on COVID-19



⌚ Students of PKU Yenqing Academy located across the globe attend an online lecture

With regards to teaching work, Hao Ping saw that this epidemic has not only brought great challenges to higher education, it is also changing people's educational concepts and methods, and leading to improvements in digital education. This semester, over 2,800 teachers taught 4,437 online courses to over 40,000 students using various platforms. 60 of our international teachers coming from 31 different countries and regions across 5 continents overcame the difficulties posed by differing time zones to teach their classes.

Peking University believes that international cooperation is crucial to fight this epidemic and has been working with institutions around the world to offer mutual support and conduct joint disease prevention work. PKU has reached a cooperation framework with

the Virology Laboratory of Cambridge and has held a number of video conferences with the University of Michigan and the Qatar University to establish a joint mechanism of response to the disease. Teachers and students have translated brochures on fighting COVID-19 into Arabic as an effort to share with people of different languages and cultures.

At the end of his speech, President Hao expressed his concerns about the incidences of racial discrimination and extreme nationalism that have occurred during the epidemic. Faced with this, he argued, there should be solidarity and mutual assistance among countries and universities must defend these common values.

Peking University has long been playing an active part in cooperating with international organizations as a research institution and a

PKU and UCL's joint session on World Economic Forum 2020



PKU shares experience of fighting against COVID-19 with Qatar University



think tank. On January 22, Peking University and University College London held a joint session at the World Economic Forum 2020 in Davos-Klosters, Switzerland, titled "A Roadmap for AI towards

SDGs." This is the first time Peking University has participated in the World Economic Forum as an official forum organizer. This event provided an excellent opportunity to make the voices of Peking University and China heard on the world stage, and helped contribute to Peking University's international development strategy.

The Global University Leaders Forum (GULF), a group of presidents from 29 top world universities, was established in 2006. It has two

29

a group of presidents from 29 top world universities

major roles, acting as a community to address educational, scientific and research agendas, and as an advisory body providing intellectual stewardship to the World Economic Forum. Peking University is a founding member of GULF. ⬇️

On April 21, 11 teachers from the School of Foreign Languages at Peking University, the Faculty of Arts and the Confucius Institute at Cairo University participated in a video conference via ClassIn to exchange their experience in teaching online during the COVID-19 outbreak.

Having expressed his concern about the teachers and students at Cairo University, Professor Fu Zhiming, deputy dean of the School of Foreign Languages at Peking University, detailed the preparatory work done by the School of Foreign Languages

in response to the pandemic, as well as the process of formulating their online teaching plans. He said the School of Foreign Languages has made substantial efforts to ensure the quality of online teaching, although teachers still face challenges in helping students develop basic language skills, giving assignments and feedback, and carrying out assessment.

Professor Lin Fengmin, dean of the Department of Arabic Language & Culture of the School of Foreign Languages, introduced the advantages and disadvantages of teaching Arabic online based on his own experience. Professor Liu said



Peking University hosts video conference with Cairo University on online teaching



that although most students were generally satisfied with online courses, drawbacks like the fatigue resulted from sedentariness, the unstable network connection, and their increased workload cannot be overlooked.

Professor Rehab Mahmoud, head of the Department of Chinese Language and Literature and manager of the Confucius Institute at Cairo University, said that Cairo University has utilized a variety of online-teaching tools and taught with both live and recorded lectures. Given the limitations of the Internet connection and the large student size, students from the Department of Chinese Language and Literature joined recorded lectures on e-learning platform Schoology and participated in regular Q&A sessions through mobile messaging application WhatsApp. The major challenge faced by teachers is that students are less likely to raise questions online. As for the assessment, Rehab said the Ministry of Higher Education of Egypt had decided that this semester students at Egyptian universities would take final examinations online with either a “pass” or a “fail” as a result.

During the video conference, faculty members

online teaching



from both universities also talked about related topics such as the methods of carrying out online tests and tracking students' independent learning conditions, the criteria for evaluating term papers, and the impact of COVID-19 on their daily lives.

Fu and Mahmoud said that both universities would continue to communicate and support mutually in the fields of education and research during the outbreak of COVID-19, and further consolidate their intercollegiate partnership. 📌



Fighting COVID-19:

Peking University strengthens online communication with global universities

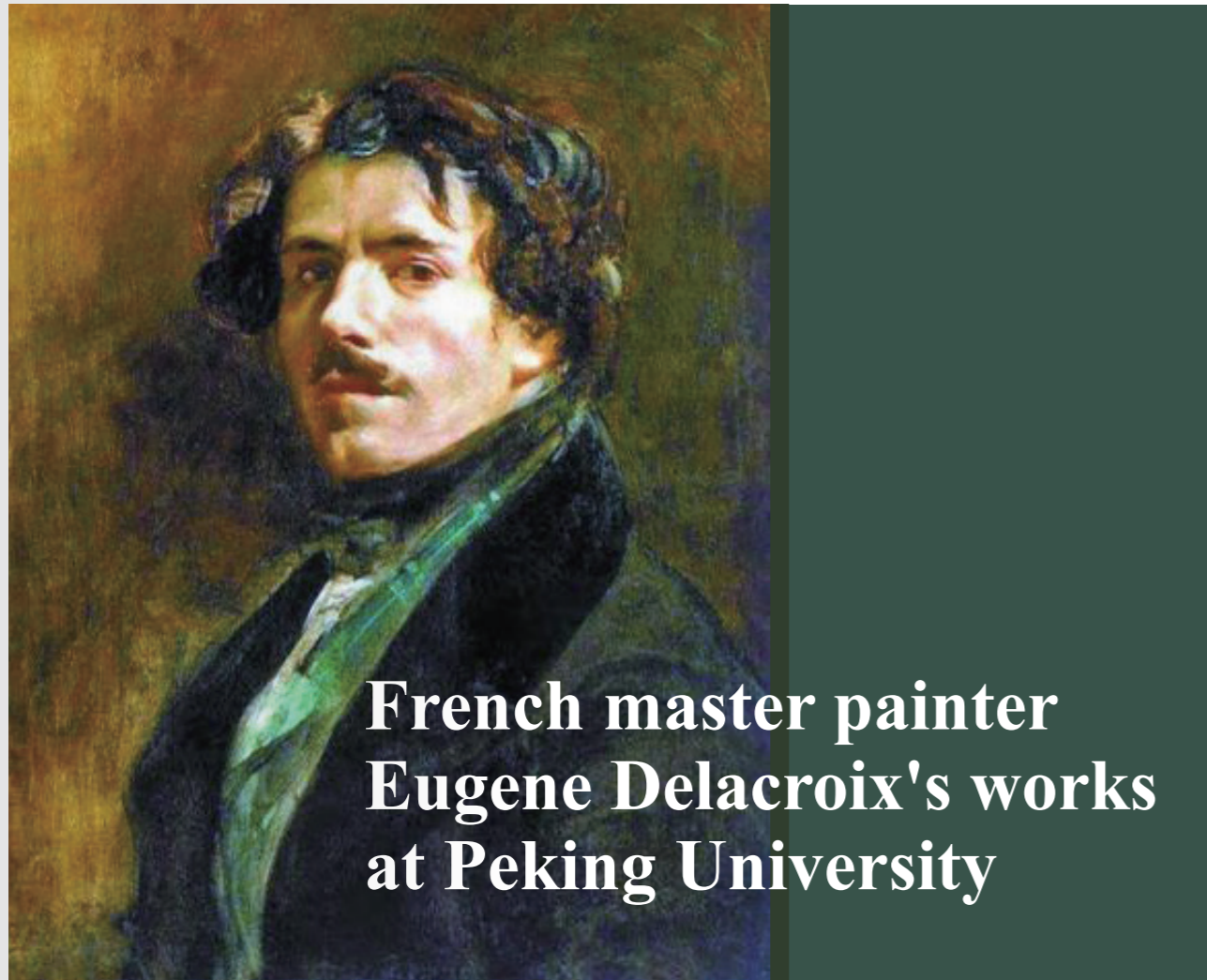
Having gained valuable experience from tackling the COVID-19 pandemic in China, Peking University has been proactive in sharing its experience with universities around the world during April. The university-wide dialogues have been conducted through participation in the Global University Leaders Forum, video conferences with partner universities and through conversation between Chinese and international medical experts.

After the GULF, Peking University continued to share valuable experience and best practices learned from tackling the COVID-19 outbreak. On April 10, Peking University convened a video conference with the University of Tokyo. The two universities have both written to each other expressing concerns and seeking collaboration since the onset of COVID-19, exemplifying the strong ties between Peking University and the University of Tokyo. During the online meeting, both sides shared their experience regarding online education and medical cooperation, and agreed to enhance collaboration in relevant fields under the

framework of the International Alliance of Research Universities (IARU).

Additionally, the Peking University Health Science Center had a fruitful discussion with the Medical School of University of Michigan (U-M) on March 26. As part of the efforts to help U-M Medical School contain the spread of COVID-19, medical experts attended the online meeting from Beijing, Wuhan, and Ann Arbor, Michigan to exchange views on various fields, including the latest development of the virus outbreak, prevention and control measures, case studies and clinical experience. Both sides have pledged to further bilateral cooperation in the fight against COVID-19.

In these trying times, Peking University is doing its utmost to share anti-epidemic experience with universities worldwide via video conferences. Peking University will continue to maintain online communication with higher institutions across the world during this time, and will be committed to sharing its experience to support the global fight against the pandemic. 📌



A collection of the French master painter's prints and drawings donated to Peking University on April 24, the collection is on show and can be viewed through virtual tours.

Eugene Delacroix is best known for his painting, *Liberty Leading the People*, which he completed in 1830. People around the world recognize the monumental work as a cultural symbol of France, and it claimed Delacroix's place among the giants of French painting.

He painted *Liberty Leading the People*

at age 32. He boasted a prolific and multidimensional career until his death in 1863. The master not only produced many paintings but also drawings and prints, which are less well-known to ordinary art audiences, including in China.

But these works are now in the collection of Peking University in Beijing, thanks to donations over several years by Donald Stone, an English professor at the school. They portray Delacroix's multifaceted

creativity, his social concerns, and his passion for literature and animals.

Stone, who has collected art for six decades, has donated around 700 prints, drawings and watercolors by such Western masters as Raphael, Delacroix and Pablo Picasso to Peking University.

Prints by other Western artists, donated by Donald Stone, are on display at the Arthur M. Sackler Museum

of Art and Archaeology at Peking University. The Sackler Museum is temporarily shut down because of COVID-19. But people can take virtual tours of the show with audio guides on the museum's WeChat account. The Sackler



An 18th-century European print on show illustrates Beijing and the Great Wall

Museum exhibition also features Delacroix's animal prints, which exude his respect for nature and admiration of life.

