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NOTES

LEGAL LIABILITY FOR ARTIFICIAL INTELLIGENCE AND POTENTIAL TORT REFORM

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INTRODUCTION

In 2022, a smart chat engine called Chat GPT commenced the race of artificial intelligence (AI) among tech companies. As of today, the advancement of AI technologies has dominated the newspaper headlines. Due to the fierce competition, AI tools are becoming highly sophisticated. Instead of manually pulling up the weather forecast from a website, it is fairly convenient to ask Siri[1] or Alexa[2] to generate the latest weather news. In addition to that, the usage of autonomous driving technologies was embraced by many scholars, claiming that it will make our roads "accident-free." [3] AI technologies also reformed business entity's decision-making processes. Shearman & Sterling LLP uses Kira, a document review software, to conduct merger & acquisition due diligence.[4]

While AI has substantial potential to improve people's lives, it also poses significant risks. As with any new technology, once AI has been adopted ubiquitously, there will be injuries, and some will result in lawsuits. A new issue arises along with this fast-developing industry: Who is liable for AI's negligence? The unique characteristic of AI poses significant challenges to our current tort liability framework. Under the traditional view, the most fundamental feature of tort liability is negligence.[5] The law requires one to behave prudently in a manner that conforms with the ordinary, typical member of their community.[6] If one deviates from this standard of care and causes injury to somebody else,

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[1] Siri is a digital assistant software that is part of Apple Inc.'s IOS.
[2] Alexa is a virtual assistant technology created by Amazon.
[3] *See* Alexander Lemann, *Autonomous Vehicles, Technological Progress, and the Scope Problem in Products Liability*, 12 J. Tort L. 157, 158 (2019).
[4] Sindhu Sundar. *As Big Law looks to Tech to Help Draft Legal Briefs and Log Billing Hours, Top Firms Like Orrick and Shearman & Sterling Are Using AI to Fast-Track Work on M&A Deals*, BUS. INSIDER (Oct. 20, 2022), https://www.businessinsider.com/big-law-firms-using-ai-fast-track-ma-deals-work-2022-10.
[5] *See* Jules L. Coleman, *The Morality of Strict Tort Liability*, 18 Wm. & Mary L. Rev. 259, 261 (1976).
[6] Oliver Wendell Holmes, THE COMMON LAW, Lecture III (1881).

liability may well result.[7] The second tort liability framework is product liability. The manufacturer would be liable if the product it created was designed defectively, manufactured defectively, or failed to warn its customers about potential dangers.[8] Moreover, the legislating body could subject AI to a strict liability or vicarious liability model. Under the strict liability regime, the manufacturer or operator could be liable for the damage associated with their acts regardless of whether they were at fault.[9] Under the various liability models, if AI is deemed to be an agent subject to the principal's control, the principal, rather than AI's creator, is going to be liable for injuries caused by AI technologies.[10] Whether negligence, product liability, strict liability, or vicarious liability is the appropriate legal framework for compensating injuries is, therefore, a reflection of what we envision AI to be. If AI is deemed to be a "sophisticated calculator," then we should run a negligence or vicarious liability analysis. If AI is deemed to have self-consciousness, then maybe product liability or strict liability matters. This distinction of the nature of AI is crucial because it determines whether individuals who are injured can receive remedies, and it determines who pays. This note, therefore, takes up the question of which, if any, of the current liability framework can successfully adapt to AI technologies.

This note proceeds in four parts. Part I will give an overview of the different intelligence levels of AI. Part II will begin by introducing the relationship between AI technologies, tort law, and society as a whole. Tort law influences the behavior of citizens in various ways. It is necessary to find a middle course between tort law and AI technologies so society can operate efficiently with AI's assistance. Part III will start discussing the shortcomings of our current liability frameworks. Due to the unique characteristics of AI technologies, it may not fit into any of the tort liability frameworks. This section will be broken down into four subsections: negligence, product liability, strict liability, and vicarious liability. Part VI will discuss the blueprint of a new liability framework that is able to both foster innovation and provide safety guidance for AI technologies.

