

# NISTH Newsletter

Issue 5: Dec 2020

## 2020 IN PICTURES

Pictures speak volumes...



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## AI and the Law - *Hannah YeeFen Lim*



*Hannah YeeFen Lim, formally qualified in computer science and law, author of 6 scholarly books, is a NISTH Fellow and a REP Fellow and Associate Professor in the Division of Business Law at NBS, NTU, Singapore. She is an internationally recognised legal expert in Technology & Internet law including the policy and regulation of AI, FinTech and blockchain, Intellectual Property Law, Data Protection and Privacy Law and E-commerce law. Her research has always been interdisciplinary and critically analysed cutting edge technology from the perspectives of law, ethics and society and has shaped legal and regulatory thought and policy. Her research has been cited with approval by senior judiciary, most notably by the High Court of Australia and she has been appointed to serve as an expert by the UN and the WHO.*

At present, the regulation of artificial intelligence ("AI") in many jurisdictions is mostly at the preliminary stages. Many jurisdictions and organisations such as the OECD and European Union have been busy developing ethics principles, guidelines or codes for the use and development of AI technology but few have passed substantive laws.

Most of these ethics principles and guidelines espouse principles that have already been in place in laws of legal systems for many centuries; principles such as fairness, transparency and explainability, and thus, they seem largely redundant. Laws, processes, and procedures have always been required by regulation, legal thought and jurisprudence to be fair and transparent for example. Further, when things go wrong, explanations need to be furnished, especially if the matter reaches litigation and the courts, thus, explainability is also the cornerstone of many legal standards and concepts. Over the centuries, many legal theorists and legal philosophers have also weighed in on these essential principles that form the basis of good legal systems.

In addition to being principles that form the foundations of many legal systems, the ethics guidelines thus far developed, have all been fairly standard and non-contentious as far as any kind of new technology is concerned, and they also form the foundation of personal data protection regimes in many jurisdictions, such as the European Union's General Data Protection Regulation (GDPR) which built upon the 1995 EU Data Protection Directive.

Why then, has there not been more progress on AI laws? One possible explanation is that one cannot regulate what one does not understand, just like one cannot teach what one does not understand. This is the fundamental challenge facing policy-makers, regulators and lawyers around the world today on laws concerning AI. Many lack the technological expertise to have a clear understanding of what AI technology is all about and how AI systems function, hence they have been grappling with how to and whether to regulate AI. There is an obvious lack in interdisciplinary knowledge and expertise, which cannot be completely compensated simply by being in dialogue with technologists because essentially, they are speaking two languages with concepts that are quite different and foreign to one another.

Even worse is when one may learn snippets about AI but wrongly assumes that one has mastered an adequate understanding of AI and begin to build legal arguments, policies and research projects on sand and not solid ground. Sadly, many may still be enamoured by the media and have not yet moved out of science-fiction modes of thinking about AI. It is critical that those with authority understand that AI is built on mathematics, statistics and algorithms, and as such, whilst it may appear that AI is capable of a great deal, AI will inherently still have substantial limitations - limitations which will inherently fall short of the legal standards or requirements already established in many areas of law. In my book *Autonomous Vehicles and the Law: Technology, Algorithms and Ethics* published in 2018, I reverse engineered how autonomous vehicles (AVs) function and I applied existing legal standards in negligence laws to AVs, both in terms of the hardware and the software. I thereby demonstrated that it is possible to apply existing legal tests, standards and laws to AI machines, even if there may be challenges, in which case, policies can step in to remedy the situation.

This brings me to the second possible reason why laws have been slow to materialise, even as substantial work has been ongoing for a good four to five years. Just because the technology is AI does not mean that all the existing laws, regulations and standards are thrown out or somehow do not or cannot apply. A case in point is FinTech, TechFin and RegTech. Since the 2008 financial crisis, incumbent players have been fined billions of dollars for non-compliance with global anti-money-laundering, know your customer and other compliance regulations, so much so that FinTech and RegTech solutions, some utilising AI, have been rapidly developed to meet some of these compliance requirements. In this way, much of the existing laws already apply to AI systems and it remains to be seen where the gaps are and to implement appropriate laws. Some of the FinTech and RegTech solutions do need closer scrutiny but the regulations that govern them already exist, so it is a question of perhaps developing SupTech to aid in the process of ascertaining regulatory compliance.