Dong Qiang, a professor of French language and literature of Peking University, says audiences will not only discover Delacroix's considerable attention to British and German literature at



the exhibition but also will see deepening exchanges among different countries in the 19th century.

Minstrel of the 19th Century has been the 13th exhibition of prints that Stone had curated at the Sackler Museum. It also shows dozens of prints by other Western artists that Stone acquired for the museum in 2019. They include works by Goya and Marc Chagall, as well as 18th-century pieces that offer hand-colored city views of China, France, Italy and Turkey.

“
Of my 13 exhibitions for the Sackler Museum, this one is my favorite
Stone says.

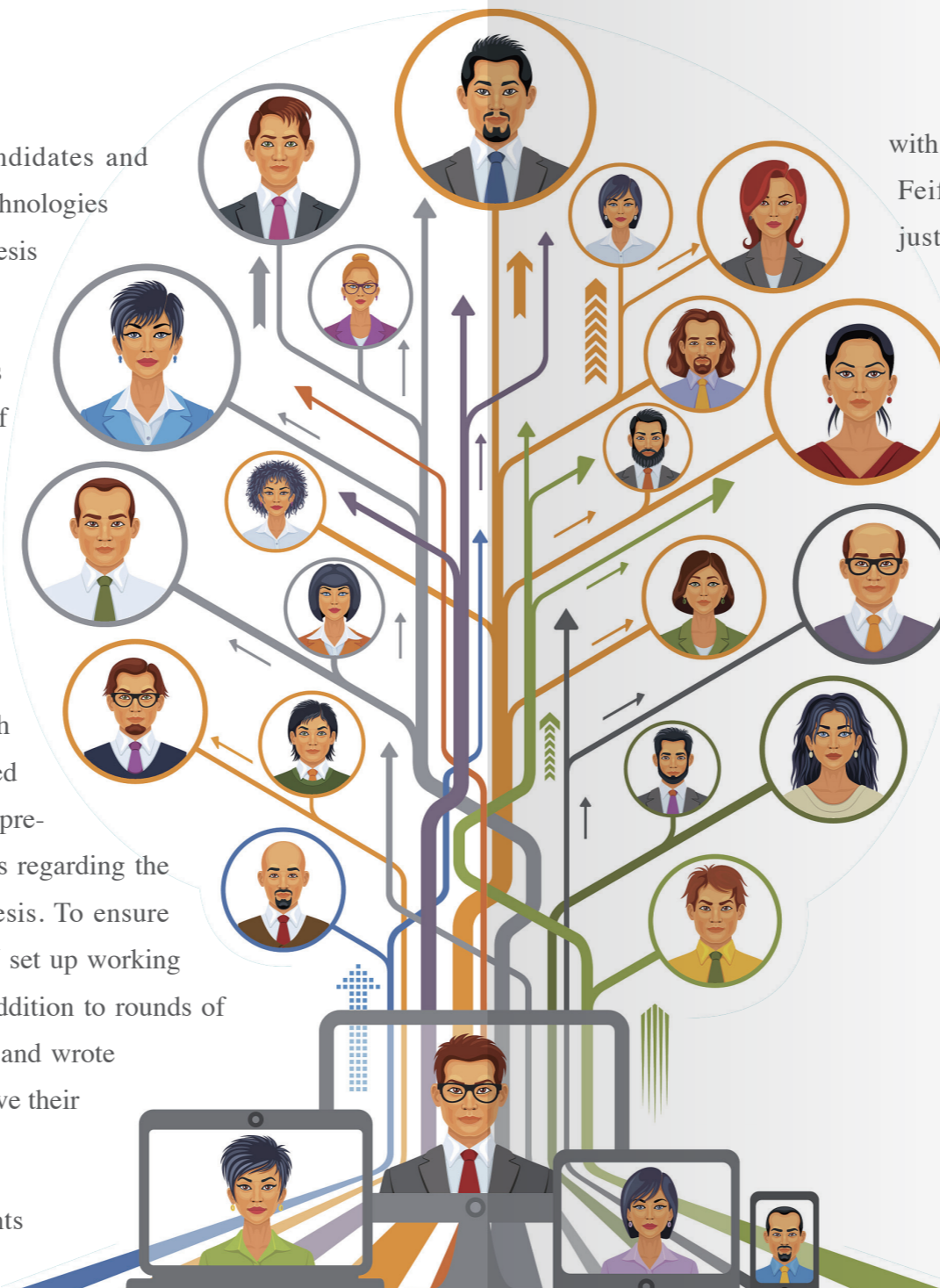
PKU's Ph.D. candidates take new measures to complete thesis pre-defenses during COVID-19 outbreak

During the novel coronavirus outbreak in April, Ph.D. candidates and supervisors of Peking University adopted telecommuting technologies to overcome the difficulties caused by isolation and finished the thesis pre-defenses.

Isolated at home, the students and their supervisors took various measures to solve the challenges of telecommuting. For the lack of research resources, Ph.D. candidates use VPN to access internal data. And they set up remote desktop connections to PKU servers for data-intensive computation, which cannot be done on personal computers. Also, the supervisors frequently held online discussions to help the students with their dissertations.

