Reform of Copyright Subsistence in Light of Generative AI

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Contents

Background

1. Generative artificial intelligence (**AI**) models operate differently from traditional deterministic or mechanistic tools or systems. When you press a key on a keyboard or pluck a string on a guitar, the output is *linear and deterministic*. There is a direct cause-and-effect relationship, where the same input always produces the same result. In contrast, when a user prompts a generative AI model, the response is *emergent and probabilistic*. Rather than following a fixed path, the response arises from complex interactions within the model's training data and algorithms, making the outcome less predictable and non-deterministic. The generative AI model produces responses dynamically, drawing from patterns rather than predefined rules. Further, different responses are produced each time the model is provided with the identical prompt. Or, putting this in more legal terms, traditional input methods offer direct *control*, while generative AI offers only indirect *influence*, where the input shapes the output but does not dictate it exactly.

2. Copyright may subsist in the prompt (e.g., as a literary work) used to instruct the model with the human prompter as the author. Copyright may also subsist in various components that comprise the model (e.g., source code) with the human developers as the authors thereof. But does copyright subsist in the output of a generative AI product or service and is the human prompter the author of that output as a matter of law? If not, does the law require reform?

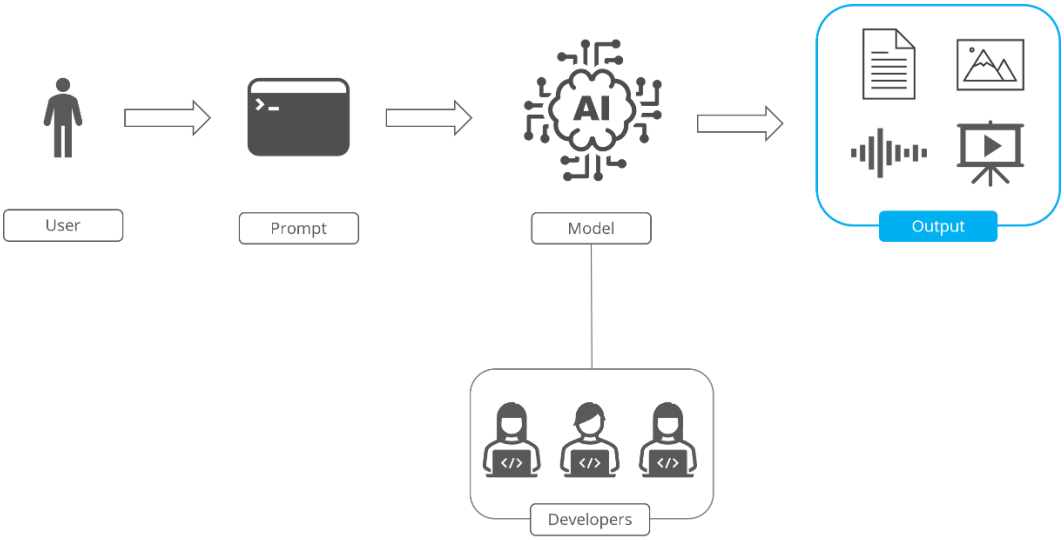

Figure 1. Flowchart of generative AI system
illustrating relationship between user prompt and multimodal output

Problem statement

3. The question may be expressed as follows: If an authorial work originated in some action by a natural person, but that person did not have full or complete control over the causal chain subsequent to the person's originating action, including fixing of that authorial work into a tangible medium of expression, is the person the author of the authorial work as a matter of copyright law?

4. In September 2025, the Singapore Academy of Law held a roundtable under the Chatham House Rule to discuss this question and others. The roundtable was attended by a range of

stakeholders, including rightsholders and developers from both local and international organisations, as well as individuals involved in the creative industries.[2]

[2] Refer to the Acknowledgement Page for a fuller list of roundtable participants. Note that some participants prefer to remain anonymous.

Summary of recommendation

5. Based on the analysis that follows, the common law can find subsistence of copyright in authorial works created using generative AI with the prompter as the author thereof applying existing principles. As such, there appears to be no need for imminent reform of the common law approach nor legislative reform such as the introduction of statutory recognition of computer-generated works.

General copyright principles

6. Before attempting to address the problem statement above, it may be helpful to start with a summary of the elements of copyright.

Subject matter protected by copyright

7. Under Singapore law, there are several types of materials that are entitled to copyright protection:

    a. "authorial works";

    b. published editions of authorial works;

    c. sound recordings;

    d. films;

    e. broadcasts; and

    f. cable programmes.[3]

Authorial works

8. "Authorial works" comprise literary, dramatic, musical and artistic works. These types of works are common types of outputs from generative AI systems.

9. An authorial work does not need to be creative, have utility or possess literary, dramatic or musical merit. This is because copyright protects "the originality of the expression employed to communicate ideas".[4] The concept of *originality* is discussed below.

Non-authorial works

10. Items (c)–(f) above are referred to as "non-authorial" or "entrepreneurial" works.

11. The requirement of "originality" discussed below does not apply to these works. Copyright in these types of works subsists not on account of any skill of an author, but rather on account of recognising the commercial and technical investment involved in producing such works, which is typically for commercial exploitation of existing authors' works.

Originality

12. The essential condition of copyright subsistence is the originality of the work.[5]

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3 Copyright Act 2021, sections 8 and 9.

4 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [64].

5 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [38].

