

AC21 Newsletter

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AC21 International Forum 2020

December 7 – 9, 2020

Organizer:

Kasetsart University



AC21 International Forum will be held on December 7 – 9, 2020, hosted by Kasetsart University. This year, the event was shifted from physical to online due to the COVID-19 pandemic. Although we face these challenging times, it has brought the AC21 members to work closely together and seek new opportunities to improve the network. Under these circumstances, Kasetsart University has put effort into making this International Forum a special event. We look forward to seeing you at the IF2020.

Host University	Kasetsart University
When	Monday, December 7 (GA meeting), Tuesday-Wednesday, December 8-9 (online forum)
Theme	New Pathways in Higher Education to Meet Challenges of Global Change
Sub-themes	1. curricular changes and new program development 2. the role of technology in education today and into the future 3. integrating liberal arts education with professional education 4. changing perspectives of higher education students

Please visit our web site for more details:

<http://www.ac21.org/activities/international-forum/international-forum-2020>

AC21 Special Project Fund(SPF)2019: Reports from Awardees

Towards Ultra-Reliable Low-Latency Communications for 5G UAV Ecosystems: Collaborative Research Planning among NC State, NU, and AU Progress Report

North Carolina State University (Project Group Leader: Dr. Shih-Chun Lin)

As one of the 5G envisioned services, ultra-reliable and low-latency communications (URLLC) aim to provide secure data transmissions from one end to another with ultra-high reliability and deadline-based low latency requirements, enabling tactile Internet, mission-critical Internet of Things, and vehicle safety applications. Meanwhile, unmanned aerial vehicles (UAVs) for wireless communications has drawn much attention as the mass production of high-performance, low-cost, intelligent UAVs become more practical and feasible, which empowers more functional diversity for 5G networks. This SPF project, led by NC State, focused on initiating collaborative research discussion and external grant planning for introducing a holistic software-defined wireless architecture that ensures URLLC in 5G UAV ecosystems. Dr. Shih-Chun Lin (NC State), Dr. Kentaro Kobayashi (Nagoya University), Dr. Peng Shi (University of Adelaide) and Dr. Kwang-Cheng Chen (University of South Florida) joined their efforts in this project with great accomplishments during 2019. These achievements include several teleconference and seminar discussions, tutorial and workshop organization, external grant writings, student exchanges, etc.

In May 2019, Dr. Chen and Dr. Lin jointly gave a tutorial talk of “Ultra-Low Latency and Machine-Learning Based Mobile Networking (<https://icc2019.ieee-icc.org/program/tutorials#tut-13>)” in IEEE International Conference on Communications (ICC) in Shang-

hai, China. The IEEE ICC is one of the IEEE Communications Society’s two flagship conferences dedicated to driving communications and has more than 2,900 scientific researchers each year joining the program submissions. The three-hour tutorial was a big success and had attracted more than 50 attendances in the discussion of ultra-low latency mobile networking.

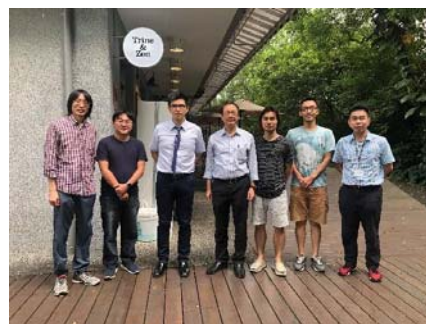


During June-July 2019, based on initial research discussions with AC21 members, Dr. Lin also gave six seminar talks to industrial partners, universities and government agents in Taiwan, including Cytotec Co., Ltd., the Research Center of Information Technology Innovation (Academia Sinica), National Chiao Tung University, LiFT Program (Ministry of Science and Technology), and National Center for High-performance Computing (National Applied Research Laboratories). The presentations greatly improved the international profile of the AC21 consortium and joined institutions.

Moreover, after a few rounds of discussions and thorough preparation, on November 3rd, 2019, Dr.

