TRAIL

CENTRE FOR TECHNOLOGY, ROBOTICS, ARTIFICIAL INTELLIGENCE AND THE LAW | NUS FACULTY OF LAW

YEAR IN REVIEW
2023

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DIRECTORS' MESSAGE

How quickly does technology evolve within the span of a year! This time last year, the "metaverse" and "non-fungible tokens (NFTs)" were the talk of the town. Now, it is the turn of "generative AI" to rise to prominence.

The ability of generative artificial intelligence ("AI") to generate text, music and images is indeed developing at a breathtaking pace. Generative AI applications such as ChatGPT, DALL·E, Midjourney and Stable Diffusion and the various applications developed from large language models are presenting new issues and scenarios that can be confounding to lawyers as well as judges and policymakers.

On 5 September 2023, the Copyright Review Board of the United States Copyright Office denied copyright registration for artist Jason Allen's two-dimensional artwork titled "Théâtre D'opéra Spatial", finding that it contains more than a de minimis amount of content generated by generative AI, and that the work cannot be registered since Allen refused to disclaim this content in the registration. This is notwithstanding Allen's argument that he provided "creative input" when he "entered a series of prompts, adjusted the scene, selected portions to focus on, and dictated the tone of the image" when using Midjourney. In contrast, the Beijing Internet Court on 27 November 2023 held that a blogger who used Stable Diffusion to generate and publish images on the Xiaohongshu platform had secured copyright to the images. The court found that from the time when the artist conceived the picture to the final selection of the picture involved, the plaintiff has made sufficient "intellectual investment" which included arranging the order of prompt words and setting relevant parameters.

In the same spirit, for this fourth edition of its Year In Review, we decided to create our own cover using generative AI. We settled on the iconic Marina Bay Sands building that is emblematic of contemporary Singapore, but with four pillars to signify the fourth issue of our annual publication. We repeatedly tried out various instructions and settings on Stable Diffusion, generated more than a thousand images, discarded the unacceptable ones, curated the rest, selected what we thought was the best representation, then made further adjustments on Adobe Photoshop, retouching particular architectural elements, the sky and the reflections in the water. Is this enough to make us the joint authors of this work under the Singapore Copyright Act? Or do we share copyright with the generative AI engine and its authors and programmers?

Our ongoing work at TRAIL attempts to shed some light on these issues. In November, we organised SLATE V; the SLATE ((Seminars on LAw and TEchnology) series, launched in April 2021, aims to bring academic papers to life in an interactive discussion forum where the authors would present salient points of their publication and engage in dialogue with the legal community. Titled "Generative AI and Copyright: Understanding Infringement and Fair Use", SLATE V, helmed by David Tan, attracted an audience of about fifty, comprising senior lawyers from firms such as Drew & Napier, Rajah & Tann Singapore, WongPartnership and Allen & Gledhill. In September, we partnered AI Singapore to co-host Professor Anu Bradford's lunchtime talk on her new book titled Digital Empires: The Global Battle to Regulate Technology, at the NUS Kent Ridge Campus.

We are also actively involved in work on other law and technology issues. Throughout the year, TRAIL participated actively in and spoke at numerous seminars such as the Annual Developments in Intellectual Property series (organised by the Intellectual Property Office of Singapore (IPOS)), Crypto Assets and Virtual Currencies series (organised

by the Gambling Regulatory Authority of Singapore (GRA)), TechLaw.Fest (organised by the Singapore Academy of Law) and Singapore Media Festival/ Asia TV Forum and Market (organised by, inter alia, the Infocomm Media Development Authority). In March this year, TRAIL partnered the Centre for Legal Innovation and Digital Society (CLINDS) at Chinese University of Hong Kong for the Metaverse Law Conference – following our successful "Understanding the Metaverse" conference in Singapore in 2022 that was jointly presented with Meta and Rajah & Tann Singapore LLP. Selected papers have been published in the peer-reviewed Media & Arts Law Review in December 2023.

Last but not least, we helped NUS Law launch a new course called Law and Technology for senior law school students. In this course, students learned the basic elements of information technology and Python programming. They were introduced to law and technology issues such as crypto assets and virtual currencies, privacy, intellectual property and AI regulation, and learned about various legal tech applications and platforms used by practitioners. To better prepare them for the challenges of a technologically-oriented legal practice and to enhance their problem-solving skills, students were also exposed to elements of design thinking. All this is possible only with the unstinting support of the law school's leadership team and the generous contribution of time and resources from TRAIL Academic Fellows, practitioners and expert collaborators, both local and overseas. We also encouraged law students to consider employment opportunities in intellectual property and technology in a careers panel discussion organised by the NUS Centre for Future-ready Graduates.

On the social side, we welcomed visitors such as Dov Greenbaum, Marco Giacolone, Shen Weiwei, Andrea Stazi and Tyler Cain, and enjoyed discussing law and technology issues with them.

We look forward to 2024 where we have a number of research projects and conferences in the pipeline that seek to continue this dialogue on law and technology. While generative AI is the current buzzword, TRAIL's broader focus on law and technology will see us moving into new terrains such as an international conference jointly organised with McGill's Institute of Air & Space Law on legal and policy issues relating to aviation and outer space.

Thank you for your support in 2023. We hope to see you at our events and conferences this year.

Associate Professor Daniel Seng
Co-Director, TRAIL

Professor David Tan
Co-Director, TRAIL

METAVERSE LAW CONFERENCE

Professor Lutz-Christian Wolff (Dean, CUHK Law) welcoming the participants

On 14 March 2023, TRAIL partnered the Centre for Legal Innovation and Digital Society (CLINDS) at the Faculty of Law, Chinese University of Hong Kong (CUHK) in organising the Metaverse Law Conference at its Graduate Law Centre on the second floor of the Bank of America Tower in Hong Kong. The conference examined emerging issues associated with the metaverse in different fields of law, that included contract law, property law, intellectual property, data protection, consumer protection and financial law - https://www.law.cuhk.edu.hk/app/events/metaverse-law-conference/

The Media & Arts Law Review will be publishing a special symposium issue comprising a selection of papers presented at this conference. Professor Roger Brownsword from the Dickson Poon School of Law, King's College London, delivered the keynote address. Other presenters included Professor David Tan (Co-Director, TRAIL), Professor Lee Jyh-An (Executive Director, CLINDS), Professor Kelvin Low (NUS Law), Professor Jeannie Paterson (Melbourne Law School), Associate Professor Wang Runhua (University of Science & Technology Beijing) and Assistant Professor Eliza Mik (CUHK).