13. Originality requires origination of the work from one or more authors.[6] It is "the contribution which is made by the author to the form in which the work is expressed".[7]

14. The work must also be an "authorial creation".[8] It is not the idea of the work that must originate from an author, as ideas are not protected by copyright. Rather, it is the work that must be "*causally connected* with the *engagement of the human intellect*" (emphasis original).[9]

Engagement of the human intellect

15. "Human intellect" refers to "the application of intellectual effort, creativity, or the exercise of mental labour, skill or judgment".[10]

16. Different common law jurisdictions have adopted different formulations of the requisite standard. For example, "independent intellectual effort",[11] "minimal degree of creativity",[12] "skill, labour and judgment"[13] and "exercise of skill and judgment".[14] The differences between these standards are "essentially semantic".[15]

17. As to the sufficiency of what the standard requires, it will be "a question of fact and degree and thus has to be determined on the facts of the particular case".[16] It is "practically impossible to prescribe prospectively a minimum level of such effort".[17]

Authorship

18. Originality is inextricably tied to the requirement of authorship. The two concepts "have always been correlative; the one connotes the other"[18] where "[a]n author must first be

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6 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [75].

7 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [40], quoting Staniforth Ricketson and Christopher Creswell, *The Law of Intellectual Property: Copyright, Designs & Confidential Information* (Lawbook Co, 2nd Ed (Revised), 2010) at [7.45].

8 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [24].

9 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [24].

10 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [24].

11 *IceTV Pty Limited v Nine Network Australia Pty Limited* (2009) 239 CLR 458 (High Court of Australia) at [33].

12 *Feist Publications, Inc v Rural Telephone Service Company, Inc* 499 US 340 (1991) (Supreme Court of the United States) at 345.

13 *Ibcos Computers Ltd v Barclays Mercantile Highland Finance Ltd* [1994] FSR 275 (High Court of Justice of England and Wales) at 302.

14 *CCH Canadian Ltd v Law Society of Upper Canada* [2004] SCC 13 (Supreme Court of Canada) at [16].

15 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [27].

16 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [34].

17 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [28].

18 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [40], quoting *Sands & McDougall Pty Ltd v Robinson* (1917) 23 CLR 49 at 55–56.

identified before the work in question can be deemed to be original".[19] It is the author who is entitled to the benefits of the bundle of rights that copyright confers.[20]

19. That author must be human (that is, a "natural", as opposed to "legal", person"). This is because "the objective of copyright law has been to encourage the creativity of natural authors".[21]

Fixation in material form

20. For a work to be entitled to copyright, it must be "fixed in material form".[22] This is a consequence of the deeming by the Copyright Act 2021 (**Act**) that a work is made at the time the work is "first fixed in material form" for the purposes of calculating the time from which copyright subsists.

21. The Act does not expressly require the material form of the work to be fixed by the author and the courts have held that the fact that a work is fixed into a material form with the assistance of software does not mean that the work does not originate from the person operating the software.[23] So, while the tangible expression of the work must originate from an author, the author need not fix it in that material form.

Copyright policy

22. While there does not appear to be any authoritative statement from the Singapore courts in the context of the Act, it appears accepted that the Act should be interpreted in a technologically neutral manner. That is, the Act should not be interpreted in a manner that discriminates between different types of technologies used to create works.

    (Singapore's Ministry of Law and the Intellectual Property Office of Singapore noted that major amendments to the Act's predecessor, the Copyright Act 1987, in the late 1990s and early 2000s were done to ensure Singapore's copyright regime was "technology-neutral".[24] We are unaware of any suggestion that this approach has changed in respect of the Act.)

23. The Court of Appeal of Singapore has also stated that there is "a public interest in not allowing copyright law to hinder creativity and innovation".[25]

Presumptions of copyright subsistence

24. Unlike the United States, Singapore does not operate a copyright register. As such, the question of subsistence generally only arises if, in an infringement action, the defendant disputes the plaintiff's copyright in the work allegedly infringed.

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19 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [75].

20 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [41].

21 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [41].

22 Copyright Act 2021, section 16.

23 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd* [2016] 2 SLR 165; 2016 SGHC 09 at [253]–[255].

24 Ministry of Law and the Intellectual Property Office of Singapore, Public Consultation on Proposed Changes to Singapore's Copyright Regime, 23 August 2016 (pdf) at para 2.13.

25 *RecordTV Pte Ltd v MediaCorp TV Singapore Pte Ltd* [2011] 1 SLR 830; [2010] SGCA 43 at [69].

25. The Act contains several presumptions regarding copyright subsistence. Those presumptions are set out in Subdivision 4 (“Presumptions in infringement actions”) of Division 9 (“Infringement of copyright”) of Part 3 (“Copyright in works”) of the Act.

Copyright in works generated using computer programs

26. One approach to answering the problem statement might be found in judgments considering works created using computer programs. (Generative AI involves a similar process of human instruction → computer processing → output.)

Express Newspapers v Liverpool Daily Post & Echo

27. In *Express Newspapers plc v Liverpool Daily Post & Echo plc*,[26] Whitford J of the High Court of Justice of England and Wales ruled that "output from a computer that has been randomly generated by the machine itself is a copyright work".

28. Whitford J reasoned:[27]

> The computer was no more than the tool by which the varying grids of five-letter sequences were produced to the instructions, via the computer programs, of [the operator] Mr Ertel. It is as unrealistic as it would to suggest that, if you write your work with a pen, it is the pen which is the author of the work rather than the person who drives the pen.

29. Here the court treated the computer program as the law treats any other creative tool. In that regard, there is never any suggestion that authorship of a work should be attributed to the pen, piano or a word processor that was used to create it. Nor is there any suggestion that authorship should be attributed to Montblanc, Steinway & Sons or Microsoft Corporation as manufacturer or developer of the tool.

30. The difficulty with using Whitford J's analogy to answer the problem statement is that the putative author of the output created using generative AI does not drive the generative AI model as one "drives" a pen.