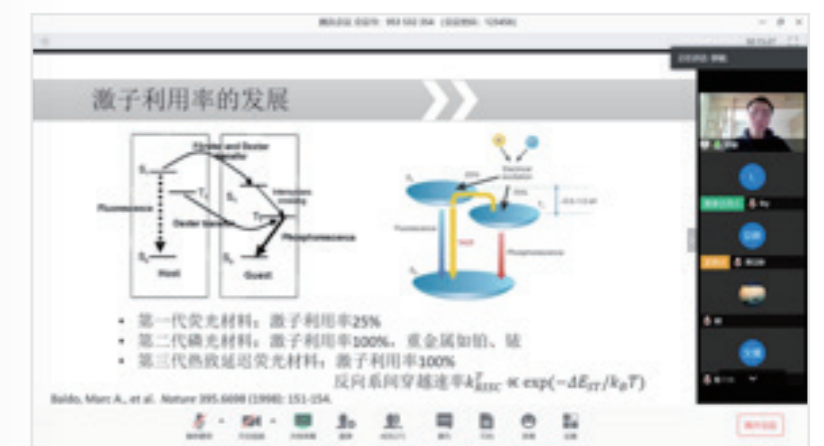
While students adopted news measures to carry out research remotely, faculty members at university and department levels worked together to prepare and ensure a smooth running of virtual thesis pre-defenses. In March, PKU issued a guidance note to all departments regarding the arrangement of this semester's review of doctoral candidates' thesis. To ensure the smooth running of online pre-defenses, several schools of PKU set up working groups to design workflows and emergency plans in advance. In addition to rounds of rehearsals, the Graduate School of Education also offered training and wrote instruction manuals for faculty members and Ph.D. candidates to solve their technical problems.

With all these solutions and support, four colleges and departments

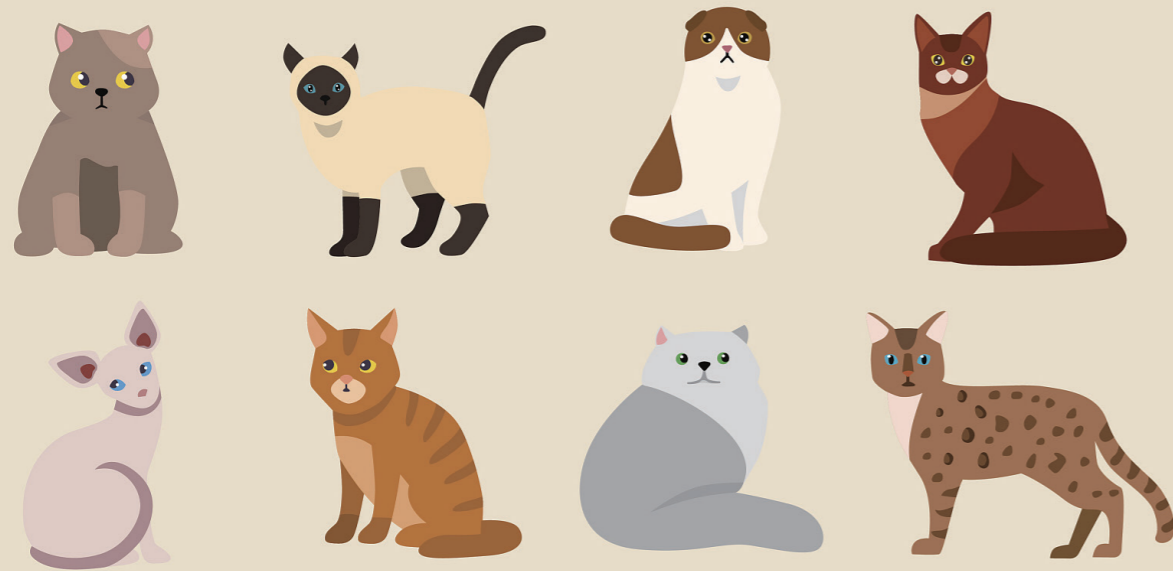


with over 60 Ph.D. candidates have completed virtual pre-defenses. Wang Feifan, one of the Ph.D. candidates of Institution of Modern Optics, just returned home from abroad after her academic exchanges in the U.S. While still adjusting to the novel situation since face-to-face instruction from her supervisor is not possible, she did not know how to start her thesis at home. Knowing her problems, her supervisors discussed with her through the Internet every week and her classmates communicated with her through PKU's public curriculum platform, which helped her determine the overall structure of her thesis.

“(Though completed online,) the thesis pre-defenses strictly follow the academic requirements, standards, and procedure of traditional ones”, said Han Chenyu, a Ph.D. candidate from the School of Economics. 📌