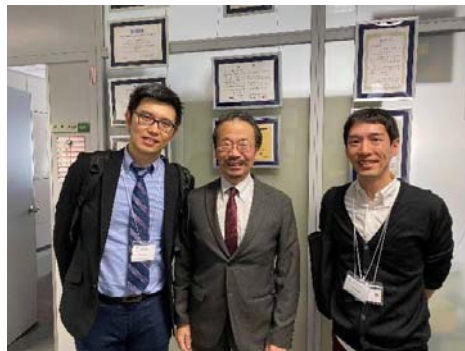
Lin and Dr. Kobayashi successfully held “the First Collaborative Workshop Towards Ultra-Reliable Low-Latency Communications for 5G UAV (<http://www.katayama.nuee.nagoya-u.ac.jp/~kobayashi/ncsu/workshop01.html>)” at Nagoya University in Japan. The workshop is co-located with the International Conference on Materials and Systems for Sustainability (ICMaSS), which was first held in 2005. Dr. Kobayashi served as workshop chair, and there were five workshop papers presented by Dr. Kobayashi’s students and Dr. Lin. This is the first international conference for AC21

members’ joint research outcomes in ultra-reliable low-latency communications. It is our goal to continuously organize the workshop every two years with ICMaSS, which will bring the scope and impact of this SPF project far beyond the grant period.



Through active academic exchanges, the four participating AC 21 members also conducted fruitful collaborative proposal writings. These activities included the Harry C. Kelly Memorial Fund and NC State 2019- 2020 Internationalization Seed Grants (NC State and Nagoya University), 2019 Faculty Research and Professional Development (NC State), NSF

SpecEES (NC State and University of South Florida), and University of Adelaide - NC State Starter Grants for Research Collaboration. Spanning from this SPF project, Dr. Lin and Dr. Kobayshi planned to establish a Ph.D. student visiting program between labs at the two institutions and are expecting the first visit will happen around the first quarter of 2020. This program will certainly enhance the cross-linkage between the lines of research pursued by the participating members and strengthen the AC21 network in the long term.



Advancing Paleontological Research and Specimen Conservation in Southeast Asia

North Carolina State University

(Project Group Leader: Lindsay E. Zanno, Assistant Research Professor)

The Cretaceous Period (145-65 million years ago) was a dynamic time in the co-evolution of life and planet. During this time, Earth's inhabitants endured climate changes that mirror our modern challenges, including a global temperature spike attributable to increased atmospheric CO₂ and dramatic sea-level rise that flooded coastal areas, dividing continents into island refugia. As a result, many species went extinct, redefining the composition of terrestrial ecosystems on a planetary scale. Over a century of paleontological explorations in North America document the impact of these events regionally; however, little is known about how climate change affected plants and animals inhabiting Southeastern Asia during this time. The Khorat Plateau, connecting Thailand, Laos, and Cambodia, contains one of the richest Cretaceous rock records in the region, offering the potential for scientists to make key discoveries that extend our knowledge of these effects across the Northern Hemisphere. However, reconstructing paleoclimate and biodiversity trends requires a multidisciplinary team of experts and mastery of the latest approaches for synthesizing palaeontological, sedimentological, stratigraphical, geochronological &

geochemical data.



With the generous support of an AC21 Special Project Fund award, paleontologists, geologists, and paleoclimatologists from North Carolina State University [NCSU, USA], Stellenbosch University [SU, South Africa], and Kasetsart University [KU, Thailand], collaborated with regional and international partners including Western Colorado University [WCU, USA], the North Carolina Museum of Natural Sciences [NCMNS, USA], Suranaree University of Technology [Thailand] and the Department of Mineral Resources [Thailand] to co-host the first

international symposium directed toward this effort. The three-day meeting was held at the Berkeley Hotel in Bangkok, Thailand, December 17th-19th and included 80 participants. The symposium opened with a full-day of research presentations summarizing the current state of knowledge about southeastern Asian geology and paleontology including keynote presentations focusing on the challenges and opportunities for research in the region. Talks were followed by three workshops that provided hands-on training in the latest methodologies. Workshop I: Reconstructing Ancient Ecosystems: Application of Detrital Zircon Geochronology and Isotope Geochemistry was led by Dr. Ryan Tucker (SU) and Dr. Ethan Hyland (NCSU). The workshop provided hands-on experience in using detrital zircon geochronology as a



provenance tool for tectonic and paleogeographical experience in using detrital zircon geochronology as a provenance tool for tectonic and paleogeographical reconstruction, landscape evolution, and refining the age of terrestrial floras and faunas, as well as the application of stable isotope techniques for creating high-resolution records of climate in deep time, and correlating ecosystem impacts with major climate events. Workshop II: Mitigating deterioration of fossil specimens due to pyrite oxidation explored various methods for conserving fossil specimens at risk for destruction by pyrite decay (a serious and widespread concern with many Thai fossils) and was led by Lisa Herzog (NCMNS). Participants included museum curators and collection managers who performed hands on mitigation with Thai fossils. Finally, Workshop III: Digitizing Dinosaurs: how to use advanced visualization techniques to conserve and study fossil specimens was led by Dr. Ryan Tucker (WCU) and Dr. Lindsay Zanno (NCSU) and explored the use of rapid, high-resolution, 3D imaging technology to capture and model paleontological and geological data as well as different options for data

archiving as a means for museum and universities to increase visibility of their research collections. Each workshop accommodated thirty participants.