Telstra Corporation v Phone Directories Company

31. *Telstra Corporation Limited v Phone Directories Company Pty Ltd*[28] concerned whether there was copyright in the White Pages and the Yellow Pages directories published by Australian telecommunications company Telstra. At the trial before the Federal Court of Australia (Gordon J) and on appeal to the Full Federal Court of Australia (Keane CJ, Perram and Yates JJ), this question was answered in the negative. This was because the directories were brought into the form in which they were published by an automated computerised process.

32. The first-instance and appeal judgments provide dicta that may be useful when it comes to the common law's approach to answering the problem statement.

    (Singapore's Copyright Act 1987 was modelled on Australia's Copyright Act 1968 (Act No 63 of 1968) (Cth), as amended by the Copyright Amendment Acts 1980 (Act No 154 of 1980) (Cth) and 1984 (Act No 43 of 1984) (Cth).[29] Singapore's Copyright Act 1987 was repealed and re-enacted in 2021 as the Act. But those amendments do not appear to affect the relevance of Australian authorities on originality and authorship.)

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26 [1985] FSR 306.

27 *Express Newspapers plc v Liverpool Daily Post & Echo plc* [1985] FSR 306 at 310.

28 [2010] FCAFC 149.

29 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [21].

Gordon J

33. As to the starting point, Keane CJ endorsed[30] the approach taken by the trial judge, Gordon J,[31] regarding the determination of authorship and originality. This passage was later cited with approval by the Court of Appeal of Singapore in *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* (***Asia Pacific Publishing***):[32]

> Authorship and originality are correlatives. The question of whether copyright subsists is concerned with the particular form of expression of the work. You must identify authors, and those authors must direct their contribution (assessed as either an 'independent intellectual effort' of [*sic*] a 'sufficient effort of a literary nature') to the particular form of expression of the work. Start with the work. Find its authors. They must have done something, howsoever defined, that can be considered original.

34. Under this approach, to determine subsistence of copyright, the court starts with the work and finds the putative author thereof. That person must have "done something" that is sufficient to establish the "independent intellectual effort" required for the work to be considered to originate from that person.

    (As noted above, "independent intellectual effort" is Australia's version of Singapore's "human intellect" standard).

35. If the computer program ousts the prospective author's "independent intellectual effort", then the author cannot be said to originate the resulting work. Indeed, this is why the trial judge and the Full Federal Court held that there was no copyright in the directories. The alleged authors were, in a sense, slaves to the machine. The directories were not compiled by individuals but by the automated processes of the computer system. Indeed, the purpose of automating the process was to relieve individuals of any "intellectual effort" in generating the directories, rather than provide for it.[33] As the trial judge explained regarding the "Rules" of the automated computerised process: "It is unclear who created the Rules. But it is clear that everyone is bound by them".[34]

    (There will also be no independent intellectual effort where the work is copied from another work.[35] The position is the same in Singapore.[36])

36. The author must "direct" his or her "independent intellectual effort" to "the particular form of expression of the work". It does not appear that Gordon J was requiring a direct cause-and-effect relationship between the author's contributions and the work's ultimate tangible expression. Such an interpretation would appear to render the adjective "particular" as synonymous with "exact" or "precise". Rather, "particular" appears to refer to the concrete expressive elements of the work, as distinct from abstract ideas or general concepts. This is consistent with the fundamental distinction in copyright law between unprotectable ideas and

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30 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [32].

31 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCA 44 at [344].

32 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [74].

33 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCA 44 at [341].

34 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCA 44 at [90].

35 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [73]–[74] per Keane CJ, quoting *IceTV Pty Limited v Nine Network Australia Pty Limited* (2009) 239 CLR 458 at [33] and *University of London Press Ltd v University Tutorial Press Ltd* [1916] 2 Ch 601 at 608–10.

36 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd* [2016] 2 SLR 165; 2016 SGHC 09 at [81].

protectable expression, while acknowledging the collaborative and evolutionary nature of many creative works.

37. In the final sentence of the passage, Gordon J states that the "something" must be capable of being considered "original". "Original" here should not be taken as a synonym for inventive or creative. As Keane CJ explained:[37]

> It may also be accepted that the level of intellectual effort necessary to produce an original literary work is not required to rise to the level of "creativity" or "inventiveness". In determining whether a literary work is original, the focus of consideration is not upon creativity or novelty, but upon the origin of the work in some intellectual effort of the author.

The position is the same under Singapore law.[38]

Perram J

38. Perram J (of the Full Federal Court) articulated[39] a test for determining what is necessary for a work *generated by a computer program* to originate from the prospective author:

> … a computer program is a tool and it is natural to think that the author of a work generated by a computer program will ordinarily be the person in control of that program. However, care must [be] taken to ensure that the efforts of that person can be seen as being directed to the reduction of a work into a material form. Software comes in a variety of forms and the tasks performed by it range from the trivial to the substantial. So long as the person controlling the program can be seen as directing or fashioning the material form of the work there is no particular danger in viewing that person as the work's author. But there will be cases where the person operating a program is not controlling the nature of the material form produced by it and in those cases that person will not contribute sufficient independent intellectual effort or sufficient effort of a literary nature to the creation of that form to constitute that person as its author: a plane with its autopilot engaged is flying itself. In such cases, the performance by a computer of functions ordinarily performed by human authors will mean that copyright does not subsist in the work thus created.

39. Unlike Gordon J, Perram J's dicta were not cited by the Court of Appeal of Singapore in *Asia Pacific Publishing.* That said, His Honour's views are instructive in considering the problem statement. Our observations on the above quotation are as follows.

40. *First,* Perram J states that one might assume that the person who is "in control" of a computer program is naturally the author of a work generated by that computer program. But that fact, in and of itself, is not sufficient to establish authorship. This is because the computer program could be "controlling the nature of the material form produced by it" and, if so, the person—notwithstanding their control of the program—"will not contribute sufficient independent intellectual effort… to the creation of that form to constitute that person as its author".

