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Technology and the Courts:
Artificial Intelligence and Judicial Impartiality

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Thank you for the opportunity to make a submission to this inquiry. I do so in a private capacity as a scholar of law and technology at UNSW Law in Sydney, Australia.

Any reforms to the laws on judicial impartiality and bias in Australia should take into account the role of technology in judicial decision-making. From digitisation of court filing and administrative systems, to automation of decision-making in small claims litigation, to machine learning software in criminal sentencing, the judiciary is increasingly - or may soon be – using various technologies.[1] Some see the technologisation of the judicial role as inevitable, and call for a speedy embrace of automation by the courts to better perform their public role. However, to maintain public confidence in the administration of justice; the law reform must consider how the increasing experimentation and proposals to automate judicial decision-making, or elements of it, especially with machine learning tools, can enhance or undermine the legal

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[1] Monika Zalnieriute and Felicity Bell, 'Technology and Judicial Role', *The Judge, the Judiciary and the Court: Individual, Collegial and Institutional Judicial Dynamics in Australia* (Cambridge University Press 2021).

system and the judiciary as a whole. In my recent work, I examined the compatibility of various automation tools with fundamental principles of justice and how they strengthen and undermine the rule of law.[2] I also analysed how automated systems in judicial decision-making affect judicial values to understand where the technology might go in the future and the dangers it could bring for the judicial role.[3] In this submission, I share the most relevant insights form that work on the relationship between technology and judicial impartiality, decisional independence and bias.

Enhancing Impartiality and Decisional Independence of Judiciary with Technologies

First, technology can enhance judicial impartiality and reduce bias. Digital technologies can support judicial independence and impartiality by helping to reduce corruption and increasing 'public trust by providing an effective means of communication between courts and their users and the general public'.[4] Technologies such as electronic case allocation, randomly assigning cases ensures that judges are not 'cherry-picked' to hear particular cases, and electronic case management system can provide further oversight by identifying irregularities.[5] Similarly, social media, enabling widespread sharing of information, can be an important tool in fighting against judicial corruption, which arguably undermines institutional independence as well as impartiality of the judiciary.

At the same time, the social media has impact on judicial impartiality and have challenged conceptions of how judges ought permissibly to interact with lawyers and others. For example, with increasing Facebook use came questions about whether it was appropriate for judges to be 'Facebook friends' with lawyers or even parties appearing before them.[6] In the US, judges

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2   Monika Zalnieriute, Lyria Bennett Moses and George Williams, 'Rule of Law "by Design"?' (2021) 95 Tulane Law Review Forthcoming; Monika Zalnieriute and others, 'From Rule of Law to Statute Drafting: Legal Issues for Algorithms in Government Decision-Making' in Woodrow Barfield (ed), *Cambridge Handbook on the Law of Algorithms* (1st edn, Cambridge University Press 2021); Monika Zalnieriute, Lyria Bennett Moses and George Williams, 'Automating Government Decision-Making: Implications for the Rule of Law' in Sebastian de Souza and Maximillian Spohr (eds), *The Future of Law: Technology, Innovation and Access to Justice* (Edinburgh UNIVERSAITY Press 2021); Monika Zalnieriute, Lyria Bennett Moses and George Williams, 'The Rule of Law and Automation of Government Decision-Making' (2019) 82 The Modern Law Review 425.

3   Zalnieriute and Bell (n 1).

4   Dory Reiling, *Technology for Justice: How Information Technology Can Support Judicial Reform* (Leiden University Press 2009) 254.

5   Victoria Jennett, *Fighting Judicial Corruption: Topic Guide* (Report, 31 October 2014).

6   Samuel Vincent Jones, 'Judges, Friends, and Facebook: The Ethics of Prohibition' (2011) 24(2) *Georgetown Journal of Legal Ethics* 281; Benjamin P Cooper, 'USA: Saving Face – Ethical Considerations for American Judges Using Facebook' (2014) 17(1) *Legal Ethics* 148–52; Steven Rares, 'Social Media - Challenges for Lawyers and the Courts' (Speech, Australian Young Lawyers' Conference, 20 October 2017) [30].

have been 'reprimanded' for their use of social media (including for posting comments about, and 'researching' those appearing before them).[7] It is now common for courts to have guidelines on how judges are to use social media, which generally require judges to consider how their use of social media affects their actual or perceived impartiality.[8] It is important that such guidelines are updated to keep up with rapid developments in social media and digital platforms.