Prior to the symposium, members of the host committee conducted two weeks of joint fieldwork in the Cretaceous Sao Khua Formation on the Khorat Plateau with four undergraduate students. Students were trained in collecting fossils materials and gathering sedimentological and stratigraphic data for independent research projects. The host committee also had several successful meetings to outline future research efforts and collect preliminary data for upcoming grants proposals to support future collaborative research.



Multilingualism, Identity, and Education: Global Perspectives on Research, Policy, and Pedagogy

Stellenbosch University (Project Group Leader: Dr Marcellyn Oostendorp)

The workshop, 'Multilingualism, Identity and Education: Global Perspectives on Research, Policy and Pedagogy' provided the opportunity for scholars at Stellenbosch University (SU) in South Africa, North Carolina State University (NCSU) in the USA, University of Strasbourg (US) in France, and University of the

Western Cape (UWC) in South Africa to draw upon international perspectives for language and literacy in education with a multilingual, multicultural and interdisciplinary focus. The workshop was held at Stellenbosch University's Adam Small Theatre Complex from 15 to 17 October. The project brought together academics from Linguistics, Education and Visual Arts, providing

cross-cultural understanding of educational systems and facilitating research and curriculum conversation among educational researchers. In addition the workshop also brought academics of various ranks together (Professors, PhD and Postdoctoral researchers and Master's students) which allowed for thought-provoking discussions.

All three countries involved in the project are multilingual nations, however, power dynamics around language play out in different ways in these three countries. In South Africa, language was (and continue to be) deeply racialized. This is also the case in educational contexts, with many of the scholars from South Africa, talking about ways to unsettle race in their presentations. In the USA, interesting work is being done in highlighting the country's multilingualism and in using visual methods as one way of unsettling perceived notions of monolingualism and monomodality. In France, ways are being sought to value and integrate the linguistic resources of migrant children in the classroom. Despite these differences, the researchers could identify common themes across their respective inter-

ests which they would like to continue working on. These themes include: Qualitative and critical methodologies, Power, and Space as a theoretical concept.

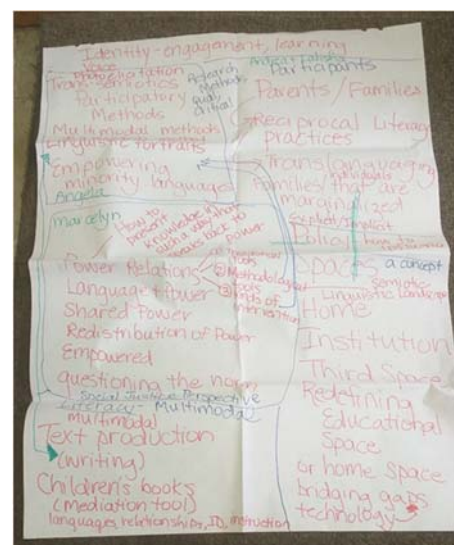


Some delegates in front of the Adam Small Theatre Complex

In addition to the full academic program of the workshop, more informal discussions were also held with Stellenbosch University's International Office about how the institution-

al structures that are in place, allow the researchers to continue to collaborate. The researchers have continued their contact virtually and are seeking opportunities for funding to sustain a more long-term collaboration.

Thank you to AC21 for enabling this exciting and inspiring opportunity.



Themes identified in the workshop



Exploring multimodal artefacts at Gus Gallery



Talking about the way forward

Asia's Infrastructure Boom: An AC21 Workshop Held in Freiburg

University of Freiburg (Project Group Leader: Prof. Dr Jürgen Rüländ)

Connectivity is the new buzzword in the international development discourse. While the connectivity concept is wide and also includes institutional and people-to-people connectivity, its core concern is physical infrastructure, that is, the construction of sea ports, airports, railways, roads, bridges, oil and gas pipelines, power plants and supply lines, dams and special industrial zones. Preceded by the Masterplan of ASEAN Connectivity 2010, it was the

gigantic Chinese Belt and Road Initiative (BRI) which, launched in 2013, triggered an unprecedented infrastructure boom in many parts of Asia. Two years later, in 2015, Japan announced a high-powered Quality Infrastructure Program. Meanwhile, India, the US and the EU, too, initiated infrastructure schemes in Asia. Riding on their coattails, even smaller countries such as South Korea, Thailand and Malaysia became infrastructure providers.