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37 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [58].

38 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [101], quoting *University of London Press, Limited v University Tutorial Press, Limited* [1916] 2 Ch 601 at 608-609 (per Peterson J).

39 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [118].

41. *Second*, the question is then how the alleged author establishes that they are "controlling the nature of the material form" produced by the computer program, rather than the program itself. This requirement will be established if the alleged author can be seen as "directing",[40] "fashioning",[41] "guiding",[42] or "shaping"[43] the material form of the work.

42. *Third*, is the evidentiary standard. Perram J states that the evidence must be such that the efforts of the person controlling the computer program "can be seen" as directing the reduction of a work to its material form. The phrase "can be seen" appears deliberate as it appears twice in the quoted paragraph (in the second and fourth sentences). That is, it appears that the person controlling the computer program does not need to prove a direct cause-and-effect relationship between (a) its efforts (namely, the person's inputs into the computer program) and (b) the reduction of the work into the material form.

43. *Fourth,* in the final clause of the final sentence of the quoted paragraph, Perram J states that "the performance by a computer of functions ordinarily performed by human authors will mean that copyright does not subsist in the work thus created". The clause is circumscribed by the phrase "[i]n such cases"—being "cases where the person operating a program is not controlling the nature of the material form produced by it". Thus, the final clause of the final sentence appears to be an observation, rather than a statement of principle.

Application of principles to Generative AI

44. For copyright to subsist in the output of a generative AI model (with the prompter as the author thereof), there must be: (a) sufficient engagement of the prompter's human intellect; and (b) that engagement must bear a sufficient connection with the expressive elements of the output from the generative AI model.[44] Whether both are satisfied is "a question of fact and degree".[45]

45. The two primary pieces of evidence would appear to be the user's prompt(s) and the output(s). The prompt may evidence the engagement of the prompter's human intellect. The combination of the prompt alongside the output may evidence the requisite causal connection between the prompt and the expressive elements of the output.

    (The format of the output generated by a generative AI model may not be the same as the format of the prompt inputted into the model. For example, diffusion models are often text-to-image[46] where an image is generated from a text prompt but can also be image-to-image.[47] The fact that the output format is different from the input format should not matter, provided that the requirements of subsistence are met.)

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40 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [118] and [119].

41 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [118].

42 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [118].

43 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [119].

44 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [24] and [30]. See also Intellectual Property Office of Singapore, "Artificial Intelligence and Copyright Protection in Singapore – How does Singapore Law Treat AI-generated Content", undated, which similarly adopts these principles.

45 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [30].

46 "Text-to-text", *Hugging Face*, undated.

47 "Image-to-image", *Hugging Face*, undated.

46. The prompt may be "creative" or "inventive". But it need not be. Indeed, the prompt need not satisfy the requirements of a work. This is because "originality" of the output is concerned with the *origination* of the output in the engagement of the author's human intellect.[48]

47. The prompt must be directed to the expressive elements of the output, rather than an idea or a general concept of the output. This is because copyright protects the former and not the latter.[49] In that regard, there is a difference between a prompt that asks a generative AI system to create an image of "a cat" in comparison with a prompt that asks for "a photorealistic portrait of a calico-coloured tabby cat with green eyes sitting on a sunny windowsill".

48. An author may start with a general concept of a work which is not subject to copyright (e.g., a concept or thesis for an essay or novel), the content of which is refined over multiple drafts, ultimately leading to a protected work. Similarly, one may argue that a prompter may start with a general concept of the output (which is not subject to copyright) that crystallises into a work over successive prompts.

49. It does not appear that the prompter (as the alleged author) must establish a direct cause-and-effect relationship between his/her prompt(s) and the expressive elements of the output(s). Per Gordon J, the alleged author must "direct their contribution" (that is, the engagement of their human intellect) "to the particular form of expression of the work".[50] ("Particular" in this regard appears to refer to the concrete expressive elements of the work, as distinct from abstract ideas or general concepts—consistent with the "idea–expression" dichotomy.)

50. This appears supported by Perram J, although His Honour uses different terms. According to Perram J, the requisite causal connection will be established if the prompter is "controlling the nature of the material form".[51] This will be established if the prompter can be seen as "shaping", "guiding", "directing" or "fashioning" the material form of the output.

51. Such an approach is useful when applied to works created using generative AI. Unlike traditional deterministic or mechanistic tools and systems, a user of generative AI only has indirect influence over the output. The user's prompts shape the output but do not dictate the output exactly. As such, it is not possible to explain precisely why a specific prompt produces a specific output and not something else.

    (In this regard, generative AI stands in contrast to automation. Automation, as illustrated by the *Telstra Corp* decisions, relies on fixed pre-defined rules that restrict or oust the engagement of the potential author's human intellect and is thus akin to Perram J's analogy of a plane flying on autopilot. Generative AI, on the other hand, does not. Indeed, one may argue that rather than ousting a prompter's human intellect, generative AI provides for it.)

52. One imagines that the more specific the prompt(s) is(are) regarding the expressive elements of the output, the more likely that copyright will subsist in the output (with the prompter as the author thereof) provided that those expressive elements are reflected (even if not exactly) in the output.

53. Perram J's concepts of "shaping", "guiding", "directing" or "fashioning" are apropos when it comes to prompt engineering. One form of prompt engineering is called "prompt chaining"

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48 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [58]; *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [40].

49 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd and another matter* [2017] 2 SLR 185; [2017] SGCA 28 at [30].

50 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCA 44 at [344].

51 *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [118].

where the user breaks down a complex task into a series of smaller prompts, where the output from one prompt serves as the input for the next. This iterative technique, while more time-consuming for the prompter, generally leads to more accurate and relevant outputs. It also allows the user to spot any mistakes or "misunderstandings" by the model along the chain, aiding in troubleshooting.