Professor David Tan, in his welcome address, explains how this conference builds on an earlier conference titled "Understanding the Metaverse" organised by TRAIL in September 2022 in Singapore (https://law.nus.edu.sg/trail/media/trail-partners-with-meta-and-rajah-tann-for-metaverse-conference/)
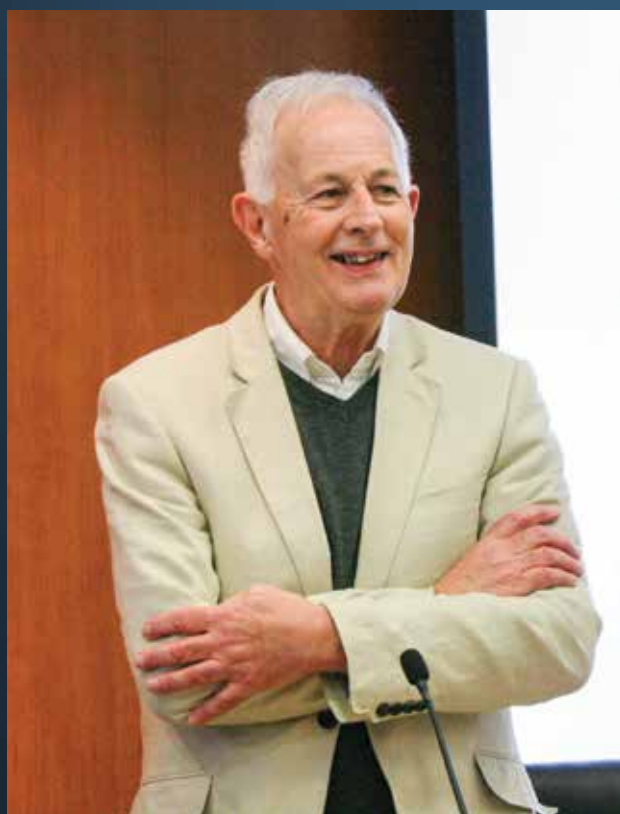
Professor Roger Brownsword's keynote address: "Law's Imperfect Governance: Is the Metaverse the Solution?"

Professor Lee Jyh-An speaking about copyright licenses and NFT transactions in the metaverse

Professor David Tan presenting his paper titled "Trademarks in the Metaverse: Everything Everywhere All At Once" ... coincidentally on the day after the movie swept seven Oscars at the 95th Academy Awards

Professor Kelvin Low discussing his provocative paper titled "The Futility of Blockchain Asset Tokenisation"

There's always time for a wefie: Professor David Tan with Associate Professor Normann Witzleb (one of four recipients of the Meta XR Programs & Research Fund administered by TRAIL) and Professor Lee Jyh-An

Conference speakers celebrate at the conclusion of a long day

SLATE V – GENERATIVE AI & COPYRIGHT:

UNDERSTANDING INFRINGEMENT AND FAIR USE

Today, rapid advancements in AI capabilities to create literary, dramatic, musical and artistic works continue to redefine the human role in the creative process. Most of these works generated by computers rely heavily on the underlying algorithm and the input of millions of authorial works to train the AI system.

Generative AI applications such as ChatGPT, DALL·E and Stable Diffusion are presenting new scenarios that can be confounding to copyright lawyers as well as judges and policymakers. In SLATE V (Seminars on LAw and TEchnology series) on 22 November 2023, Professor David Tan discusses whether existing copyright doctrines can adequately address these issues and to what extent the Singapore Copyright Act 2021 is equipped to deal with these challenges. The seminar covers: (i) copyright infringement in both the input of works to train generative AI and the AI output in response to human prompts and commands; (ii) how the computational data analysis exception and open-ended fair use provision are likely to apply to these scenarios.

(L-R) Steve Tan (Deputy Head (TMT) & Partner, Rajah & Tann Singapore), Prof David Tan, Rajesh Sreenivasan (Head (TMT) & Partner, Rajah & Tann Singapore)

The SLATE series, launched in April 2021, aims to bring academic papers to life in an interactive discussion forum where the authors would present salient points of their publication and engage in dialogue with the legal community.

Titled "Generative AI and Copyright: Understanding Infringement and Fair Use", SLATE V attracted an audience of about fifty, comprising senior lawyers from firms such as Drew & Napier, Rajah & Tann Singapore, WongPartnership and Allen & Gledhill. The articles are published in two parts in *SAL Practitioner*: 'Generative AI and Copyright – Part 1: Copyright Infringement' [2023] *SAL Practitioner* 24; and 'Generative AI and Copyright - Part 2: Computational Data Analysis Exception and Fair Use' [2024] *SAL Practitioner* 25.

(L-R) Tony Yeo (Managing Director (IP), Drew & Napier), Prof David Tan, Regina Quek (Director, One Legal LLC)

The seminar in session at the NUS Bukit Timah Campus

Prof David Tan kicks off SLATE V with an introduction to the key industry players

Peter Schoppert (Director, NUS Press) poses a question

A rapt audience trying to understand why the US Copyright Office denied registration for an AI-generated work

Prof David Tan discussing fair use

Prof Kelvin Low (NUS Law)

Afzal Ali (Partner, Allen & Gledhill)

(L-R) Tony Yeo (Managing Director (IP), Drew & Napier), Lam Chung Nian (Head (IP, Technology & Data) & Partner, WongPartnership), Lau Kok Keng (Head (IP, Sports & Gaming) & Partner, Rajah & Tann Singapore)

BITS & BYTES

TRAIL launched Bits & Bytes, a monthly online bulletin hosted on TRAIL's website on Monday 3 July 2023.

The bulletin allows TRAIL and its partners to showcase their thought leadership in law and technology. It covers how technology is used in or impacts different areas of law such as commercial law, intellectual property, banking and finance, international arbitration, tort law, privacy and data protection, cybersecurity and criminal law.

Bits & Bytes is open to monthly contributions lawyers from four law firms (Allen & Gledhill, Drew & Napier, Rajah & Tann, and Wong Partnership). The short bite-sized articles of no more than 2,000 words include commentaries on a particular area of law, technological development or legal policy, case notes or practice notes. Bits & Bytes also features short contributions from TRAIL's academic fellows and research associates, and is free for all to access on TRAIL's website.

TRAIL would like to record its appreciation to the Singapore Academy of Law for featuring the articles on its Singapore Law Watch.

META XR PROGRAMS & RESEARCH FUND UPDATE

TRAIL had put out a call for proposal on 20 September 2022 inviting interested scholars to bid for a grant to conduct research on privacy and data protection issues arising from the metaverse.