Since then, several years have passed. Time to appraise how connectivity changed Asia. An AC21 workshop organized in July 2019 by the University of Freiburg, Germany, in cooperation with the University of Nagoya and Universitas Gadjah Mada, Yogyakarta, addressed this question. Geographically, it focussed on Southeast Asia, one of the main beneficiaries of the current infrastructure investment drive.

Paper presenters corroborated findings of the earlier connectivity literature: major powers in the region use infrastructure investments as a tool to craft “soft” power, to strengthen their influence in neighbouring countries and to curtail the one of their rivals. Feng Yuan (Free University of Brussels) saw China pursuing economic, institutional and security objectives by the BRI. She portrayed the scheme as a device addressing China’s east-west imbalances; externalizing overproduction in the construction sector; promoting trade in an era of mounting protectionism; internationalizing the Chinese currency, the Yuan; securing energy supplies; circumventing maritime choke points such as the Malacca Straits and revising the rules of the Western-dominated global governance architecture.

Japan, argued Hanns W Maull (German Institute for International and Security Affairs, Berlin), challenged by growing Chinese assertiveness, faces various BRI-caused dilemmas. It responds to them by maintaining its alliance with the United States, cultivating closer relations with other nations concerned about China’s rapid rise, and boosting multilateral policies. At the same time, it deepened economic ties with Beijing. The provision of quality infrastructure is a tool to strengthen

Tokyo’s presence in the region.

India and ASEAN, too, try to cope with the region’s changing power equation. Arndt Michael (University of Freiburg) showed that India’s “Act East” policy also entails an infrastructure dimension, albeit markedly trailing China and Japan in terms of investments. Yet it is part and parcel of a strategy to soft-balance a China that is increasingly extending its influence into New Delhi’s Indian Ocean defence perimeter. In contrast, ASEAN member states were primarily infrastructure recipients. For Muhadi Sugiono (Gadjah Mada University), they used investments of external powers as a “hedging” strategy, that is, avoiding unilateral commitments to the main rivals in the region: the United States and China.

While much has been written about the strategic dynamics fuelling competitive connectivity, the developmental impact of infrastructure projects has been neglected. Unsurprisingly, workshop participants differed in their views. Sanae Ito (University of Nagoya) regarded connectivity projects as a rejuvenation of a non-Western state-driven developmentalism – an Easternization or even Southernization of development cooperation. Meanwhile, others such as Jürgen Rüländ (University of Freiburg) were more sceptical. For them, the way infrastructure projects have been implement-

ed, revives the dark sides of the developmental state and obsolete assumptions of modernization theory. For him, the current infrastructure boom causes unacceptably high social and environmental costs, the brunt of which is borne by the weakest segments of society: the rural and urban poor, fishermen, and indigenous people. Also Christian von Lübke (University for Applied Sciences Konstanz), Andreea Brinza (Romanian Institute for the Study of the Asia-Pacific) and Stefan Rother (University of Freiburg) argued that without concern for social and environmental sustainability, the projects are destined to fail their key objectives. By producing a lost generation, infrastructure neither contributes to the alleviation of poverty nor the creation of soft power for the donors. Indeed, there is ample evidence that connectivity projects of various donors increasingly face popular resistance.

Participants of the workshop therefore agreed that especially with regard to the issue of social and environmental sustainability more in-depth research is needed and that the cooperation started with the Freiburg workshop should be continued and extended.

AC 21 & the Workshop on Smart Civil on Construction and Operation

Northeastern University (Project Group Leader: Prof. Shu-hong Wang)

Academic Consortium 21 & the Workshop on Smart Civil on Construction and Operation (2019) was hosted by Northeastern University from July 8th to 13th, 2019. It contains the following parts: the invited reports, ‘One Belt and One Road’ special report, ‘Smart Civil’ special courses, cultural journey and site visit. The six



The opening ceremony of the workshop

-days workshop on ‘Smart Civil Engineering’ is the main activity providing a good opportunity for the members of AC21 including three Chinese universities (Northeastern University, Nanjing university, Tongji University and Shanghai Jiaotong University) and two international universities (The University of Adelaide, North Carolina State University),

together with the other non-AC21 participants to review the current progress in this field, share recent advances in the application and deeply discuss the critical issues in the field of ‘smart civil engineering’.