54. Indeed, one also imagines that the greater the number of prompts and the resulting iterations of the output, the more readily a court will be able to find that the requisite "sufficient" causal connection—between the engagement of the prompter's human intellect and the output—is established.

55. As noted above, whether (a) the requisite engagement of the prompter's human intellect (as evidenced by the prompt) and (b) the requisite sufficient causal connection with the output (as evidenced by a comparison of the prompt(s) and the output(s)) are established will be "a question of fact and degree".

    (We query whether other evidence,[52] in addition to the prompt(s), may also be relevant. For example, would evidence of the prompter's reasons for choosing one generative AI system over another be relevant if it evidences that the system used was chosen because of how it responds to a user's prompts vis-à-vis the expressive elements of the output?)

56. Applying these principles, not all outputs of a generative AI system will be entitled to copyright protection. Consistent with earlier authorities, the mere expression of data or facts may not be entitled to protection (because copyright does not protect data or facts). For example, a prompt simply instructs the model to organise a table of figures in an ascending or descending order. If the output represents a random sampling from the model's training data rather than a response to the user's prompt, it is unlikely that the prompter will be the author of that random sample (for want of a sufficient causal nexus between the prompt and the output).

US Copyright Office

The US Copyright Office (**Office**) is of the view that a prompter cannot be the author of the output of a generative AI system. We briefly address the Office's view in the **Annexure**.

57. The fact-specific nature of originality may create uncertainty in application, but this reflects the common law's inherent methodology rather than a weakness in the framework. As the Court of Appeal of Singapore explained, the "apparently cumbersome" nature of the common law is, in fact, its "inherent genius".[53] The common law is an "organic, coherent as well as holistic system out of which justice and fairness flow … notwithstanding the apparent absence of a clear blueprint".[54]

58. Indeed, this report is illustrative of the benefits of the common law approach. That is, there is nothing inherent in the nature of copyright law that makes it unable to adequately and appropriately respond to the advent of generative AI. To adopt the words of one Singapore

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52 For example, quality (as opposed to quantity) of prompts, editing of outputs post-generation, whether the prompter uploaded its own materials in the generative AI model used, etc.

53 *Kickapoo (Malaysia) Sdn Bhd and another v The Monarch Beverage Co (Europe) Ltd* [2010] 1 SLR 1212; [2009] SGCA 63 at [57].

54 *Kickapoo (Malaysia) Sdn Bhd and another v The Monarch Beverage Co (Europe) Ltd* [2010] 1 SLR 1212; [2009] SGCA 63 at [57].

judge, the "old wineskins of the common law have not necessarily become brittle with old age and overuse, but can still be flexible enough for the new wine" of generative AI.[55]

[55] Phillip Jeyaretnam, "New Wine in Old Wineskins: Adapting the Law for the New Digital Economy" *Law Gazette*, July 2022.

Statutory recognition of computer-generated works

59. Another solution is legislative reform to the Act to expressly recognise copyright subsistence in works generated using a computer.

60. The United Kingdom (**UK**) introduced such a provision in 1988 when it enacted the Copyright, Designs and Patents Act 1988 (**CDPA**) which replaced the former Copyright Act 1956.

61. The relevant provision is section 9(3) of the CDPA which states:

> In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.

62. Section 178 of the CDPA defines the past participle adjective "computer-generated" as follows:

> "computer-generated", in relation to a work, means that the work is generated by a computer in circumstances such that there is no human author of the work;

63. The provision is a potential solution to the problem that some computer-generated works may not have a human author as a matter of copyright law. The provision solves the problem by deeming the person by whom the arrangements necessary for the creation of the work were undertaken as the author.

64. Other (current and former) Commonwealth jurisdictions have also adopted the provision into their respective copyright statutes, namely Hong Kong Special Administrative Region,[56] India,[57] Ireland,[58] and New Zealand.[59]

65. We make the following observations about section 9(3) of the CDPA.

66. *First*, section 9(3) only operates if "there is no human author of the work". Considering the analysis in the previous section, the common law can find a human author of a work generated by a computer. So, one queries the utility of such a provision.

67. *Second*, the provision may be inoperative or, to the extent it is (or can be, via a purposive interpretation, made) operative, it creates a contradiction in copyright law. Section 9(3) comprises two clauses: a subordinate clause ("In the case of a literary, dramatic, musical or artistic work which is computer-generated") and a main (deeming) clause ("The author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken"). The subordinate clause requires the existence of a literary, dramatic, musical or artistic work. But, as a matter of copyright law, a work cannot be a literary, dramatic, musical or artistic work unless the work has a human author. So, the deeming clause appears not to operate because the subordinate clause fails to operate in the absence of a human author.

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56 Copyright Ordinance (Cap 528) (Hong Kong Special Administrative Region), section 11(3).

57 Copyright Act 1957 (India), section 2(a)(vi).

58 Copyright and Related Rights Act 2000 (Ireland), section 21(f).

59 Copyright Act 1994 (New Zealand), section 5(2)(a).

68. For the deeming clause to operate, it would appear that the courts must find that a work can be a literary, dramatic, musical or artistic work even if it does not have a human author. This is contrary to existing jurisprudence where the concepts of an (original) work and (human) authorship are correlative.[60]

69. *Third*, the person who is deemed, by the main clause, to be the author of the work is the person "by whom the arrangements *necessary* for the creation of the work are undertaken" (emphasis added). In the context of generative AI, both the developers of the system as well as the human prompter are "necessary" for the creation of the work. Output is not produced in the absence of a prompt and equally a prompt has no function in the absence of a generative AI system. So, as between the different humans who may be involved (the human prompter on the one hand and the human developers of the generative AI system on the other), it is unclear who would be deemed the author of the output.