The following grant proposals are successful:

- Normann Witzleb (Chinese University of Hong Kong, HKSAR)
    - "A Rights-Based Approach to Protecting Children's Personal Information in the Metaverse"

- Dan Svantesson, James Birt and Eugenia Georgiades (Bond University, Australia)
    - "Privacy Risks in the Metaverse: The Use & Misuse of People's Avatars and Images"

- Tanel Kerikmäe, Maria Claudia Solarte Vasquez and Tea Kookmaa (Tallinn University of Technology, Estonia)
    - "Empowering AI-based Public Services by Metaverse and Protection of Biometric Data"

- Terence Sim and Daniel Seng (National University of Singapore, Singapore)
    - "Privacy Risks to Sensitive Personal Data presented by AR/VR Headsets with Eye-Tracking Capabilities"

Principal investigators provided status updates via Zoom with Prof David Tan who was coordinating the projects as well as representatives from Meta earlier in the year. By Christmas of 2023, three of the teams had submitted their research findings.
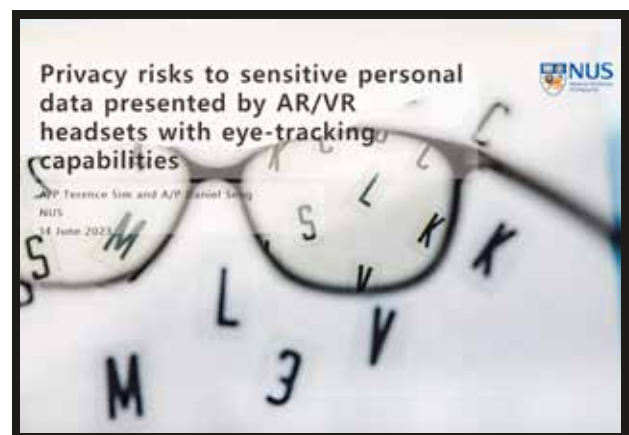
EVENTS IN 2023
10TH DEVELOPMENTS IN IP LAW SERIES

Welcome address by Mr Kok Kitt-Wai

NUS Law continues its partnership with IPOS International to co-organise the 10th Developments in IP Law series in 2023. Reverting to its original in-person format held at Suntec City Convention Centre, this series brought together academics, judges, practitioners and policymakers to discuss key decisions in 2022 in Singapore, the United Kingdom, the European Union, the United States and Australia in the following areas: Trade Marks/Passing Off (2 February 2023); Patents (9 February 2023); Breach of Confidence/Privacy & Data Protection (16 February 2023); Copyright (23 February 2023).

Professor David Tan, Co-Director of TRAIL (and concurrently Head (Intellectual Property) at the EW Barker Centre for Law & Business), kicked off the first session on Trade Marks/Passing Off on 2 February 2023. The other presenters were Justice James Mellor QC (High Court of England & Wales), Professor David Llewelyn (David Llewelyn & Co LLC), and NUS Adjunct Professor Mark Lim (Director/Chief Legal Counsel, Hearings & Mediation, IPOS International).

The final session of the four-part series concluded on 23 February 2023. Prof Tan provided an analysis of judicial decisions from Singapore and the United States on copyright law handed down in the year 2022, which included the copyright infringement lawsuit brought against Katy Perry in the Ninth Circuit as well as the US Copyright Office's rejection of Thaler's attempt to register an AI-authored work "A Recent Entrance to Paradise". Professor Martin Senftleben (Professor of IP Law and Director, Institute for Information Law (IViR), Faculty of Law, University of Amsterdam) commented on developments in the European Union and the UK, while Mr Gavin Foo (Senior Legal Counsel, Legal Department, IPOS) shared highlights of the provisions governing the collective management organisations under the Copyright Act 2021. Justice Mavis Chionh (Supreme Court of Singapore) joined the panel Q+A/discussion which was moderated by Mr Gabriel Ong (Senior Legal Counsel, Hearings & Mediation Department, IPOS; Adjunct Assistant Professor, NUS Law).

Professor David Tan responds to a question on machine learning in the context of ChatGPT and Stable Diffusion

A full house at Suntec City

Professor David Tan on judicial decisions in the United States regarding trademark law

TRAIL AT TECHLAW.FEST

The panel deep in discussion for a full 90 minutes

For more than a decade, TechLaw.Fest has been at the forefront of groundbreaking discussions about the tech of law and the law of tech. The two-day event this year took place at the Suntec Singapore Convention and Exhibition Centre on 21 and 22 September 2023.

Generative AI has emerged as a powerful autonomous tool with numerous applications in various fields, including art, music, and design. However, its legal implications present several challenges. Professor David Tan, co-director of TRAIL, joins an illustrious panel on Day 1 which discussed the textent to which copyright protection may potentially subsist in AI-generated works, as well as how copyright ownership issues of such works can be resolved under prevailing legislative regimes. The panel also critically examined

Professor David Tan responding to a question from Dr Stanley Lai

whether the computational data analysis exception covers the use of works for generative AI learning purposes and whether these and other uses may also potentially qualify as fair use.

Privacy and personal data protection issues are also at the forefront of the concerns of the risks that AI will pose to humankind. The use of material that could include personal data which is accessible from the Internet has led to investigations for possible violation of data protection laws, and numerous jurisdictions are contemplating enacting legislation to regulate the use of AI with a tiered-approach to managing risks.

The panel discussion titled "Legal Implications of Generative AI – Is it a Tool of the Future?" was moderated by Dr Stanley Lai SC (Allen & Gledhill; Intellectual Property Office of Singapore) and the panel members comprised Professor David Tan (TRAIL), Mr Jared Ragland (BSA – The Software Alliance), Dr Alan Ragueneau (Dentons), Ms Winnie Tan SC JP (Des Voeux Chambers), and Adjunct Professor Steve Tan (NUS Law; Rajah & Tann Technologies).

Adjunct Professor Steve Tan explains how personal privacy can be compromised by AI systems

Dr Alan Ragueneau discusses the building of multi-prong strategies to maximise legal opportunities and minimise legal risks

TRAIL AND AI SINGAPORE IN CONVERSATION WITH PROFESSOR ANU BRADFORD

On 13 September 2023, TRAIL and AI Singapore jointly hosted Professor Anu Bradford's lunchtime talk on her new book titled *Digital Empires: The Global Battle to Regulate Technology*, published by Oxford University Press, at the NUS Kent Ridge Campus. Professor Bradford outlined the strengths and limitations of three regulatory models adopted by the United States, Europe and the People's Republic of China, and framed the debate as a battle between techno-democracies and techno-autocracies.

In her book, Professor Bradford observed that the "group of techno-democracies is heterogeneous, and existing disagreements may impede any meaningful collaborations among them." She pointed out that tech companies "suffer from a deep reputational and trust deficit with policymakers and the general public, making it difficult for them to take a combative stand against the regulators without triggering an even harsher backlash."