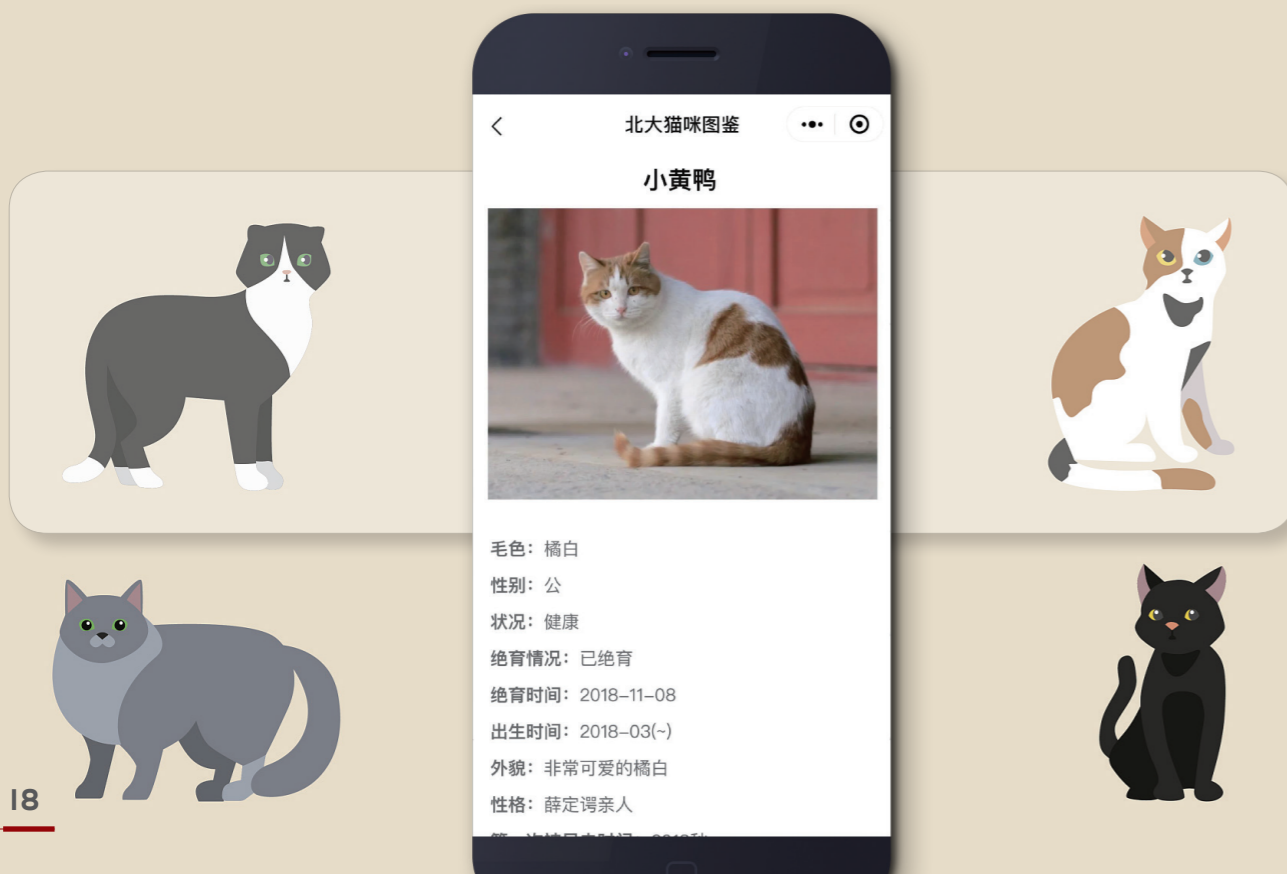


📌 Virtual thesis pre-defenses



Peking University students set up app for stray cats on campus

Cats prowling around one of China's top universities now have their personal profiles uploaded to the country's largest social media network – WeChat. A group of students at Peking University (PKU) created a mini-program, or a sub-application under WeChat's ecosystem, to catalog the stray cats roaming the campus, CGTN reported on April 23.



⊖ A stray cat named Xiaoju at Peking University. /Peking University Cat Care Association's WeChat mini-program

The mini-program, named Yan Yuan Mao, was created by the Peking University Cat Care Association. It recorded each cat's name alongside a photo. For some cats, descriptions of their personalities, favorite foods, real-time records of recent sightings, relationships with other cats on campus, and even sounds were also included.

Students in the association help the stray cats get sterilized and adopted. If they've been adopted, they're marked "graduated." If they haven't been seen for a long time, they're marked "suspension of schooling." So far, there are 69 cats remaining "on campus."

The mini-program unexpectedly went viral on Chinese social media on April 16, and the university's online network even collapsed for a while when too many people tried to log into the program. Many netizens praised the students' intelligence and their love and care for stray cats on campus.

Cats have been a beloved part of campus life at Peking University, with students, faculty members and passersby, offering them food.

Some cats have even become celebrities on campus. One of them went viral on social media for prowling the teaching buildings, and sitting on desks during lectures,

with a particular interest in philosophy and literature.

However, although PKU has offered stray cats a relatively better living environment, it doesn't mean that the existence of stray cats are reasonable. Fan Hanyun, president of the association, told China News, adding that the stray cats have been abandoned by their owners and continue to breed their offspring outside.

He also said that some stray cats' lives on campus are not as good as many people thought. He had seen over a dozen of stray cats died due to various reasons over the past three years, as some of them couldn't adapt to the lives in the wild and even run into cars on the road.

"PKU is not a heaven for stray cats," said a sentence in the mini-program. "The fact that a cat becomes a stray cat is not good at all," said Fan, "As the owner, if you want to be responsible for your pets, the correct approach is to find a better family for pets, rather than abandon them." 📌

Li Liuyi 42,000 Relief Medics' Protector

Li Liuyi is a researcher, Master's supervisor, and director of the Infection Management-Disease Prevention and Control Bureau of the Peking University First Hospital, and member of the National Health Commission COVID-19 Panel.



At 8:30 a.m. on January 21st, the telephone rang in Dr. Li Liuyi's office. It was the National Health Commission, which sent Li into combat mode. The call was about the COVID-19 epidemic, and as soon as Li received her instructions, she rushed to the airport, boarded a 10:10 a.m. plane and arrived in Wuhan at 2:00 p.m..