70. *Fourth*, the provision may run counter to the underlying rationale and justification for recognising copyright. The provision permits copyright to subsist in works without a human author. But "the objective of copyright law has been to encourage the creativity of natural authors".[61] It has been argued by relevant UK government agencies that affording copyright in works without a human author "has little or no positive incentive effect"[62] and this argument appears to be supported by the "minimal evidence" of use of the provision since its enactment in the UK.[63]

71. In respect of the provision's role in encouraging the growth of generative AI products and services, this is also said to be "unlikely".[64] There has been a proliferation in the development, deployment and use of generative AI products and services notwithstanding the absence of an authoritative statement regarding whether copyright subsists in the outputs thereof. To the extent that there is legal uncertainty on this question, providers of such products and services have sought to address it by clarifying that ownership of the outputs, if any, lies with the human users.[65]

72. *Fifth*, the UK Government is of the view that there "does not appear to be a strong justification for maintaining" the provision and thus "is minded to reject" its continued existence, at least in its current form.[66] That said, the UK Government nevertheless invited the public to provide "information on whether this provision is being used, its economic effect, and how it is being

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60 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [40], quoting *Sands & McDougall Pty Ltd v Robinson* (1917) 23 CLR 49 at 55–56 and at [74], quoting *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149 at [32].

61 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [41].

62 Intellectual Property Office, Department for Science, Innovation and Technology, and Department for Culture, Media and Sport, "Copyright and AI: Consultation", 17 December 2024) at para 137.

63 Intellectual Property Office, Department for Science, Innovation and Technology, and Department for Culture, Media and Sport, "Copyright and AI: Consultation", 17 December 2024) at para 132.

64 Intellectual Property Office, Department for Science, Innovation and Technology, and Department for Culture, Media and Sport, "Copyright and AI: Consultation", 17 December 2024) at para 140.

65 See, for example, Open AI, "Terms of Use", 11 December 2024. Such clauses function on the assumption that copyright subsists in the output generated; otherwise, there is no underlying copyright for which ownership can be conferred.

66 Intellectual Property Office, Department for Science, Innovation and Technology, and Department for Culture, Media and Sport, "Copyright and AI: Consultation", 17 December 2024) at para 143.

interpreted in practice" during a consultation exercise that ran between 17 December 2024 and 25 February 2025. As of writing, the results of that exercise are yet to be published.[67]

73. *Sixth,* it may be possible to draft a provision that addresses the question without being burdened by the issues affecting section 9(3) of the CDPA. But one queries whether such a provision would, in effect, be meaningfully different to the common law position outlined above.

[67] A progress update was provided in December 2025. See Department for Science, Innovation and Technology, and Department for Culture, Media and Sport, "Statement of Progress under Section 137 Data (Use and Access) Act", December 2025.

Other approaches

74. There are other approaches offering potential solutions to the problem statement. Two are briefly considered below.

Model as author

75. Some have suggested that the law should recognise a generative AI model itself as the author of its outputs. We make the following observations regarding this suggestion.

76. *First*, this approach requires the personification of the model, which is legally problematic. The personification of non-humans is limited under the law. Indeed, the Court of Appeal of Singapore has already ruled that corporate bodies cannot be authors of copyrighted works.[68] If a corporate entity—despite its legal personality—cannot qualify as an author, it is even harder to justify granting authorship to something as abstract as a generative AI model.

77. *Second*, if a model can be personified for the purpose of copyright subsistence, then by parity of reasoning, one may argue that this personification should extend to copyright infringement as well. However, this appears to raise enforcement challenges—how would one commence infringement proceedings against a model? How could legal orders be enforced against it? If one model were to infringe the copyright of another model, how would such disputes be resolved?

78. *Third*, this framework appears to contradict the underlying rationale and justification for recognising copyright (which is designed to encourage human creativity) and current industry practice (where copyright in AI-generated outputs is typically stated as owned by the human user rather than the model itself).

Developers as authors

79. Others have suggested that the (human) developers of a generative AI model should be recognised as the authors of its outputs. However, this approach also appears to face difficulties.

80. The primary challenge appears to concern originality. It is the prompter, not the model developer, who inputs a prompt that not only initiates the process which generates the output but also actively shapes that output.

81. In a scenario in which a prompter's engagement is so minimal that it serves merely as the initiator of a process rather than as a meaningful contributor to the final work, the developer faces a further hurdle: the developers' contribution to the output of the model (in the form of the development of the model) is anterior to the output of the model first taking its material form. In other words, while the developers may have copyright in the components that comprise the model (e.g., source code), that does not mean that they have copyright in the model's outputs.

82. In the case of a foundational model—which can be applied to a wide variety of use cases—the developer's connection to the ultimate output is even more remote as such models will be adapted (i.e., fine-tuned) to specific tasks, including on task-specific datasets, by others.

83. From a policy perspective, it is unclear whether recognising developers as the authors of a model's output would incentivise the advancement of generative AI products and services. As

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68 *Asia Pacific Publishing Pte Ltd v Pioneers & Leaders (Publishers) Pte Ltd* [2011] 4 SLR 381; [2011] SGCA 37 at [72].

noted above, the absence of such an approach does not appear to have hindered AI development thus far.

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Images

- Prompt icon by Magicon from the Noun project.
- AI icon from UXWing.

Annexure: US Copyright Office's position

1. The US Copyright Office (**Office**) is of the view that a prompter cannot be the author of the output of a generative AI system.

2. We should be cautious when considering the views of the Office because it is speaking as an operator of a copyright register and in respect of US law. Moreover, the Office is not the final arbiter of the interpretation of the US Copyright Act. The interpretation of the US Copyright Act is a matter for the Federal Courts and ultimately the Supreme Court of the United States.