I. OVERVIEW OF ARTIFICIAL INTELLIGENCE

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[7] *Id.*
[8] Omri Rachum-Twaig, *Whose Robot Is It Anyway?: Liability for Artificial-Intelligence-Based Robots*, 2020 U. ILL. L. REV. 1142, 1157 (2020).
[9] *Id.*
[10] Anat Lior, *AI Entities as AI Agents: Artificial Intelligence Liability and the AI Respondeat Superior Analogy*, 46 MITCHELL HAMLINE L. REV. 1044, 1056 (2020).

As of today, the use of AI technologies is widely adopted by various industries. AI can give an informative description of what happened in the past, explain why something has happened, forecast what is likely to happen in the future based on historical data, and make recommendations to optimize outcomes.[11] The risk of AI error is tremendous. Training an AI is like raising a child. Developers must provide an adequate amount of correct and nonbiased data.[12] An AI needs to digest these data and form a logical response by itself.[13] To better understand the challenges AI poses to our current tort liability framework, a deeper analysis of what AI is and how it works becomes essential.

A. Weak AI

The concept of AI has been around for decades. In the 1950s, Alan Turing was the pioneer who carried out substantial research in this field that made computers think like humans.[14] As we enter the information age, computers are becoming highly sophisticated.[15]

The intelligence level of AI varies. Even though the stage of AI remains a hotly debated topic, scholars generally recognize two intelligence levels of AI.[16] The first level is artificial general intelligence (AGI), also called weak AI.[17] An AGI could learn to accomplish any

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[11] *See* Yongjun Xu et al., *Artificial Intelligence: A Powerful Paradigm for Scientific Research,* 2 THE INNOVATION (2021), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8633405/.
[12] *Id.*
[13] *Id.*
[14] Varol Akman & Patrick Blackburn, *Editorial: Alan Turing and Artificial Intelligence*, 9 J. LOGIC, LANGUAGE, & INFO. 391, 392 (2000).
[15] In recent years, researchers have devised assessments to gauge whether an AI system possesses intelligence comparable to that of humans. The field of computer hardware engineering and information technology has undergone notable progress over the years. This advancement is fundamentally transforming our lifestyles, work environments, and modes of communication. As AI systems advance in complexity, there is a potential for them to enhance their ability to adapt and apply their translation capabilities across various situations. *Will Machines Become More Intelligent Than Humans?*, CALTECH, https://scienceexchange.caltech.edu/topics/artificial-intelligence-research/machines-more-intelligent-than-humans (last visited Jan. 26, 2025).
[16] Naveen Joshi, *7 Types of Artificial Intelligence*, FORBES (June 19, 2019), https://www.forbes.com/sites/cognitiveworld/2019/06/19/7-types-of-artificial-intelligence/?sh=b1341f2233ee.
[17] *Id.*

intellectual task that human beings can perform.[18] However, weak AI software relies heavily on its developer. In the absence of enhanced programming, AIs at this level must undergo a process of statistical learning from the data it has processed.[19] Weak AI possesses exceptional abilities in scrutinizing vast volumes of data, discerning patterns, and applying them in accordance with the data it receives from either the developer or its user.[20] In other words, weak AIs are more like 'learning calculators' that are incapable of self-decision-making. Weak AI endeavors to model the human mind in a manner similar to how natural humans learn from our peers. Weak AI does not seek to replicate or generate consciousness. Software such as Chat GPT, Siri, and Alexa are within this level of intelligence. AI at this level of intelligence is intended to assist human users with basic and repetitive tasks such as documentation review, grammar check, or email drafting. AI developers will implement a set of learning models to help this software learn.[21] The thinking and operation of weak AI are governed by the input of learning models. Nevertheless, weak AI is still very complicated.

B. Strong AI

The smarter type of AI is called strong AI or artificial consciousness.[22] This level of AI arguably has self-consciousness and could be deemed as an "artificial person."[23] Some scholars, such as Professor Giorgio Buttazzo at Sant'Anna School of Advanced Studies, argue that at the current stage of computer science development, humans are not yet capable of creating independently thinking AI.[24] Conversely, computer cognitive experts like Professor David Chalmers at New York University argue that this level of intelligence is attainable through deep machine learning.[25] Autonomous driving software is an excellent example of a strong AI. Strong AI is a more mysterious software that