When Li arrived in Wuhan, she realized the situation was much more critical than she had thought; There was a huge shortage of medical personnel and supplies, and an increasingly unbearable amount of work that needed to be done. As a professional in hospital infection control, it is Li and her team's job to control the spread of disease and minimize the number of healthcare-associated infections. If the fight against this epidemic was like a war without guns, then the medical staff were the troops on the front line, and Dr. Li was their guardian



Li Liuyi's Training Course

angel keeping them safe in the trenches. Thanks to their work, the spread of the epidemic was controlled, and not a single one of the 40,000 medical aid workers were infected.

All members of the medical aid teams were required to be trained by Li's team in how to properly use protective equipment and carry out disinfection and quarantine procedures before they went to the front lines in Wuhan. Li's temporary training sessions were held in conference halls, outdoor plazas, and between buildings. Sometimes, when teams arrived late at night and had to be ready for work the next day, she had to split her time in the evening to train them. She often had to adjust her busy schedule to accommodate teaching five to six times a day, but she never missed a training session.

In addition to training medical personnel, she also helped





with researching and supervising infection prevention and control (IPC) work in cities of Wuhan, Xiaogan, Huanggang, Xiaogan, and Suizhou. She would examine hospital layouts, monitoring equipment and disinfection and isolation measures before putting forward suggestions to help hospitals prevent the infection of medical personnel and patients.

Taking into account the specific needs of Hubei and Wuhan, Dr. Li participated in the development and implementation of infection prevention practices guidelines, including a technical guide on the prevention and control of COVID-19 in medical institutions (Version 1) and the guidelines on the use of common medical protective equipment in controlling COVID-19, issued by the National Health Commission.

Since 2003, the government has formulated a series of laws and regulations related to the prevention and control of infectious diseases, including special regulations for hospitals. Hospitals at all levels have

established departments and teams responsible for prevention work, and these departments cooperate with each other to create a fairly smooth system for preventing and controlling infectious diseases. Specific measures, such as the standardization of patient isolation procedures, the provision of handwashing stations and quick-dry disinfectant, have accelerated the ability of the Chinese medical system to prevent and control infectious diseases.

However, the outbreak of COVID-19 has exposed weaknesses in this system. Though hospital staffs have nearly doubled, Li thinks that a city like Wuhan should have at least one infection prevention and control specialist per 100 patients under normal circumstances, and one IPC specialist per 30 patients during a severe epidemic.

Wuhan Hospital was not up to this standard. Fortunately, medical aid teams from all over the country brought in more than 330 IPC specialists to make up for this shortfall, which

is one of the main reasons why they managed to avoid any infections among the medical aid teams.

Li believes that medical institutions at all levels must take the construction of IPC organizations in hospitals very seriously and expand and improve IPC training for healthcare professionals, because the prevention and control of infections in hospitals is a prerequisite for providing quality medical care. She hopes that medical schools will organize more IPC courses and train more IPC specialists, and that the other major medical departments will also include more compulsory IPC courses into their curriculum.

During the SARS outbreak in 2003, Li was head of the Infection Control Team at the hospital that was designated for the treatment of

SARS in Beijing. Peking University ran three sick wards with a total of 700 medical personnel, and none were infected.

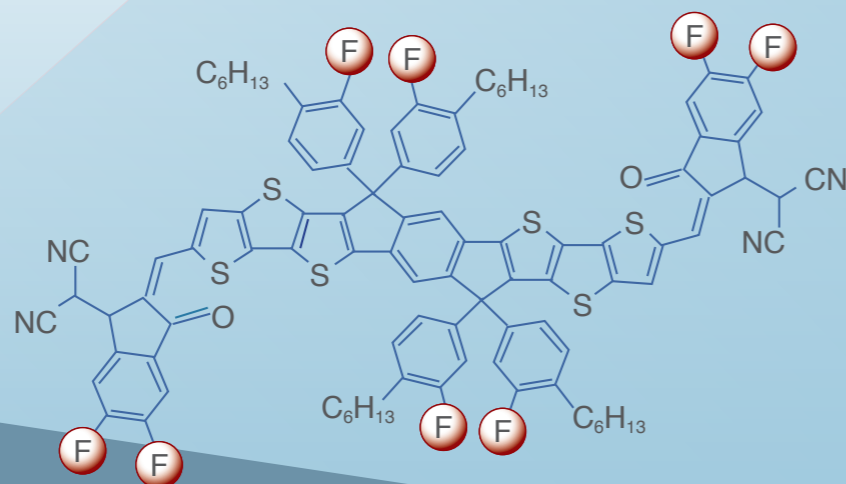
In the winter of 2020, when the novel coronavirus outbreak occurred, Li was once again put in command, and none of 40,000 medical aid workers sent to Wuhan were infected. "This is just what I do. Though you could see this as a war, I'm already a veteran," she said.

Now the winter has passed, and spring has arrived on the Peking University campus, waiting for the hero to return! 📌

“
This is just what I do. Though
you could see this as a war,
I'm already a veteran
”



INIC: X=H, PCE=5.1%
FINIC: X=F, PCE=14.0%



Zhan Xiaowei's group develops fused-ring electron acceptor with 3D exciton and charge transport

During April, Professor Zhan Xiaowei's group from the College of Engineering at Peking University made new progress in non-fullerene acceptors for organic solar cells (OSCs). They developed a new fluorinated fused-ring electron acceptor (FREA) with 3D stacking and exciton and charge transport (Adv. Mater., DOI: 10.1002/adma.202000645).