Automation Tools Can Undermine Impartiality and Introduce Bias

However, moving from simple communication via digital technologies to the deployment of automation tools in the judicial decision-making process itself, the impartiality and decisional independence of the judiciary could be undermined. The degree of automation employed in such systems, designed to support judicial decision-making, vary along a trajectory starting with what is known as 'decision-support' to 'human-in-the-loop', to the total disappearance of humans from the decision-making process.[9] 'Decision-support' is an information system which supports organisational decision-making, and has a relatively long history.[10] Such systems can be designed to ensure that decision-makers consider relevant considerations and disregard irrelevant considerations; and that criteria are applied in standardised ways, improving consistency of decision-making, and reducing potential for bias. Meanwhile, 'human-in-the-loop' is a system with more automation but which still requires human interaction.[11] Decision-support and automation with a human-in-the-loop may involve different techniques, and sometimes combinations of them. For example, expert system is a process that follows a series of pre-programmed rules to mirror responses of a human expert in a particular domain.[12] An

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7   Benjamin P Cooper, 'USA: Saving Face – Ethical Considerations for American Judges Using Facebook' (2014) 17(1) *Legal Ethics* 148–52.

8   Steven Rares, 'Social Media - Challenges for Lawyers and the Courts' (Speech, Australian Young Lawyers' Conference, 20 October 2017) [30]; see, eg, The Council of Chief Justices of Australia and New Zealand, *Guide to Judicial Conduct* (Australasian Institute of Judicial Administration, 3rd ed, 2017) 43–5.

9   See Iyad Rahwan, 'Society-in-the-Loop: Programming the Algorithmic Social Contract' (2018) 20(1) *Ethics and Information Technology* 5; Sailik Sengupta et al, 'RADAR: A Proactive Decision Support System for Human-in-the-Loop Planning' (Conference Paper, AAAI Fall Symposium Series, 9–11 November 2017).

10 Giovanni Sartor and Karl Branting (eds) *Judicial Applications of Artificial Intelligence* (Kluwer Academic, 1998).

11 Lorrie F Cranor, 'A Framework for Reasoning about the Human in the Loop' (Conference Paper, Usability, Psychology, and Security, 14 April 2008).

12 Richard E Susskind, *Expert Systems in Law: A Jurisprudential Inquiry* (Clarendon Press, 1987) 114–15.

example in judicial context is EXPERTIUS - a decision-support system used in Mexico to advise judges and clerks as to whether a plaintiff is eligible for a pension.[13]

Importantly, automation of judicial decision-making process may introduce bias and undermine judicial impartiality and independence, thereby giving rise to individual and collective harms. This could be, for instance, because the automation tool that is relied to assist judges may use proprietary software, developed by a private company operating for profit. Often such tools shielded behind trade secrets and are not subject to the same accountability or oversight mechanisms as other public actors in our legal systems, including, notably, judges.[14] Where such systems are not open source and are protected by intellectual property laws, it is impossible to understand precisely how their outputs have been generated.[15] Such secrecy impacts both institutional independence and judicial impartiality. For instance, in some US jurisdictions, judges can (or may even be required to) use risk-assessment tools such as COMPAS ('Correctional Offender Management Profiling for Alternative Sanctions') that draw on historic data and use machine learning to infer which convicted defendants pose the highest risk of re-offending, particularly where there is a risk of violence, to make decisions about bail or sentence. Relying on machine learning technology, COMPAS 'learns' from data (either collected or constructed) so as to draw inferences about new situations. These decisions may be classification (eg, that a document is relevant in discovery[16]) or predictive (eg, that an individual is likely to commit a crime in the future). A variety of data-driven techniques can be used so that a system will 'learn' patterns and correlations to generate predictions or reveal insights. Unlike standard statistical methods, machine learning is generally iterative (able to continually 'learn' from new information) and capable of identifying more complex patterns in data. COMPAS, for example, takes into account the gender, postcode and various personal attributes and biographical facts (e.g, whether and how many the person has been stopped by police, whether their parents are divorced, etc). A similar tool – called HART (Harm

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[13]   Davide Carneiro et al, 'Online Dispute Resolution: An Artificial Intelligence Perspective' (2014) 41 *Artificial Intelligence Review* 227–8.

[14]   Rebecca Wexler, 'Life, Liberty, and Trade Secrets: Intellectual Property in the Criminal Justice System' (2018) 70(5) *Stanford Law Review* 1343.

[15]   Justice Melissa Perry, 'iDecide: Administrative Decision-Making in the Digital World' (2017) 91(1) *Australian Law Journal* 29

[16]   See, eg, Maura R Grossman and Gordon V Cormack, 'Technology-Assisted Review in E-Discovery Can be More Effective and More Efficient than Exhaustive Manual Review' (2011) 17(3) *Richmond Journal of Law and Technology* 1.