The lunchtime talk in session at a cosy setting in the innovation 4.0 building

Professor Simon Chesterman shares his views on the continuing conflict of the different regulatory models

Professor David Tan commenting on the rise of the techno-plutocracies and overcoming the challenge of the First Amendment in the United States

Both Professor Simon Chesterman and Professor David Tan led a lively discussion that ranged setting of transnational data protection standards to the prospects of a dystopian future. Professor Simon Chesterman, Vice Provost (Educational Innovation) at the National University of Singapore, is also Senior Director of AI Governance at AI Singapore. Professor David Tan is the Co-Director of the Centre for Technology, Robotics, Artificial Intelligence & the Law at NUS Law, and has pioneered courses in Freedom of Speech and Entertainment Law there.

Anu Bradford is the Henry L. Moses Professor of Law and International Organizations at Columbia Law School. She is also a director for Columbia's European Legal Studies Center and a Senior Scholar at Jerome A. Chazen Institute for Global Business at Columbia Business School. Her research focuses on international trade law, European Union law, digital regulation, and comparative and international antitrust law. Bradford is the author of *The Brussels Effect: How the European Union Rules the World* (OUP 2020), which was named one of the Best Books of 2020 by *Foreign Affairs*.

Professor Anu Bradford with Professor Simon Chesterman and Professor David Tan

From left: Associate Professor Jungpil Hahn (AI Singapore/NUS School of Computing) and David Low (SNDGO)

Mr Kenneth Lim (AIA Singapore)

Dr Karryl Kim Sagun Trajano (NTU)

Associate Professor Han-Wei Liu (SMU Law)

Ms Asha Hemrajani (NTU)

Dr Chuanman You (CUHK Shenzhen)

Professor Anu Bradford with guests and staff of AI Singapore

BRANDS IN A DIGITAL WORLD

On 15 May 2023, Professor David Tan, Co-Director of TRAIL, joined an illustrious panel of practitioners to discuss how the metaverse hype has affected the development of trademark laws, including registration, infringement and dilution. Organised by Baker McKenzie on the fringes of the 2023 International Trademark Association (INTA) Meeting in Singapore, this half-day client seminar titled "Brands in a Digital World" at Marina Bay Financial Centre Tower 1 brought together their lawyers and clients from around the globe.

From left: Mr Steve Holmes, Professor David Tan, Mr Brian Hengesbaugh and Mr Kensaku Takase

Prof Tan explained that while the metaverse as an immersive virtual environment is a much debated concept with myriad definitions, what is generally agreed is that the line between the social realities about how individuals live on a daily basis and the constructed online worlds in which people choose to invest their time, money, emotion and creativity will blur as the metaverse becomes more prominent and pervasive in the future. The reality in 2023 is that many companies that have ventured into the fray are now suffering losses and reevaluating their investments. Nonetheless, commercial opportunities abound, and many well-known brands have filed trademark registrations for myriad forays into the metaverse, as well as for non-fungible tokens (NFTs). In reality, the metaverse as presently understood is not an interconnected seamless world; it is in fact disparate virtual environments of games and networking spaces built on different proprietary platforms and blockchain technologies that are not interoperable.

On 1 January 2023, the 12th edition of the Nice Classification entered into force and it had been updated to more explicitly refer to uses in what we would call the metaverse, as well as NFTs. The appropriate classes are Class 9, 35, 41 and 42. Although there exists much ambiguity as to cohesive and viable business strategies regarding the metaverse and NFTs, big brands in the fashion, food, entertainment, automobile and real estate sectors are definitely registering their trademarks in these classes and commencing a spectrum of XR activities and issuing of NFTs. David concludes that as activities in the metaverse attempt to mimic reality – whether shopping, socialising or playing games – the way the law protects our expressive uses of trademarks in the real world will continue to adapt to confer similar protection in this virtual environment. However, the divergent perspectives between the US – with the juggernaut of the First Amendment – and the rest of the world regarding the emphasis to be placed on the status of freedom of expression in intellectual property jurisprudence will no doubt be a formidable challenge to the architects and users of the metaverse who are still trying to make sense of this frenetic new space.

From left: Mr Ken Chia, Mr Mark Lim (Director (Hearings & Mediation Group), IPOS; Adjunct Professor, NUS Law), Ms Eva-Maria Strobel

HUAWEI CLOUD SPARK DISCOVERY

In May 2023, Associate Professor Daniel Seng was part of a team of senior AI researchers from NUS and other institutes of higher learning in Singapore who were invited by Huawei International to visit their headquarters in Shenzhen, China. The Huawei Cloud Spark Discovery symposium sought to bring the academic community of AI researchers together to better understand our cloud computing and AI requirements. Together with discussions with various high-level executives from Huawei, the AI researchers also briefly presented their projects to the Huawei team. Prof Seng briefed the researchers and executives present on the interim results of his DMCA research project. He also had the opportunity to learn more about the various AI projects of other researchers. There was a candid and fruitful exchange of ideas and engineering perspectives with everyone in attendance, with promises of collaboration with like-minded researchers.

Assoc Prof Daniel Seng (fifth from left); Assoc Prof Chang Ee-Chien (NUS Computing) (sixth from left)

ASLI FELLOW SEMINAR – AGAINST ALGORITHMIC TRANSPARENCY: THE PERILS AND LIMITATIONS OF OPENING THE BLACK BOX

Associate Professor Daniel Seng was the chairperson for the ASLI Fellow Seminar on 9 November 2023. Presented by Dr Shen Weiwei from the China University of Political Science and Law (CUPL), Dr Shen argued against the need for algorithmic transparency, noting that for ex ante regulation, exposing the workings of algorithms, particularly in instances that involve national security, social order or where private interests are involved, would erode these interests respectively. In his commentary, Prof Seng noted that algorithmic transparency has become more, and not less, important, especially with the increasing use of AI to replace human decision making. He cautioned against using national security, social order and private interest concerns as absolute backstops for transparency. He cited two cases: *B2C2 v Quoine* and *UK Post Office Limited v Bates (No 6)*, where the failure to be sufficiently transparent in instances involving private interests and arguably social order contributed to the retention of a mistaken windfall and a substantial miscarriage of justice respectively.

The Asian Law Institute (ASLI) was established in 2003 through the efforts of several leading Asian law schools to foster Asian legal scholarship and to facilitate greater interaction amongst legal scholars in Asia as well as legal scholars outside Asia working on Asian law. ASLI Fellows spend two months in Singapore researching, writing and presenting the results of their research.

CRYPTO ASSETS AND VIRTUAL CURRENCIES - GAMBLING REGULATORY AUTHORITY OF SINGAPORE

In October 2023, Associate Professor Daniel Seng was invited by the Gambling Regulatory Authority of Singapore (GRA) to conduct a series of lectures and workshops on the topic of Crypto Assets and Virtual Currencies for the staff of GRA. In addition to covering the genesis of the development of Bitcoin and the technical implementations of virtual currencies, the lecture and workshop series also delved into some of the legal issues associated with the use of crypto assets and virtual currencies. In various exercises, the staff at GRA also had the opportunity to study and learn about the challenges of implementing crypto currency platforms, including public and private key cryptosystems, message hashing and crypto currency mining.