3. That being said, the Office's views are instructive in offering a comparative perspective when considering Singapore law's answer to the problem statement.

4. For completeness, we set out an extract of the Office's analysis of the issues below:[69]

> **2. Analysis**
>
> The Office concludes that, given current generally available technology, prompts alone do not provide sufficient human *control* to make users of an AI system the authors of the output. Prompts essentially function as *instructions that convey unprotectible ideas*. While highly detailed prompts could contain the user's desired expressive elements, at present they do not *control* how the AI system processes them in generating the output.
>
> Cases regarding joint authorship support this conclusion. These cases address the amount of control that is necessary to claim authorship. The provision of detailed directions, without influence over how those directions are executed, is insufficient. As the Third Circuit explained, when a person hires someone to execute their expression, "that process must be rote or mechanical transcription that does not require intellectual modification or highly technical enhancement" for the delegating party to claim copyright authorship in the final work. Although entering prompts into a generative AI system can be seen as similar to providing instructions to an artist commissioned to create a work, there are key differences. In a human-to-human collaboration, the hiring party is able to oversee, direct, and understand the contributions of a commissioned human artist. Depending on the nature of each party's contributions, the artist may be the sole author, or the outcome may be a joint work or work made for hire. In theory, AI systems could someday allow users to exert so much control over how their expression is reflected in an output that the system's contribution would become rote or mechanical. The evidence as to the operation of today's AI systems indicates that this is not currently the case. Prompts do not appear to adequately determine the expressive elements produced, or control how the system translates them into an output.
>
> The gaps between prompts and resulting outputs demonstrate that the user lacks control over the conversion of their ideas into fixed expression, and the system is largely responsible for determining the expressive elements in the output. In other words, prompts may reflect a user's mental conception or idea, but they do not control the way that idea is expressed. This is even clearer in the case of generative AI systems that modify or rewrite prompts internally. That process recasts the human contribution—however detailed it may be—into a different form.

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69 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at pp. 18-22.

The following image, which the Office generated by entering a prompt into a popular commercially available AI system, illustrates this point:

Prompt	***Output***
professional photo, bespectacled cat in a robe reading the Sunday newspaper and smoking a pipe, foggy, wet, stormy, 70mm, cinematic, highly detailed wood, cinematic lighting, intricate, sharp focus, medium shot, (centered image composition), (professionally color graded), ((bright soft diffused light)), volumetric fog, hdr 4k, 8k, realistic	

This prompt describes the subject matter of the desired output, the setting for the scene, the style of the image, and placement of the main subject. The resulting image reflects some of these instructions (e.g., a bespectacled cat smoking a pipe), but not others (e.g., a highly detailed wood environment). Where no instructions were provided, the AI system filled in the gaps.

For instance, the prompt does not specify the cat's breed or coloring, size, pose, any attributes of its facial features or expression, or what clothes, if any, it should wear beneath the robe. Nothing in the prompt indicates that the newspaper should be held by an incongruous human hand.

The fact that identical prompts can generate multiple different outputs further indicates a lack of human control. As one popular system explains on its website, "[n]o matter how detailed . . . the same text describes an infinite number of possible" outputs. In these circumstances, the black box of the AI system is providing varying interpretations of the user's directions.

Repeatedly revising prompts does not change this analysis or provide a sufficient basis for claiming copyright in the output. First, the time, expense, or effort involved in creating a work by revising prompts is irrelevant, as copyright protects original authorship, not hard work or "sweat of the brow." Second, inputting a revised prompt does not appear to be materially different in operation from inputting a single prompt. By revising and submitting prompts multiple times, the user is "re-rolling" the dice, causing the system to generate more outputs from which to select, but not altering the degree of control over the process. No matter how many times a prompt is revised and resubmitted, the final output reflects the user's acceptance of the AI system's interpretation, rather than authorship of the expression it contains.

Some commenters drew analogies to a Jackson Pollock painting or to nature photography taken with a stationary camera, which may be eligible for copyright protection even if the author does not control where paint may hit the canvas or when a wild animal may step into the frame. However, these works differ from AI-generated materials in that the human author is principally responsible for the execution of the idea and the determination of the expressive elements in the resulting work. Jackson Pollock's process of creation did not end with his vision of a work. He controlled the choice of colors, number of layers, depth of texture, placement of each addition to the overall composition—and used his own body movements to execute each of these choices. In the case of a nature photograph, any copyright protection is based primarily on the angle, location, speed, and exposure chosen by the photographer in setting up the camera, and possibly post-production editing of the footage. As one commenter explained, "some element of randomness does not eliminate authorship," but "the putative author must be able to constrain or channel the program's

> processing of the source material." The issue is the degree of human control, rather than the predictability of the outcome.
>
> The Office also agrees that authorship by adoption does not in itself provide a basis for claiming copyright in AI-generated outputs. As commenters noted, providing instructions to a machine and selecting an output does not equate to authorship. Selecting an AI-generated output among uncontrolled options is more analogous to curating a "living garden," than applying splattered paint. As the Kernochan Center observed, "selection among the offered options" produced by such a system cannot be considered copyrightable authorship, because the "selection of a single output is not itself a creative act."
>
> There may come a time when prompts can sufficiently control expressive elements in AI-generated outputs to reflect human authorship. If further advances in technology provide users with increased control over those expressive elements, a different conclusion may be called for. On the other hand, technological advancements that facilitate increased automation and optimization may bolster our current conclusions. For example, if generative AI systems integrate or further improve automated prompt optimization, users' control may be diminished.

5. Our observations on the Office's analysis are set out below. In doing so, we make no assessment regarding whether the Office's analysis is consistent with US jurisprudence.