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[18] Mark Sullivan, *Why Everyone Seems to Disagree on How to Define Artificial General Intelligence,* FASTCOMPNAY (Oct. 18, 2023), https://www.fastcompany.com/90968623/why-everyone-seems-to-disagree-on-how-to-define-artificial-general-intelligence.
[19] *Id.*
[20] *Id.*
[21] *See* Xu, *supra* note 11.
[22] Stephen L. Thaler, *The Emerging Intelligence and Its Critical Look at Us*, 17 J. NEAR-DEATH STUD. 21, 21–29 (1998), https://doi.org/10.1023/A:1022990118714.
[23] *See* Holmes, *supra* note 6.
[24] Giorgio Buttazzo, *Artificial Consciousness: Utopia or Real Possibility*, PERSPECTIVES 24 (2001), https://retis.sssup.it/~giorgio/paps/2001/ieeecm01.pdf.
[25] David J. Chalmers, *A Computational Foundation for the Study of Cognition*. 12 J. COGNITIVE SCI. 325 (2012).

creates the most trouble for the current tort liability framework. Unlike weak AI, it does not rely on the learning model its developer implements. In order to make strong AIs omniscient, developers often allow it to operate within a broader technological context and to not exist in isolation.[26] Strong AI is able to absorb information within a network of modern technologies that interact with each other. This interconnected environment, known as the "AI Ecosystem," allows strong AI to exchange, analyze, pool, and reevaluate data in this ecosystem.[27] However, this exceptional speed of learning comes with a cost. Due to massive exposure to trillions of pieces of information, strong AI can become more vulnerable to false information.[28] If the information within the AI ecosystem is inaccurate, strong AI will learn the false information.[29] For instance, if one posts millions of articles claiming that the earth is flat, strong AI will deem the earth is flat. This characteristic made strong AI extremely unpredictable, and the liability landscape became layered and increasingly intricate.

C. Modern AI Technologies

It's important to highlight that numerous contemporary AI systems combine aspects of both weak AI and Strong AI.[30] For instance, self-driving cars utilize trained machine-learning systems to navigate roads.[31] Through repetitive training, the system autonomously deduces suitable driving behaviors. However, a significant portion of the self-driving car's operation also incorporates computer code that engineers program.[32] The command to stop at a stop sign is typically programmed manually. Moreover, human coders regularly update map features, such as identifying various traffic signs.[33] AI systems like self-driving vehicles or driving assistance software are a combination of AI machine-learning models and hand-coded knowledge-representation rules about the

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[26] *Id.*
[27] Rahul C. Basole, *Visualizing the Evolution of the AI Ecosystem*, Conference Paper (Jan. 2021), https://www.researchgate.net/profile/Rahul-Basole/publication/345119002_Visualizing_the_Evolution_of_the_AI_Ecosystem/links/5fd355e1a6fdccdcb8b830a4/Visualizing-the-Evolution-of-the-AI-Ecosystem.pdf.
[28] *Id.*
[29] *Id.*
[30] J.M. Unterrainer et al., *Planning Abilities and Chess: A Comparison of Chess and Non-Chess Players on the Tower of London Task*, 97 BRIT. J. PSYCH. 299, 299–300, 302 (2006).
[31] Shunichi Doi, *Technological Development of Driving Support Systems Based on Human Behavioral Characteristics*, 30 IATSS RES. 19, 20–21 (2006).
[32] Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. REV. 1305 (2019).
[33] *Id.*

environment. The overarching idea is that AI systems often incorporate a blend of different approaches rather than exclusively relying on one or the other.[34]

II. ARTIFICIAL INTELLIGENCE, TORT LAW, AND SOCIETY

The necessity of AI technologies in human society is contingent on social efficiency.[35] Throughout history, humans have actively sought faster and more efficient ways to accomplish tasks. Civilization has evolved from the age when we used mass human labor to complete certain tasks. Today, our daily life is significantly more convenient and leisurely due to technological contributions. Tools have been integral to human civilization since its inception.[36] AI technology is driven by the urge for innovation to bring productivity to another level. While AI has brought numerous benefits, there's a cautionary note from the early 20th century. Aldous Huxley, in his book "Brave New World," warned of the potential danger of creating a monster through the development of genetic technology as human technology advances.[37]

Similar to the surge of tort lawsuits against railroad companies in the early nineteenth century, AI is currently marching into industries that are governed by tort law. Recently, AI has been making significant strides in the healthcare industry, aiding doctors in diagnostics, identifying disease sources, and even performing surgeries.[38] A recent study conducted by surgeons at the Children's National Medical Center in Washington showcased a successful surgery completed by an autonomous robot installed with AI software.[39] The rise of AI started to shake some well-established legal regimes, such as the doctor-client relationship, fiduciary duty, and the hospital's vicarious liability.