INTELLECTUAL PROPERTY CAREERS TALK

On 11 October 2023, TRAIL partnered the NUS Centre for Future-ready Graduates (CFG) to talk about career opportunities in intellectual property (IP) law at the NUS Bukit Timah Campus. Students from the LLB, LLM and JD programmes had numerous questions ranging from how different was the work of an in-house counsel from a litigation lawyer, as well as how generative AI has changed the practice of law.

Professor David Tan joined NUS alums Mr Tony Yeo (Managing Director (Intellectual Property), Drew & Napier), Ms Terri Koh (Deputy Director (Registry of Trade Marks)/ Senior Legal Counsel,

IPOS) and Ms Diyanah Baharudin (Counsel, Global Content Protection and IP Policy, Netflix). The panellists shared insights on the different careers in IP they have chosen, and their perspectives on what students can do to prepare themselves if they aspired to a career within this vibrant and rapidly changing industry.

ASIA TV FORUM & MARKET

Professor David Tan represented TRAIL at a panel discussion at the Singapore Pavilion of the Asia TV Forum & Market (ATF) on 7 December 2023 comprising industry leaders and entrepreneurs. The ATF is a significant trade fair event focusing on the entertainment industry in Asia and is held annually at the Marina Bay Sands Expo & Convention Centre in Singapore.

The panel was moderated by Felix Lee (Business Mentor, CreativesAtWork), and joining Prof Tan are Ho Jia Jian (CEO, Viddsee), Anil Nihalani (Head (Digital Products & Technology), MediaCorp) and Seng Choon Meng (CEO, Scrawl Animation). Prof Tan fielded questions from an enthusiastic audience on the legal issues, in particular copyright and right of publicity, surrounding the use of generative AI in the creative process.

(L-R) Felix Lee, Prof David Tan, Anil Nihalani, Seng Choon Meng and Ho Jia Jian

Prof David Tan explaining the laws of different jurisdictions governing AI authorship

Prof David Tan with Trina Ha (Director (Legal), Intellectual Property Office of Singapore)

WORKS IN 2023

BOOKS, ARTICLES, BOOK CHAPTERS, OPINIONS

All Rise for the Honourable Robot Judge?
### Using Artificial Intelligence to Regulate AI

Simon Chesterman (with responses by Lyria Bennett Moses and Ugo Pagallo)
[2023] Technology and Regulation 45

There is a rich literature on the challenges that AI poses to the legal order. But to what extent might such systems also offer part of the solution? China, which has among the least developed rules to regulate conduct by AI systems, is at the forefront of using that same technology in the courtroom. This is a double-edged sword, however, as its use implies a view of law that is instrumental, with parties to proceedings treated as means rather than ends. That, in turn, raises fundamental questions about the nature of law and authority: at base, whether law is reducible to code that can optimize the human condition, or if it must remain a site of contestation, of politics, and inextricably linked to institutions that are themselves account- able to a public. For many of the questions raised, the rational answer will be sufficient; but for others, what the answer is may be less important than how and why it was reached, and whom an affected population can hold to account for its consequences. This contribution is followed by comments by Lyria Bennett Moses and Ugo Pagallo.

Artificial Intelligence Innovation in Healthcare:
Relevance of Reporting Guidelines for Clinical Translation from Bench to Bedside

Simon Chesterman (co-author with Zhen Ling Teo, Ann Kwee, John CW Lim, Carolyn SP Lam, Dean Ho, Sebastian Maurer-Stroh, Tsuhan Chen, Chorh Chuan Tan, Tien Yin Wong, Kee Yuan Ngiam, Cher Heng Tan, Danny Soon, May Ling Choong, Raymond Chua, Sutowo Wong, Colin Lim, Wei Yang Cheong, Daniel SW Ting)
(2023) 52 Annals of the Academy of Medicine, Singapore 199

AI and digital innovation are transforming healthcare. Technologies such as machine learning in image analysis, natural language processing in medical chatbots and electronic medical record extraction have the potential to improve screening, diagnostics and prognostication, leading to precision medicine and preventive health. However, it is crucial to ensure that AI research is conducted with scientific rigour to facilitate clinical implementation. Therefore, reporting guidelines have been developed to standardise and streamline the development and validation of AI technologies in health. This commentary, published in *Annals of the Academy of Medicine*, Singapore, proposes a structured approach to utilise these reporting guidelines for the translation of promising AI techniques from research and development into clinical translation, and eventual widespread implementation from bench to bedside.
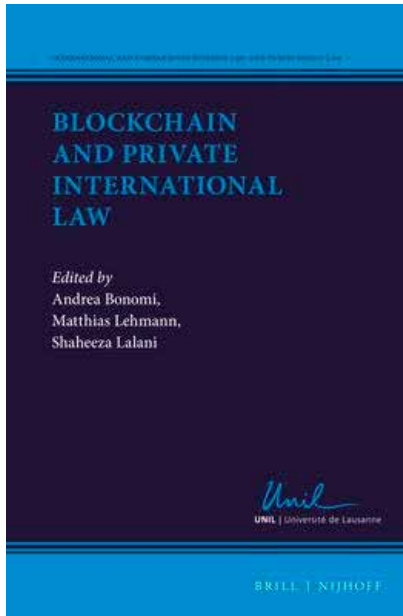
The Role and Prospects of Private International Law Harmonisation in the Area of DLT

Gérardine Goh Escolar

Blockchain and Private International Law (Edited by Andrea Bonomi, Matthias Lehmann and Shaheeza Lalani)(Brill Nijhoff, 2023) 10

This book chapter discusses the many private international law (PIL) issues that arise with the increasing use of distributed ledger technology (DLT) in various fields. Questions relating to the determination of the applicable law, jurisdiction, choice of forum, and recognition and enforcement remain unresolved, a situation that is difficult as DLT applications are inherently cross-border. The complexity of answers to these questions is further compounded due to the global reach of DLT applications, which do not recognise traditional national borders and thus require novel approaches to traditional concepts in PIL. This chapter considers the PIL challenges arising from DLT applications, including the considerations that arise in specific DLT use cases. It discusses the ongoing work at the Hague Conference on Private International Law (HCCH), the United Nations Commission on International Trade Law (UNCITRAL) and the International Institute for the Unification of Private Law (UNIDROIT) to harmonise PIL rules that relate to DLT applications. It then touches on the prospects for such harmonisation, before looking to the future of PIL in the DLT space.

Mainstreaming Unjust Enrichment and Restitution in Data Security Law

Hu Ying

(2023) 13 UC Irvine Law Review 855

This article seeks to improve enforcement of the duty of companies to safeguard personal data in their possession. It is notoriously difficult for data breach victims to succeed in class actions against companies that failed to take reasonable steps to safeguard their personal data. Many commentators have argued that existing legal rules should be relaxed or applied differently in data breach cases.