## **ACCELERATING CREATIVITY AND EXCELLENCE (ACE) 4<sup>th</sup> GRANT CALL**

### **CONGRATULATIONS TO THE WINNERS!**

The 4th ACE Call, which was launched on 19th May and closed on 10th July 2020, was a thematic round seeking proposals in two broad themes: i) Food Science and ii) Responsible Technology.

A total of 15 research proposals (9 in Food Science, 6 in Responsible Technology) were received with COS, COE and COHASS as the top participating colleges. The ACE scheme has successfully achieved its objective in encouraging interdisciplinary collaborations among faculty at NTU schools and colleges to catalyse bold and unconventional research in addressing global research problems.

An ACE review panel comprising NTU Research Directors, Associate Deans (Research) and Associate Chairs (Research) of Colleges and Schools spent considerable time reviewing the proposals carefully and thoroughly. Based on the evaluation and comments of the ACE review panel, the following four (4) proposals were the selected winners of the 4th ACE awards. Each project will receive funding for 2 years.

#### **Proposal 1: A portable scent screening system for food freshness monitoring [Food Science]**

Research Team:

- Chen Xiaodong (MSE) - PI
- Ling Xing Yi (SPMS) - Co-PI
- Zheng Yuanjin (EEE) - Co-PI
- Balazs Zoltan Gulyas (LKCM) - Co-PI

#### **Proposal 2: Towards a green future: improving urban farming under tropical weather conditions, for locally-grown vegetables of high quality [Food Science]**

Research Team:

- Ma Wei (SBS) - PI
- Huang Changjin (MAE) - Co-PI
- Jimmy K. Hsia (MAE) - Co-PI
- Chen Wei Ning, William (SCBE) - Co-PI
- Shirley S. Ho (WKWSCI) - Co-PI

#### **Proposal 3: Unlocking human superpowers through AI-aided health and wellness model to enhance sleep quality [Responsible Technology]**

Research Team:

- Josip Car (LKCM) - PI
- May O. Lwin (WKWSCI) - Co-PI
- Theng Yin Leng (WKWSCI/ARISE) - Co-PI
- Chia Yong Hwa Michael (NIE) - Co-PI
- Vivien Huan (NIE) - Co-PI
- Ho Moon-Ho Ringo (SSS/ARISE) - Co-PI
- Joty Shafiq Rayhan (SCSE) - Co-PI

#### **Proposal 4: Robots as Medical Professionals: Unpacking and Mitigating Public's Resistance towards Rehabilitation Robots [Responsible Technology]**

Research Team:

- Sharon Ng (NBS) - PI
- Domenico Campolo (MAE) - Co-PI
- Gabriel Aguirre Ollinger (ARTICARES Pte Ltd) - Collaborator
- Wee Seng Kwee (Tan Tock Seng Hospital) - Collaborator

We congratulate all the winners and look forward to the teams making impactful achievements from their respective projects.

# NISTH Think Out: Debate Series

## AI & Regulation - 21 October 2020



The inaugural debate on AI & Regulation debated the subject contention: *Artificial Intelligence Systems will need to be stringently regulated by governments in order to ensure their success.* The presenters Assoc Prof Hannah YeeFen Lim and Assoc Prof Bo An, well-versed and experts in their fields, engaged actively in debate.

The debate can be watched on our YouTube channel: <https://youtu.be/Y-QdZ9Mjw8U>

or listened to on our podcasts at: <https://nisth.buzzsprout.com/>

## Responding to Climate Change - 18 November 2020



The NISTH Think Out, second debate, on Responding to Climate Change, discussed the subject contention: *How should we best respond to the problem of a warming planet?* NISTH Societal Impact Fellows, Asst Prof Sonny Rosenthal and Nanyang Asst Prof Perrine Hamel, were very convincing in their arguments. The audience actively encouraged the debate by asking interesting questions.



## ENDING PLASTIC WASTE ACE GRANT CALL CALL FOR PROPOSALS

### NTU-ALLIANCE Accelerating Creativity Excellence (ACE) Thematic Grant Call on Ending Plastic Waste

The ACE (Accelerating Creativity and Excellence) Programme aims to spark bold, creative and unconventional ideas at the intersections of research disciplines. The programme promotes interdisciplinary collaborations among faculty, NTU schools and colleges to catalyse bold and unconventional research.