The invited academic group was composed of 25 international scholars and 13 scholars of NEU. Among them, the international scholars came from 18 well-known colleges and universities of 9 countries and regions. The student participants were 40 international graduate students, 16 NEU international students, and 52 NEU Chinese graduate students, coming from 19 colleges and universities of 8 countries and regions.

The opening ceremony of the workshop was held on July 9. Mr. Han Zhongjun, the vice director of the Department of International Cooperation & Exchange of Northeastern University, delivered a speech on the opening ceremony. He emphasized: ‘Academic Consortium 21 is an international academic alliance aiming at the process of academic internationalization. The Workshop on Smart Civil on Construction and Operation (2019) received the financial support from AC 21. This will greatly promote the internationalization and double-first class university construction of Northeastern University, and the academic cooperation in the field of civil engineering.’

On the forum, the academic reports were given by the invited professor and researchers in the field of smart civil engineering around the world. The Ph.D. candidates gave the report of their latest research in the section of Special Report of One Belt and One Road. Prof. A.P.S Selvadurai from McGill University gave the special courses of “Smart Civil” to undergraduate students on the frontier of smart civil engineering research.

Through the thoughtful cultural journey, site visiting and the visit to the smart manufacturing companies, the participants gained more about the result of the latest research. Moreover, the workshop established an international



Prof. Peng Yongbo from Tongji University gave the report ‘Random Optimal Control of Engineering Structures’



Site visiting of smart construction

platform, realized the scientific research exchange and cooperation of international high-level talents among AC21 members, and promoted the international development of the civil engineering discipline of Northeastern University.



The report of Mr. Xiong Feng, the Ph.D candidate from University of Adelaide



The report of Mr. Xu Wentao, the Ph.D candidate from Nanjing University



The group photo of all the participants of the workshop

AC21 Special Project Fund (SPF) : Results of the 2020 Round SPF Awarded to Five Projects This Year

The AC21 General Secretariat is delighted to announce that five proposals have been selected for the 2020 round SPF awards after careful evaluation by our STC member schools, from the fourteen outstanding applications submitted this year. Established in 2009, the SPF provides support to projects that involve multiple AC21 members in order to encourage collaboration and partnership.

The results are published on our web site: <http://www.ac21.org/activities/special-project-fund-spf>

The timeline for the SPF 2020 activities has been extended to 2021 due to COVID-19.

Project Titles	Participating Universities
Natural Products for Healthy Ageing: from Molecular Targets to Therapy	<ol style="list-style-type: none"> 1. The University of Strasbourg(France) 2. The University of Adelaide(Australia) 3. Stellenbosch University(South Africa)
Workshop to Develop a Collaborative Research Network and Agenda for Antarctic Tourism	<ol style="list-style-type: none"> 1. North Carolina State University(U.S.A.) 2. University of Canterbury(New Zealand) 3. Tongji University(China) <p>Two Non-AC21 Participants</p>
Pre-clinical development of antimicrobial peptides	<ol style="list-style-type: none"> 1. University of Minnesota(U.S.A.) 2. Université de Strasbourg(France) 3. Stellenbosch University(South Africa) 4. University of Freiburg(Germany)
Joint workshop on bioagricultural technology for natural and environmental disasters	<ol style="list-style-type: none"> 1. Nagoya University(Japan) 2. North Carolina State University(U.S.A.) 3. Kasetsart University(Thailand) <p>One Non-AC21 Participant</p>
Governments and economic development in history: data and approaches to studying colonialism, independence, and development	<ol style="list-style-type: none"> 1. Stellenbosch University(South Africa) 2. University of Adelaide(Australia) 3. University of Minnesota(U.S.A.) 4. University of Strasbourg(France) <p>One Non-AC21 Participant</p>

Upcoming AC21 Activities and Events :

YEAR	DATES	EVENT/ACTIVITY	HOST
2020	November 25	18th AC21 Steering Committee Meeting (STC)	AC21 General Secretariat
	December 7	10th AC21 General Assembly Meeting (GA)	AC21 General Secretariat
	December 8-9	10th AC21 International Forum	Kasetsart University (Thailand)
	December 15	AC21 SPF2021 Application Deadline	AC21 General Secretariat
2021	July 4-10	7th AC21 Student World Forum	Nanjing University (China)