In 2015, the Zhan group pioneered the concept of FREA and invented the landmark molecule ITIC (Adv. Mater., 2015, 27, 1170–1174, cited 1590 times). In 2017, they firstly introduced fluorinated 2-(3-oxo-2,3-dihydroinden-1-ylidene)-malononitrile, 1FIC and 2FIC, in FREAs (J. Am. Chem. Soc., 2017, 139, 1336–1343, cited 547 times; Adv. Mater., 2017, 29, 1700144, cited 549 times). Now, all the best non-fullerene acceptors

are based on 1FIC/2FIC.

Most recently, they proposed a new design strategy to construct FREAs via fluorination of both end-groups and side-chains. Close 3D stacking network is formed due to 3D non-covalent interactions caused by F atoms on both end-groups and side-chains, which is beneficial to efficient 3D exciton and charge transport. The OSCs based on FINIC with fluorinated end-groups and side-chains show an efficiency of 14.0%, much higher than that of the nonfluorinated INIC-based cells (5.1%).

The research work was supported by the National Nature Science Foundation of China and Basic Research Promotion Project of Peking University. ⬇

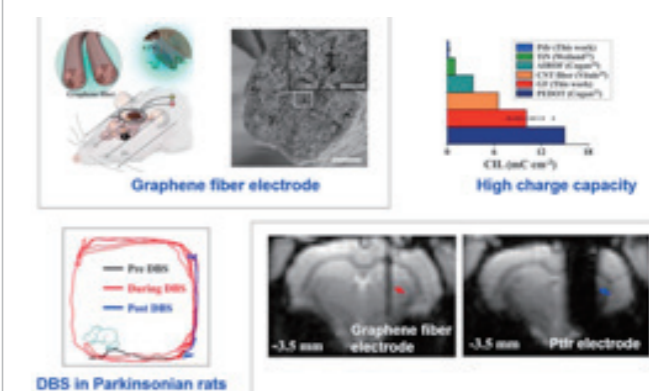
Important progress on the MRI compatible DBS electrodes and simultaneous DBS-fMRI

In April, collaboration between Dr. Duan Xiaojie's group (Department of Biomedical Engineering, College of Engineering, Peking University) and Dr. Liang Zhifeng's group (Institute of Neuroscience, Center for Excellence in Brain Science and Intelligence Technology, CAS) has led to a novel MRI compatible, graphene fiber DBS electrode. Using a Parkinsonian rat model, this novel electrode achieved full activation pattern mapping by simultaneous deep brain stimulation and fMRI, and revealed close relationship between fMRI activation and DBS therapeutic improvement.

This novel graphene fiber DBS electrode has 70 times more charge injection capacity than electrodes made of platinum-iridium (PtIr), which is the material most commonly used in clinical DBS, and exhibits much smaller artifacts in both T2 weighted structural images and T2* weighted functional echo planar images (Figure 1) at a high field of 9.4-Tesla. In addition, this electrode shows high stability under continuous overcurrent pulsing. Using this graphene fiber DBS electrode, subthalamic nucleus (STN) was stimulated as the DBS

target in a Parkinsonian rat model, which significantly improved rats' motor ability and reduced the motor deficit.

The above unique advantage of this novel DBS electrode enabled full activation pattern mapping using simultaneous DBS and fMRI, including the DBS target (STN) itself. The fMRI activation amplitudes of several key brain regions were found to be closely associated with mobile speed improvement, including STN, motor cortex, internal globus pallidus (GPi), external globus pallidus (GPe) and caudate putamen (CPu) (Figure 2). The above result suggests that the therapeutic effect of STN DBS in Parkinson's disease may be achieved by both orthodromic and antidromic effect of electrical stimulation. ⬇



PKU Hu Youfan's group makes great progress in research on wearable textile sensors

Hu Youfan, from School of Electronics Engineering and Computer Science, Peking University, in collaboration with Professor Zheng Zijian from the Hong Kong Polytechnic University, has made great progress in research on new wearable textile pressure sensors, developing TENG-based (based on triboelectric nanogenerators) machine-washable and breathable pressure sensors enabled by textile technologies in April.

Among wearable electronics, textile ones play a distinguishable part, for they can be integrated with traditional textiles in daily use due to

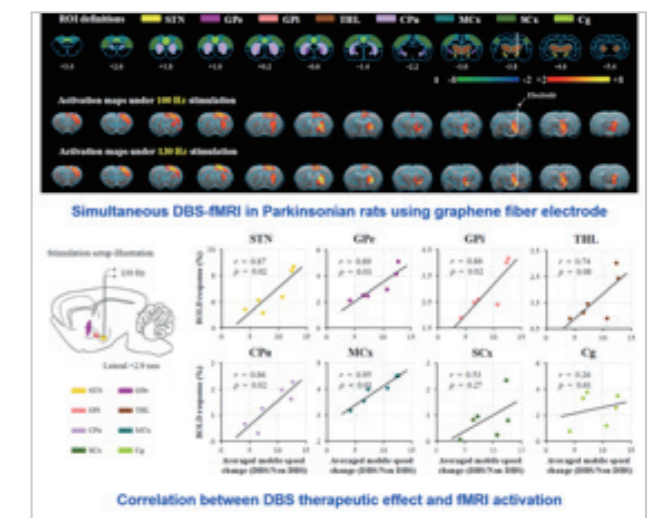
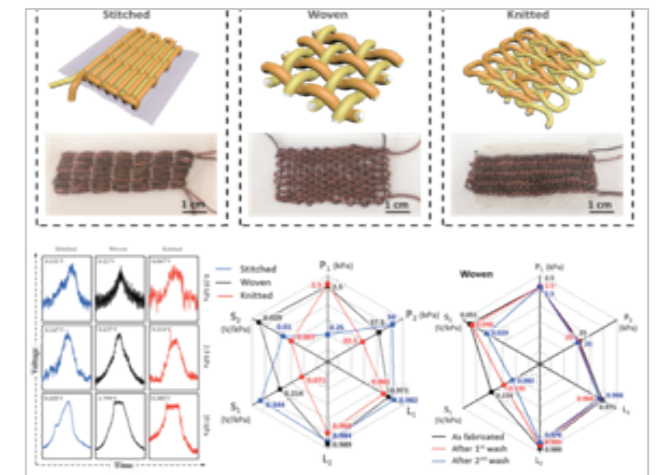
their excellent breathability and flexibility. Recently, TENG-based self-powered sensors are of great interest, since they are easier to design and produce with more reliable output and a wider range of application. However, challenges remain, including the compatibility between devices designing/manufacturing and present textile technology, the influence from textile structure on the key characteristics of the pressure sensor, the reliability as well as washability of textile pressure sensors, and etc.