The article argues instead that litigants and the courts should take more seriously unjust enrichment as a cause of action in those cases. It makes two main contributions. First, it critically analyzes the two main theories of unjust enrichment observed in data breach cases: the overpayment theory and the "would not have shopped" theory. It in turn proposes an alternative, and more plausible, account of the elements that must be proved for the overpayment theory. Second, it explains how the facilitative effects of these unjust enrichment claims on class actions solve a powerful enforcement deficit with respect to data security.

Digital Development of the European Union: An Interdisciplinary Perspective

Tanel Kerikmäe (co-editor with David Ramiro Troitiño and Ondrej Hamul'ák) (Springer, 2023)

This edited volume analyses the digital development of the European Union, presenting an interdisciplinary perspective from the disciplines of political science, international relations, economics, and law. The contributions address the main areas where the EU can, and should act, for creating an efficient and protective digital space in Europe. The book highlights the responsibility of the European Union to work on the future of its digital development, looking for prosperity and defending the European conception of society. The book's comprehensive approach allows the reader to understand this process without in-depth knowledge of the specific discipline. Therefore, it is a must-read for everybody interested in a better understanding of digital development, European Union policy, and the future of Europe.

The Unwanted Paradoxes of the Right to be Forgotten

Tanel Kerikmäe (co-author with Lusine Vardanyan, Hovsep Kocharyan, Ondrej Hamul'ák, Matúš Mesarčík, Tea Kookmaa) (2023) 17(1) Masaryk University Journal of Law and Technology 87

The dynamic development of digital and informational technologies raises the issue of proper and effective protection of human privacy, which, in turn, is gradually turning from a real fundamental right into a kind of illusion. Just a piece of information about an individual distributed on the Internet may leave its negative and often indelible mark on the life and reputation of the addressee of such information, regardless of the legality and reliability of such information. In this regard, each person is at risk on the Internet, where anyone can potentially become the victim of a single publication or a post of an Internet user. In this context the emergence of the phenomenon of the right to be forgotten in European legal reality may be considered as a step forward in the question of human privacy protection in the digital age. However, this right is not without drawbacks as explained by authors from three EU member states.

(Let's) Playing by the Rules:
A Choice of Law Rule for Communication of Copyright Material From Video Games to the Public, Through Let's Plays

Joseph Lau
(2023) 49 Computer Law & Security Review 105828

Determining which jurisdiction's law governs the issue of infringement when copyright material has been disseminated without authorisation over the Internet is a complex task as it is arguable that every one of the national copyrights a party holds over the relevant material may have been infringed, on a potentially worldwide basis. In this article, Joseph examines this question through the prism of scenarios where copyright material from video games that is used in "Let's Plays" is uploaded or streamed from platforms like YouTube or Twitch.tv, making the case that a novel combination of choice of law rules is required to tackle the difficulties which video game developers, streamers, platforms and courts may encounter in such disputes.

Internationally Driven But Domestically Aware Legislation in Trouble Times: The First Copyright Statute in China

Lee Jyh-An and Li Yangzi
(2023) 11 Chinese Journal of Comparative Law 1

The authors use the 1910 Copyright Code of the Great Qing Dynasty (Qing Copyright Code) as a lens to understand China's initial encounter with international intellectual property norms, examine the dynamic political economy in which the law was enacted, and provide an overview of the structure and important provisions of the Qing Copyright Code. They argue that, although foreign pressure was an important factor shaping the Qing Copyright Code, the Code was designed not to protect the economic interests of foreigners in China but to achieve a pair of distinct goals: advance China's national interests in accessing Western knowledge and incentivise the production and dissemination of knowledge in the country. This argument is substantiated by not only the political economy of the legislation but also the later implementation of the law.
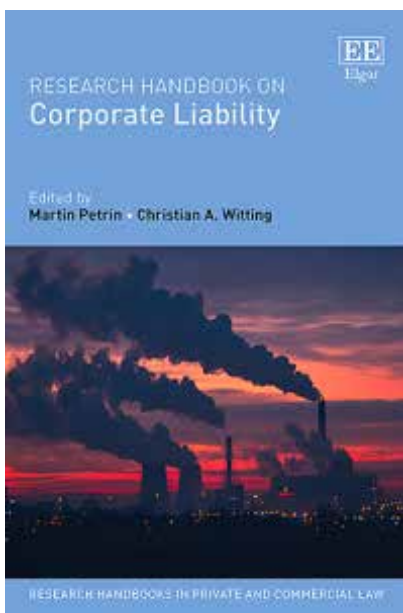
The Company and Blockchain Technology

Kelvin F.K. Low, Edmund Schuster and Wai Yee Wan
Research Handbook on Corporate Liability (Edited by Christian Witting and Martin Petrin) (Edward Elgar, 2023) 449

Blockchain and distributed ledger technology (DLT) has generated much excitement over the past decade, with proclamations that it would disrupt everything from elections to finance. Unsurprisingly, the much-maligned corporate form is also considered ripe for disruption. While certainly imperfect, and currently serviced by creaking legal infrastructure premised upon direct shareholdings, are its problems ones of centralisation/intermediation? What exactly are the limits of DLT? The book chapter proposes to expose the ignorance behind the hype that the venerable corporation will either be revitalized by DLT or replaced by Decentralised Autonomous Organisations. It demonstrates that proponents of DLT disruption either overestimate the potential of the technology by taking at face value its claims of security without unpacking what said security entails (and what it does not) or lack awareness of the history of and market demand for intermediation as well as the complexities of modern corporations.

Post-Scam Crypto Recovery: Final Clarity or Deceptive Simplicity?

Timothy Chan and Kelvin F.K. Low
(2023) 139 Law Quarterly Review 379

It is perhaps ironic that an industry that markets itself as "secure" is as riddled with frauds and scams as the cryptoasset industry. In *Jones v Persons Unknown* [2022] EWHC 2543 (Comm), Nigel Cooper QC handed down the first final judgment on a claim to recover cryptoassets following a scam. While both the result and the reasoning may seem straightforward at first glance, a deeper analysis of the judgment reveals a concealed plethora of legal complications. This note critiques certain aspects of the court's reasoning and examines the interesting issues that arise relating to property and title in cryptoassets.

DeFi Common Sense: Crypto-backed Lending in Janesh s/o Rajkumar v Unknown Person ('CHEFPIERRE')

Timothy Chan and Kelvin F.K. Low
(2023) 86 Modern Law Review 1278

One of the selling points of cryptoassets has been the ability to subject them to so-called 'smart contracts' embedded upon blockchains; yet, despite numerous common law decisions accepting cryptoassets as property, until *Janesh s/o Rajkumar v Unknown Person* ('CHEFPIERRE') no courts have had the occasion to consider how such property (in this case, an NFT) interact with these 'smart contracts'. The case considers 'smart contracts' in the context of decentralised finance (DeFi), thus also raising questions concerning the legal effectiveness and prudence of using cryptoassets as objects of security. Although the non-participation of the defendant meant that the court was deprived of full arguments, the judgment remains worthy of consideration, both for what the court does consider – specifically, criticisms of the Ainsworth test of property – and what it does not.