Control

6. The Office states that for copyright to subsist in a work, the author must have exercised "control" over the work's expressive elements.[70]

7. Singapore case law does not expressly require control by the author over the expressive elements of the output. As noted above, what is required is a sufficient causal connection between the engagement of the alleged author's human intellect and the expressive elements of the work, the determination of which is ultimately a question of "fact and degree".[71] Nevertheless, an examination of the Office's views on the requirement of "control" may be instructive.

8. In the context of discussing the cases on joint authorship, the Office appears to state that what is required is a "rote or mechanical" transcription by the AI system of the author's instructions.[72] This suggests that a direct cause-and-effect relationship between the author's instructions and the system's outputs is required for "control" to be established.

9. However, in the context of discussing the analogies with Jackson Pollock and photography, the Office's views on "control" appear softer. Quoting comments by an intellectual property research centre, the Office notes that "some element of randomness" to the predictability of the output "does not eliminate authorship". Rather, the quotation continues, "the putative author must be able to *constrain or channel* the program's processing of the source material" (emphasis added).[73]

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70 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at pp. 18 and 21.

71 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd* [2017] 2 SLR 185; [2017] SGCA 28 at [30].

72 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at pp. 18-19.

73 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at p 21.

10. This appears to suggest that a direct cause-and-effect relationship between the author's instructions and the system's outputs is *not* required and that the question is "*the degree* of human control" that the putative author has over the program's interpretation of his or her instructions (emphasis added).[74]

    (We query if there is any meaningful difference between an author "constrain[ing] or channel[ing]" how his or her instructions are processed by a computer program and an author (in the words of Perram J in *Telstra Corporation Limited v Phone Directories Company Pty Ltd* [2010] FCAFC 149) "directing or fashioning" the material form of the work using a computer program.)

11. In light of the comments on these two analogies, the Office's "control" requirement does not appear as strict as it might appear on first impression. However, the Office takes the view that the technology, as it currently stands, cannot satisfy even this more flexible approach to the requirement of "control". (For a further discussion, see the "Policy" section below.)

12. Lastly, we observe the Office's view on the requirement of "control" is not without criticism.[75]

Non-determinism

13. The Office states that one of the indicia of a lack of control is that using identical prompts with the same generative AI model can lead to different results.

14. We observe that a research lab has determined the source of such non-determinism, as well as how to resolve it to obtain truly reproducible results.[76] We do not attempt to summarise that research as doing so is beyond the scope of this report.

15. However, even if truly reproducible results are obtained, resolving non-determinism alone would not appear to alter the Office's position on control. In other words, even if a generative AI model consistently produces the same output in response to an identical prompt, any "gap" between the prompt and the resulting output would, in the Office's view, still indicate an absence of control by the prompter over the expressive elements of the output. To take the "bespectacled cat" example used by the Office: even if the model could reliably produce the same image in response to the same prompt, the gap between the prompt and the image would, it appears, result in there being no copyright in the output in the Office's view.

Joint authorship

16. The Office states that "[c]ases on joint authorship support" their view that prompts do not provide the human prompter with sufficient control to make the prompter the author of the output of a generative AI model.[77] However, authorities on joint authorship, in our view, can be distinguished. As noted above, an author must be a natural person. If there is more than one author, all must be natural persons. As a generative AI model is not a natural person, it

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74 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at p 21.

75 See, for example, Edward Lee, "Prompting Progress: Authorship in the Age of AI" (2024) 76 *Florida Law Review* 1445); and Joshua Gans, "The US Copyright Office is Anti-Prompt", *Joshua Gans' Newsletter*, 4 April 2025.

76 Horace He and Thinking Machines Lab, "Defeating Nondeterminism in LLM Inference", *Thinking Machines Lab: Connectionism*, September 2025.

77 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at p 18.

cannot be an author, whether solely or jointly with one or more human authors. So, the authorities on joint authorship do not apply.

17. Rather than attempting to apply the authorities on joint authorship, one might instead use those authorities by way of analogy. That is, a generative AI model is analogous to a joint author. As indicated above (see the "Model as author" section above), such an analogy requires personification of a generative AI model which is legally problematic and, in our view, unwarranted as a matter of fact and law.

Gap-filling by generative AI

18. The Office observes that sometimes the output of a generative AI model "reflects some of" the prompter's instructions "but not others", and that in the absence of instructions, "the AI system fill[s] in the gaps".[78]

19. Under Singapore law, "[i]t is not necessary that *all* parts of the work are original when determining subsistence of copyright in a work" (emphasis added).[79] So, the fact that not all of the prompter's instructions are reflected in the output is not disentitling of a finding of subsistence of copyright in the output.

Policy

20. The Office takes the view that the technology, as it currently stands, cannot satisfy the control requirement.[80] This conclusion is no doubt informed by the various applications that the Office has received and serves as a clear policy stance to applicants considering registering works, created using generative AI, with the Office. Indeed, one may argue that it is not surprising that the operator of a copyright register would take a set stance on certain types of applications to facilitate the efficient operation of the register.

21. In contrast, Singapore does not operate a copyright register, and it appears unlikely that the Singapore courts would take a set position on a particular technology. As noted above, the Court of Appeal of Singapore has held that the assessment of whether there is a sufficient causal connection between the expressive elements of a work and the engagement of the putative author's human intellect is always a question of "fact and degree". This is consistent with the fact-specific nature of the common law as well as the principle of technological neutrality.

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78 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at p 19.

79 *Global Yellow Pages Ltd v Promedia Directories Pte Ltd* [2016] 2 SLR 165; 2016 SGHC 09 at [99].

80 United States Copyright Office, *Copyright and Artificial Intelligence: Part 2: Copyrightability* (A Report of the Register of Copyrights), January 2025) (pdf) at p 21.