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[34] *Id.*

[35] Timothy J. Bergen, Jr., *David Samuel Snedden: The Ideology of Social Efficiency*, 16 J. Thought 91 (1981).

[36] Dietrich Stout, *Stone Toolmaking and the Evolution of Human Culture and Cognition*, 366 PHIL. TRANSACTIONS TRANS. ROYAL SOC'Y B 1050 (2011), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3049103/.

[37] Aldous Huxley, BRAVE NEW WORLD (1931).

[38] Jim McCartney, *AI Is Poised to "Revolutionize" Surgery*, AM. COLL. SURGEONS (June 7, 2023), https://www.facs.org/for-medical-professionals/news-publications/news-and-articles/bulletin/2023/june-2023-volume-108-issue-6/ai-is-poised-to-revolutionize-surgery/.

[39] Amy Hung, *Supervised Autonomous In Vivo Robotic Surgery on Soft Tissues Is Feasible and Outperforms Standard Surgery Techniques According to Study from Sheikh Zayed Institute for Pediatric Surgical Innovation at Children's National Health System*, CHILD.'S NAT'L HOSP. (May 4, 2016), https://www.childrensnational.org/about-us/newsroom/2016/supervised-autonomous-robotic-surgery-is-feasible-and-outperforms-standard-surgery-techniques.

Tort law empowers people who experience specific injuries or intrusions to seek remedies from those responsible for causing those injuries or intrusions.[40] Tort law also compensates for non-physical damages such as defamation, legal malpractice, and property damage.[41] AI technologies certainly pose a significant threat to the human body. A malfunctioning autonomous vehicle or surgical robot can easily kill a human being. AI may also lead to non-physical tort. AI generates images, which is a hotly debated topic and may cause various problems. Recently, a series of AI-generated pictures depicting Taylor Swift in nude and explicit situations began circulating.[42] AI can generate deceptive images from existing photographs under the user's demand. This raises intellectual property and defamation liability.[43] AI technology also has the potential to ruin financial decisions. Financial institutions are using AI technologies to "predict" market trends and make investment decisions based on these data.[44]

Who is responsible for injuries, whether monetary or physical, that are caused by the mistake of AI? Due to the rich volume of common case law on tort liability, we have divided tort into many subsections and are subject to different "tests" to determine the defendant's liability. Arguably, the largest tort liability frameworks are negligence, strict liability, product liability, and vicarious liability. Even though these liability frameworks are all derived from tort law, courts will often implement different tests or standards to adjudicate disputes between

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[40] Michael Loy, *Legal Liability for Artificially Intelligent "Robot Lawyers,"* 26 LEWIS & CLARK L. REV. 951, 966 (2022).

[41] *Id.* at 955–956.

[42] Jess Weatherbed, *Trolls Have Flooded X With Graphic Taylor Swift AI Fakes*, THE VERGE (Jan. 25, 2024), https://www.theverge.com/2024/1/25/24050334/x-twitter-taylor-swift-ai-fake-images-trending.

[43] Generative AI platforms undergo training using extensive datasets and question fragments, comprising billions of parameters derived from processing vast archives of images and text. These platforms extract patterns and correlations from the data, which they subsequently utilize to formulate rules, make judgments, and generate predictions in response to prompts. In *Andersen v. Stability AI Ltd.*, No. 23-cv-00201-WHO, 744 F. Supp. 3d 956 (N.D. Cal. Aug. 12, 2024), a group of three artists established a class action lawsuit against various generative AI platforms, alleging that these platforms utilized their original works without proper licensing to train their AI in their distinctive styles. This action enables users to generate works that may not significantly transform their existing protected works, potentially resulting in unauthorized derivative works. If the court determine that the AI's creations are indeed unauthorized and derivative, significant infringement penalties may be imposed.