The Metaverse Beyond the Internet

Tan Cheng-Han and Daniel Seng Kiat-Boon
(2023) 15(2) Law, Innovation and Technology 313

Just as the evolution of the Internet has transformed the way people live and work, so too the next significant iteration of the Internet, commonly referred to as the Metaverse, which the authors suggest will go beyond the Internet as a sort of successor state to the Internet, will also lead to significant societal change. This paper considers a number of issues that are likely to test the law and its response including in the areas of online wrongs, intellectual property and digital assets.

Protection of Weaker Parties in Smart Contracts

Andrea Stazi

(2023) 12(6) Journal of European and Consumer Market Law [full citation unavailable at printing time]

The new EU framework of consumer protection extended to contracts regarding digital goods, content and services, also seems applicable to "smart contracts", characterised by the self-execution of contractual clauses without the need for human intervention, and generally excluding the possibility of interrupting such execution or modifying the content. However, increased transparency obligations for traders, including information duties for online marketplaces concerning the identification of sellers and the algorithms used for search results, could be difficult to fulfil in case of smart contracts, which can be concluded and executed directly between parties that could be unknown, without intermediaries and automatically entering into a contract and executing it potentially without even caring who is the counterpart.
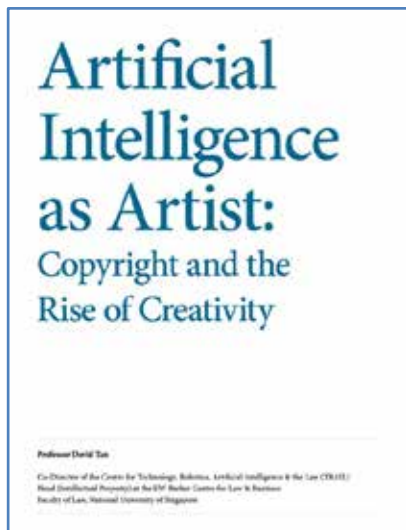
Artificial Intelligence as Artist: Copyright and the Rise of Creativity

David Tan

(2023) 8 Cultural Connections 29

The meteoric rise of the use of AI in the arts has sparked fierce debate globally about ethics, copyright, fair use, and authenticity. This article addresses some of the most salient issues on the use of AI in the creative process, including how the licensing markets of literary works could be adversely impacted. It concludes that AI could ultimately be harnessed by working artists as a tool to further their creative potential and artistic vision: the future is not one of the decline of the arts, but the rise of creativity.

The Price of Generative AI Learning: Exceptions and Limitations under the New Singapore Copyright Act

David Tan

(2023) 45 European Intellectual Property Review 400

Generative AI tools like Chat GPT and Stable Diffusion must have access to millions of images and text in order for them to learn and eventually generate output successfully in response to user commands. The key question for copyright lawyers today is whether this machine learning should come at a price. This article explores how a recent overhaul of the Copyright Act in Singapore in 2021 is equipped to deal with these issues.
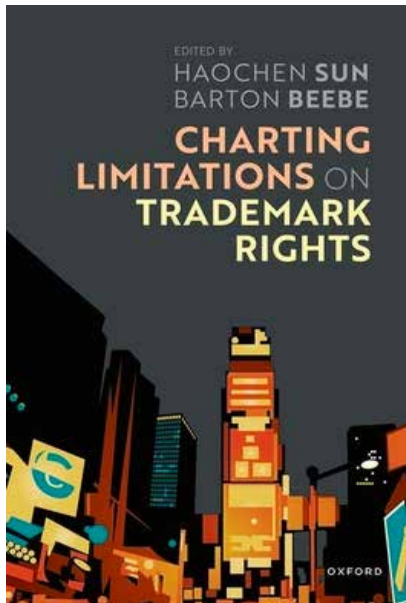
Logo Hacking, Downmarket Irony, and Counterfeit Chic: A Study of Contemporary Fashion Trends and Their Implications for Trademark Law
David Tan
Charting Limitations on Trademark Rights (Edited by Barton Beebe and Sun Haochen) (Oxford University Press, 2023) 52

The whimsical and ephemeral trends of the fashion world can be confounding and yet rewarding at the same time. As luxury fashion brands such as Gucci, Balenciaga, Vetements Louis Vuitton and Versace capitalise on ironic cultural references to rejuvenate sales and capture new customer segments, their actions have resulted in unanticipated implications for trademark laws. Simultaneously, countercultural commentary is also taking the form of parodic and satirical fashion merchandise which audaciously play with the semiotic signs of these famous marks. This book chapter explores the regulation of fashion trademarks from an interdisciplinary perspective and interrogates the bewildering celebration of the conspicuously inauthentic and culturally subversive prevalent in luxury fashion today.

Generative AI and Copyright – Part 1: Copyright Infringement
David Tan
[2023] SAL Practitioner 24

The ability of AI to autonomously, or in response to specific prompts by human users, generate text, music and images, is developing at a breathtaking pace. Generative AI applications such as ChatGPT, DALL·E and Stable Diffusion are presenting new scenarios that can be confounding to copyright lawyers as well as judges and policymakers. This two-part article discusses whether existing copyright doctrines can adequately address these issues and to what extent a recent overhaul of the Copyright Act in Singapore in 2021 is equipped to deal with these challenges. Part 1 discusses how Singapore copyright law is poised to tackle the issue of whether the use of copyright-protected works for machine learning ("input") and the works created from natural language commands ("output") are infringing copyright. It concludes that it is generally difficult to prove wholesale copying of millions of works as the various generative AI applications do not disclose the training datasets, and one would have to proceed on a classic substantial similarity analysis in respect of each output text/image vis-à-vis the original work.

Generative AI and Copyright – Part 2: Computational Data Analysis Exception and Fair Use
David Tan
[2024] SAL Practitioner 25

Part 2 of this two-part article discusses how the computational data analysis exception and open-ended fair use provision in the Copyright Act 2021 are likely to apply to these scenarios. It suggests that the two fair use factors that are likely to carry the greatest weight in the analysis are: (1) what is the purpose/character of the use, namely whether the use by generative AI is "transformative", i.e. changes the purpose or the nature of the original work in some way; and (2) what is the impact of the generative AI's use on the market i.e., does it threaten the livelihood of the original creator by competing with their works or the licensing market for their works?