By using machines to interlace robust Cu-PAN (Cu-coated polyacrylonitrile) yarns and

parylene-Cu-PAN (parylene coated Cu-PAN) yarns via multiple textile industry compatible technologies for the first time, Hu's group, along with Zheng's, have manufactured TENG-based textile pressure sensors with excellent machine-washability and breathability, simultaneously achieving devices with stitched, woven, and knitted structures. They have also investigated TENG-based pressure sensors with different textile structures under as-fabricated conditions and after machine washing, proposing a relation between textile structure and the key characteristics of the sensors. The results have showed the material/device designs, mechanical circumstances, manufacturing methods, and etc. will affect the sensitivity, linearity, saturation trend and washability of the obtained sensors. Besides, they have found that a smart textile glove with stitched pressure sensors can demonstrate grip posture detection in various circumstances.

In March, such achievement, titled "Machine-washable and breathable pressure sensors based on triboelectric nanogenerators enabled textile technologies", has been published in Nano Energy (2020, 70, 104528), a leading journal in nanomaterial studies. Hu Youfan is the corresponding author. This achievement proves that with an appropriate textile structure, TENG-based textile pressure sensors will fulfill the potential for compatibility with textile industry, light weight, portability, washability, and wearability.

This work was published by Nature Communications on April 14, 2020 □DOI: 10.1038/s41467-020-15570-9. Graduate students Zhao Siyuan and Li Gen from Peking University were co-first authors, and Dr. Duan Xiaojie and Dr. Liang Zhifeng were co-corresponding authors. This work was supported by National Natural Science Foundation of China, the National Basic Research Program of China. 📄



Big Data VS Pandemic: PKU Professor Wang Tengjiao and his team develop PESA-GLOBAL



A research team led by Professor Wang Tengjiao and Associate Research Fellow Chen Wei from Peking University School of Electronics Engineering and Computer Science developed the Pneumonia Epidemic Situation Analyst (PESA-Global) system based on multi-source big data integrated learning, which accurately predicted the global epidemic trend multiple times.

It has been nearly two months since Professor Wang's team was assigned the task of employing big data to combat COVID-19. Looking back, Wang said, "Big data is an applied technology. As a scientist, we should not only strive for scientific research and innovation, but also attach importance to engineering practice, so that technology can better serve the society and provide strong

scientific and technological support for epidemic prevention and control."

A Race Against Time: Combat COVID-19 with Smart Technologies

The COVID-19 outbreak has cast a shadow over the Lunar New Year. At that time, PKU asked Professor Wang 's team to develop a system powered by big data to prevent and control the pandemic.

"Because of the sudden outbreak and the high infectivity of the pandemic, the original statistics and analysis methods were problematic, such as being single-sourced, having small coverage, or lacking a comprehensive research and judgment mechanism." In order to carry out efficient analysis and accurate trend prediction,

Professor Wang led the team to focus on key issues. "With concerted efforts, our team has eventually developed a multi-source, big data Pneumonia Epidemic Situation Analyst (PESA)," Professor Wang said.

development of the COVID-19 outbreak on a daily basis. Meanwhile, the accurate prediction of the PESA has been highly recognized.

Carrying Out Research Online

Amid the COVID-19 outbreak, the team adopted the way of "cloud-based" scientific research. They held meetings online to discuss their work every day and code in a collaborative development environment. In this way, the team's efficiency was not affected greatly by the pandemic.

Professor Wang argued that the big data guidance mechanism is significantly important when it comes to predict the development of

"Through the collection of data from multiple sources, the final calculation model will be integrated to form a complete result, which will help authorities to study and judge the domestic epidemic situation, and provide scientific and effective decision-making support for the command and deployment of epidemic prevention and control in China," Professor Wang explained.

In-depth Development

Since March, while COVID-19 has been brought under control in China, the pandemic has spread rapidly around the world. It has become one of the most important tasks for China to actively and resolutely safeguard the hard-won epidemic prevention and control achievements in the previous stage. Using the PESA, Professor Wang and his team predicted and studied the

Big data is an applied technology. As a scientist, we should not only strive for scientific research and innovation, but also attach importance to engineering practice, so that technology can better serve the society and provide strong scientific and technological support for epidemic prevention and control.

the virus outbreak. "In the next step, our team plans to carry out in-depth monitoring and early warning approaches of novel, major infectious diseases based on big data and design a sound and effective big data guidance mechanism to provide support for the epidemic prevention and control in China. ●



北京大學

PEKING UNIVERSITY