Acknowledging the need and responsibility to contribute solutions for and knowledge on critical global environmental challenges, NTU through its Global alliance of Industries (GAIN) initiative and its Institute for Science and Technology for Society (NISTH), is very proud to partner with one of the leading non-profit organisations – Alliance to End Plastic Waste (AEPW) to work on solutions for the widespread challenge of eradicating global plastic waste in the environment.

In partnership with AEPW this is a Special Accelerating Creativity and Excellence (ACE) Call for Proposals on Ending Plastic Waste. It is co-funded by Alliance to End Plastic Waste (AEPW) and NTU.

#### Theme: Ending Plastic Waste

Proposals are sought that are audacious, creative and unusual, at the intersections of research disciplines that broadly address the challenge of ending plastic waste. The AEPW is seeking action-oriented ideas that push the boundaries of the following thematic areas that currently drive their strategy implementation and project development:

- Advanced Recovery & Recycling
- Creating Value for Recyclates
- Design for Circularity
- Societal Behaviour

Within these broad themes, solving the challenge of plastic waste can include solutions in biochemistry to breakdown, re-use plastic or upcycle plastic into a valuable resource. It involves advanced technology to manage, retrieve and handle plastic waste. However, ending plastic waste also requires changing people's behaviour and mindsets, needs a deep understanding of the environmental as well as societal impact of plastic waste, political and diplomatic solutions to deal with plastic waste, design of products with circularity in mind, new business models to create value from plastic waste and infrastructure solutions that directly reduce plastic waste or reduce the impact of plastic waste on the environment.

*Applicants can apply to two categories of funding for each of the themes: up to S\$100,000 (category A) and up to S\$200,000 (category B). Successful applicants will be supported by a lump sum grant and given the freedom to conduct research outside the usual domain-constraints.*

**This thematic round is accepting proposals from 23 November 2020 through 15 January 2021, 17:00 hrs.**

A feedback panel will be organised by TRACS (Talent, Recruitment and Career Support), NISTH (NTU Institute of Science and Technology for Humanity) and the Alliance to End Plastic Waste to provide interested PI's and teams of PI's feedback on the main concept of their proposal to maximise chances for success.

#### Objectives of ACE:

- Spark audacious, creative and unusual thinking at the intersections of research disciplines with a preference for those with demonstrable outcomes.
- Support the unfettered exploration of cutting-edge research domains, leading to new theory, methodological approaches or solutions.

#### Eligibility criteria:

- All faculty across NTU are eligible.
- The proposed project must include participating faculty from at least two different colleges and/or research institutes.

#### Application process:

- Applicants should complete the attached application form by **15 January 2021, 17:00 hrs** and submit by e-mail to [ace@ntu.edu.sg](mailto:ace@ntu.edu.sg).

For more details: <http://n4ap0112:6022/Research/Programmes/Pages/Ending-Plastic-Waste---Call.aspx>

## HAPPENINGS: *Get Involved!*



### NISTH Think Out: A Debate Series

21 January 2021; 11AM - 12PM (SGT)

Join us for the next debate on Medical Technology. Hear from our expert speakers, Assoc Prof Josip Car and Prof May O Lwin, as they discuss and deliberate on the subject contention: How is digital technology transforming healthcare?

Read more and Register at:

<https://blogs.ntu.edu.sg/nisth/2020/12/14/nisth-think-out-medical-technology/>

### NISTH Podcasts

The NISTH Podcasts was launched in October, following the start of the debate series. It provided an avenue for NISTH to reach a wider international audience. They were well received by all, especially; those who had hoped to join the debate but were unable to. Our podcasts are now listed on Spotify and will soon be on the Apple and Google playlists too. We hope to be able to provide more interesting talks and recordings from our NISTH Societal Impact Fellows on their research. We envision to be able to showcase regular updates on significant research done by our NISTH Fellows to reach a larger and more diverse population.

Our Podcasts can be accessed at: <https://nisth.buzzsprout.com/>



  
*Happy Holidays*