Assessment Risk Tool) - is used in the UK to determine whether an individual should remain on remand or be released into police custody.[17]

Many scholars have expressed concerns that judicial use of such tools in criminal sentence has been approved by the Conference of US Chief Justices[18] and by the Supreme Court of Wisconsin, as well as in various state statutes.[19] In a test case, *State of Wisconsin v Loomis*, use of the COMPAS system was held to be permissible on the condition that the decision was not fully delegated to ML software and that the judge was notified of the tool's limitations.[20] Thus, a judge must still consider a defendant's arguments as to why other factors might impact the risk that he or she poses.[21] However, COMPAS employs such proprietary software, and the judges do not know how it operates. Yet, they may be *required* to consider machine-generated risk scores in decision-making.[22] Whether or not the tool itself is accurate, judges must take its projections on face value, and cannot interrogate its processes or question its methods.

There are known examples where sentencing judges have overturned plea deals and imposed longer sentences on the convicted person because COMPAS produced very high potential recidivism scores.[23] Reliance on – or even a delegation of a decision to – a secretive tool is in tension with the value of judicial independence, which requires that judges are able to independently verify and understand an expert's evidence. The fact that judges do not have (and are unable to acquire) knowledge about the operation of an automated tool arguably has

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[17]   'Helping Police Make Custody Decisions Using Artificial Intelligence' (*University of Cambridge*, 26 February 2018) <https://www.cam.ac.uk/research/features/helping-police-make-custody-decisions-using-artificial-intelligence> accessed 8 July 2020.

[18]   Conference of Chief Justices/ State Court Administrators Criminal Justice Committee, 'In Support of the Guiding Principles on Using Risk and Needs Assessment Information in the Sentencing Process' (Resolution 7, 3 August 2011).

[19]   See *State of Wisconsin v. Loomis*, 881 N.W.2d 749 (Wis. 2016) ('*Loomis*'). The United States Supreme Court denied certiorari on 26 June 2017: Kelly Hannah-Moffat, 'Algorithmic Risk Governance: Big Data Analytics, Race and Information Activism in Criminal Justice Debates' (2018) 23(4) *Theoretical Criminology* 453; Sharad Goel et al, 'The Accuracy, Equity, and Jurisprudence of Criminal Risk Assessment' (Research Paper, Risk-Resilience Research, University of California, Berkeley December 26, 2018).

[20]   881 N.W.2d 749 (Wis. 2016).

[21]   Ibid [56].

[22]   Partnership on AI, *Report on Algorithmic Risk Assessment Tools in the US Criminal Justice System* (Report, 26 April 2019).

[23]   Alyssa M Carlson, 'The Need for Transparency in the Age of Predictive Sentencing Algorithms' (2017) 103 *Iowa Law Review* 303.

a significant impact not only on judicial impartiality and bias, but also on judges themselves and their understanding of judicial role.

Judicial Analytics and Bias

Another way that technology – specifically statistical or machine learning analysis of judicial decision-making – might be used is to illustrate or bring to light the existence of anomalous decisions or patterns of decision-making among the judiciary. An example is the work of researchers at Macquarie University who have built a machine program to analyse patterns of judicial decision-making in migration cases heard in the Federal Circuit Court.[24] As well as highlighting patterns, there are machine learning systems which can, with sufficient data, predict with good accuracy how judges will determine cases. Thus in certain areas of law automated systems are able to predict the likely outcome of decisions.[25]

These different uses – highlighting possible patterns of differential treatment, perhaps ensuring consistent treatment, and the use of predictive analytics – have ramifications for judicial impartiality. Impartiality mandates that judges operate both without actual bias – essentially, pre-judgment of the case at hand – and apprehended bias, where 'a fair minded lay observer' could reasonably consider that a judge might not bring an impartial mind to the decision to be made.[26] Generally speaking, attempts to show that an individual judge has acted in a biased manner in a particular case, based solely on statistical analysis of decisions, have not succeeded in Australia, though statistics have been used to publicly critique judges.[27] In the case law, such evidence has been rejected as lacking probative value; and held not to demonstrate apprehended or actual bias (which is a stringent test).[28] In a 1994 decision, Heerey J decoupled a pattern of past decision-making from the making of future decisions, saying that a past record of decisions could only suggest a likelihood that future decisions would be decided similarly,