Trademarks in the Metaverse: Everything, Everywhere, All at Once
David Tan
(2023) 25 Media & Arts Law Review 285

While the metaverse as an immersive virtual environment is a much-debated concept with myriad definitions, what is generally agreed is that the line between the social realities about how individuals live on a daily basis and the constructed online worlds in which people choose to invest their time, money, emotion and creativity will blur as the metaverse becomes more prominent and pervasive in the future. This article discusses trademark use in the metaverse and NFTs, and analyses how the freedom of expression can be accommodated in trademark doctrine as the law evolves to address the new challenges that technological advancement is presenting. It concludes that the metaverse may be regarded as the emerging digital carnivalesque, where individuals communicate through the use of avatars, images and videos each chosen with its semiotic freight and particular connotations understood within that community.

The Science and Art of Celebrity Branding
David Tan
The Business Times, 16 September 2023, 34

This op-ed discusses how through sponsorships, endorsements and advertising, brands attempt to create an association between their products and a celebrity's desirable traits. Coining the phrases "the science of metrics" and "the art of selection", David Tan explains how should a brand fully embrace its transnational character in selecting the personalities with whom to be associated and the fit with its brand narrative.

Obsessed with Taylor Swift? There's a line fans should not cross
David Tan
The Sunday Times, 12 November 2023, A22-A23

This op-ed posits that humans are biologically predisposed to forming attachments to familiar others, but when the familiar other is a celebrity, it can be difficult for certain individuals to make the distinction between someone known in real life on a daily basis and someone known through the media or social media. In the 21st century, social media platforms such as Instagram and TikTok not only allow celebrities to promote products and services, but they also enable celebrities to provide their fans a glimpse into their personal lives. It is not surprising, therefore that fans feel like they have a personal connection to their idols or share an emotional friendship bond, although such interpersonal relationships are unilateral and not reciprocal. But with fame comes a price – the formation of para-social relationships which can entail fans' empathy with a celebrity's triumphs and defeats, compulsive behaviours toward a celebrity, and an irrational obsession with the rudiments of a celebrity's career and personal life.

WORKING PAPERS

New barriers to access for oncology drugs: Is sustainability the only game in town?

Tracey Evans Chan
Presented at 20th ASLI Conference, 31 May 2023

Addressing Digital Vulnerability through Effective Multilateralism: The Impact of Private International Law

Gérardine Goh Escolar
Presented at the inaugural conference of the Project on Digital Vulnerability and European Private Law, University of Ferrara, Italy, June 2023

Gatekeeper Liability for Online Platforms: beyond Content Moderation

Hu Ying
Presented at the 3rd Asia-Pacific Private Law Conference, University of Hong Kong, Hong Kong, 24-25 May 2023

What's Wrong With This Picture? Clarifying the Status of Video Game Frames Under the Copyright Act 1968 (Cth)

Joseph Lau
Presented at NUS Law Faculty Research Workshop, Singapore, 23 August 2023

Non-Market Approach to Intellectual Property in the Case of China

Lee Jyh-An
Presented at the Intellectual Property Scholar Conference (IPSC) 2023, Cardozo School of Law, New York, 3-4 August 2023

Unwinding NFTs in the Shadow of IP Law

Lee Jyh-An
Presented at the 7th Annual Texas A&M Intellectual Property Scholars Roundtable, Texas, 3-4 November 2023

The Augmented Lawyer

Tanel Kerikmäe
Presented at Future Law 2023 - LegalTech Conference, Tallinn, Estonia, 26-27 May 2023

Critical view to the implementation of public AI use cases

Tanel Kerikmäe
Presented at Nordic Conference on Law and Information Technology 2023, Rovaniemi, Finland, 30 October-1 November 2023

ONGOING PROJECTS

DMCA Project

This is an ongoing project by Daniel Seng on the empirical analysis of the Digital Millennium Copyright Act (DMCA) takedown notices which originated from his doctoral thesis at Stanford University. To date, more than 202 million DMCA complaints in more than 50 languages have been tagged using a combination of large language models (LLMs) supplemented by human review for accuracy. Work in this space has drawn interest from the Berkman Klein Center for Internet & Society at Harvard University, because the statistical model that is being built will afford regulators insights into the way Internet intermediaries deploy machine learning and AI algorithms for their business processes, and further our understanding of the DMCA and various intermediary and AI regulations.

Web3 Governance

Lee Jyh-An, *Web3 Governance: Law and Policy* (co-editor Joseph Lee) (Routledge, forthcoming 2024) – Web3 is increasingly used for commercial and social interactions. As the blockchain-based web includes cryptocurrencies, NFTs, decentralised autonomous organisations (DAOs), and decentralised finance, the users can read, write, and even own their own versions of the web. It has fundamentally transformed the space for commercial and social interactions at both domestic and cross-border levels. However, there are risks involved and problems unsolved. This book aims to identify principles in law and policy based on which tools can be developed to regulate Web3 activities with focuses on security, scalability, and sustainability. This book will address the current knowledge gap in the legal literature on Web3 including, blockchain, AI and data governance in commercial and social activities.

Fashion and Intellectual Property

David Tan, *Fashion and Intellectual Property* (co-editors Jeanne Fromer and Dev Gangjee) (Cambridge University Press, forthcoming 2024) – Fashion is a multi-billion-dollar global business. Fashion brands are making forays to explore the nascent opportunities associated with the metaverse and NFTs. They are expected to embrace creative campaigns, new media channels and the metaverse, as NFTs are strategically deployed to build communities and stronger affinity for the brands. There are countless books on intellectual property law, numerous books on fashion theory, a few books on fashion law but hardly any on fashion and intellectual property. This book assembles a constellation of some of the best known intellectual property scholars around the world to present their analysis of how different aspects of intellectual property laws interact with and regulate the fashion industry.

Human-Robot Interaction in Law and its Narratives

Helena Whalen-Bridge, *Human-Robot Interaction in Law and its Narratives* (co-editor Sabine Gless) (Cambridge University Press, forthcoming 2024) – Robots are with us, but law and legal systems are not ready for them. This book identifies the issues posed by human–robot interactions in substantive law, procedural law, and law's narratives, and suggests how to address them. When human–robot interaction results in harm, who or what is responsible? Part I addresses substantive law, including the issues raised by attempts to impose criminal liability on different actors. And when robots perceive aspects of an alleged crime, can they be called as a sort of witness? Part II addresses procedural issues raised by human–robot interactions, including evidentiary problems arising out of data generated by robots monitoring humans, and issues of reliability and privacy. Beyond the standard fare of substantive and procedural law, and in view of the conceptual quandaries posed by robots, Part III offers chapters on narrative and rhetoric, suggesting different ways to understand human–robot interactions, and how to develop coherent frameworks to do that. This title is Open Access.

** The sections on Publications, Working Papers and Ongoing Projects are only highlights and do not represent the entirety of the efforts of TRAIL's academic community.

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