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24   'Who Watches Over Our Judges?', *Background Briefing* (ABC Radio National, 8 September 2019).
25   See, eg, Daniel Martin Katz, Michael J Bommarito II and Josh Blackman, 'A General Approach for Predicting the Behavior of the Supreme Court of the United States' (2017) 12(4) *PLoS ONE* e0174698; Mihai Surdeanu et al, 'Risk Analysis for Intellectual Property Litigation' (Conference Paper, International Conference on Artificial Intelligence and Law, 6–10 June 2011).
26   Margaret Beazley and Chris Frommer, 'The Distinctive Role of the Judge: "The Least Dangerous Branch of Government"' in Michael Legg (ed), *Resolving Civil Disputes* (LexisNexis Butterworths, 2016) 3, 10–11, quoting *Ebner v Official Trustee in Bankruptcy* (2000) 205 CLR 337, 344–5 [6] (Gleeson CJ, McHugh, Gummow and Hayne JJ).
27   *Vietnam Veterans' Association of Australia (New South Wales Branch Inc) v Gallagher* (1994) 52 FCR 34 [26], [33]; *ALA15 v Minister for Immigration and Border Protection* [2016] FCAFC 30 ('*ALA15*'); *BDS17 v Minister for Immigration and Border Protection* [2018] FCA 1683 ('*BDS17*').
28   *BDS17* (n 27).

which is insufficient to demonstrate bias.[29] In another case, the Full Court of the Federal Court emphasised the importance of context:

> for such raw statistical material to be attributed to the hypothetical observer, it normally would need to be accompanied by a relevant analysis of the individual immigration judgments determined by the primary judge in order that the statistics were placed in a proper context. Absent such analysis, the hypothetical observer would not be able to make an informed assessment of the significance of the raw statistics.[30]

While they may not meet the legal test for apprehended bias, such analyses may still undermine broader concepts of judicial impartiality by appearing to demonstrate tendencies among judges to rule in particular ways. Presentation of such information may fuel public criticism of judges and lead to distrust or disrespect. It may also, especially in commercial contexts, shape the nature of cases which proceed to judicial determination; or, if lawyers use data to 'craft' arguments for certain judges, become something of an echo chamber, as each successful application of the data generates confirmatory data.[31] As with any application of data-driven analyses to individuals, there is the risk that individual differences or nuances of a case are overlooked in pursuit of machine-generated patterns.

Moreover, the use of machine learning analytics on judiciary calls upon the possible effect of the judges' own personal qualities on decision-making.[32] Some work in empirical legal studies has, for example, attempted to connect the personal attributes of judges, such as race or gender, to tendencies to rule in certain ways.[33] Such usage has been recently prohibited in France, preventing the use of machine learning analytics in relation to individual judges – a change which appears to be primarily protective of the judiciary.[34] On a wider scale, the use of analytics may illustrate patterns, but ultimately cannot inform on the quality of judging.

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[29]   *Vietnam Veterans* (n 27).
[30]   *ALA15* (n 27) [38].
[31]   Frank Pasquale and Glyn Cashwell, 'Prediction, Persuasion, and the Jurisprudence of Behaviourism' (2018) 68(Supplement 1) *University of Toronto Law Journal* 63.
[32]   Rosemary Hunter, 'More than Just a Different Face? Judicial Diversity and Decision-Making' (2015) 68 *Current Legal Problems* 119, 124.
[33]   See, eg, the summary of Allison P Harris and Maya Sen 'Bias and Judging' (2019) 22 *Annual Review of Political Science* 241.
[34]   *LOI n° 2019-222 du 23 mars 2019 de programmation 2018-2022 et de réforme pour la justice (1)* (France) JO, 24 March 2019, art 33; 'France Bans Judge Analytics, 5 Years in Prison for Rule Breakers', *Artifical Lawyer* (online, 4 June 2019) <https://www.artificiallawyer.com/2019/06/04/france-bans-judge-analytics-5-years-in-prison-for-rule-breakers/>.

Conclusion

In sum, technology, especially software employing automation or machine learning, presents challenges for judicial independence and impartiality. Lack of transparency in how such tools operate, often cemented through 'trade secrecy' doctrines, is not compatible with judicial impartiality and independence. If technology is to assist judges, open source software should be used. Judges would not accept or tolerate relying on expert evidence where the expert need provide no qualifications or demonstrable expertise, no explanation of reasoning or methodology and no assurance of the reliability of their evidence. Lack of transparency also undermines judicial impartiality, and if software is trained on data which itself reflects bias and discrimination against certain groups, programs may continue to replicate those biases, as will judges when using it.

Some claim that properly designed and tested automated systems allow for human biases to be controlled for or removed from the decision-making process.[35] In most instances, however, such systems are designed for use in administrative or government, rather than judicial, decision-making, which requires discretion. It is also arguably not permissible to direct a judge as to how he or she ought make a decision, which may compromise the decisional dimension of judicial independence.

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[35]   Jay Thornton, 'Cost, Accuracy, and Subjective Fairness in Legal Information Technology: A Response to Technological Due Process Critics' (2016) 91(6) *New York University Law Review* 1821, 1840, 1849; Nigel Stobbs, Dan Hunter and Mirko Bagaric, 'Can Sentencing Be Enhanced by the Use of Artificial Intelligence' (2017) 41 *Criminal Law Journal* 261.