[44] Helan Ross, *How AI and Cloud Strategies are Changing Investment Banking,* READWRITE (Oct. 23, 2023), https://readwrite.com/data-revolution-in-investment-banking-how-ai-and-cloud-strategies-are-changing-the-game/#:~:text=Investment%20banks%20leverage%20AI%20to,insights%20and%20make%20informed%20choices.

parties. These tests and standards are certainly not arbitrary. The Common Law Courts often shrink or expand the scope of these tests based on policy considerations. However, AI is relatively new, and we do not have many case laws addressing the tort of AI. To "shove a big foot into a small shoe" is not a wise choice and might create a negative social impact.

III. THE SHORTCOMING OF CURRENT TORT LIABILITY FRAMEWORKS

Tort law has two principal aims: deterring future tortious acts and compensating the injured party.[45] Tort law centers on establishing responsibility for the harm suffered by the plaintiff. Therefore, it is crucial to correctly identify the tortfeasor and make them responsible for what they have done wrong. However, a proper liability framework must be carefully selected. If the law tips the balance between liability and activities, overdeterrence may well result.[46] Due to the unique characteristics of AI, our current tort liability framework cannot maintain this balance. This section will present a deeper analysis of AI and each tort liability framework.

A. Negligence

Negligence is the cornerstone of tort law.[47] This area of law can be traced back to seventeenth-century England. From the earliest times in England, the basis of tort liability was a fault or the failure to exercise prudent care.[48] Liability for an injury to another arose whenever the defendant failed to use such care as a prudent man would use under the circumstances.[49] This golden phrase was the prototype of what we refer to as "the reasonable man." Modern negligence is commonly broken down into four elements in assessing whether an act of a person is negligent. (1) A duty of care exists between parties; (2) There is an occurrence of a breach of such duty; (3) There is a causal link between the breach and the harm; (4) The injured party suffered compensable damage.[50]

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[45] Andrew D. Selbst, *Negligence and AI's Human Users*, 100 B.U. L. REV. 1315, 1321.
[46] Kenneth S. Abraham & Robert L. Rabin, *Automated Vehicles and Manufacturer Responsibility for Accidents: A New Legal Regime for a New Era*, 105 VA. L. REV. 1, 1, 6.
[47] *See* James Oldham, *The Law of Negligence as Reported in* The Times*, 1785–1820*, 36 L. & HIST. REV. 383 (2018).
[48] *See id.*
[49] Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 29 (1972).
[50] David G. Owen, *The Five Elements of Negligence*, 35 HOFSTRA L. REV. 1671, 1672 (2007).

1. Duty

Common law tort varies from state to state. However, the bedrock principle of tort law is highly similar. Under the negligence model, AI technology is unlikely to challenge the duty element. The duty element is fairly easy to satisfy. Courts generally impose a duty of care when the wrongdoer causes injury to the victim unless a strong policy reason suggests otherwise.[51] AI technologies undeniably have the potential to cause great physical or financial injuries to third parties. The mistake of an AI document review software used by lawyers may be catastrophic to the entire deal and be subject to legal malpractice liability. A malfunctioning autonomous driving system may greatly injure or even kill a pedestrian. We can safely assume that courts will determine that the operator, manufacturer, or even designer of an AI system has a duty of care to the world.

2. Breach

AI technologies certainly pose a greater challenge to the breach element than to the duty element. The majority of state courts use the well-known Hand Formula to determine whether the wrongdoer breached the duty of care.[52] The defendant breached the duty of care when the burden of taking precautions is less than the probability of injury multiplied by the severity of the resulting injury.[53] However, the unique characteristic of AI would make the plaintiff unable to establish the breach element because the defendant's burden of taking precautions is extraordinarily high, which may never outweigh the possibility of causing injuries. This hurdle is caused by the expansive AI development process. In order to minimize the error rate of an AI, developers must adopt numerous testing models and algorithms.[54] This process relies heavily on the developer's computational capability, computer hardware, and physical functionality in the performance of computers or supercomputers.[55] In addition to the cost of high-end equipment, the maintenance expense is another obstacle that developers must overcome. In our current technological landscape, equipment such as supercomputers are constituted by parts with typical traits like heavy

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[51] W. Jonathan Cardi, *Purging Foreseeability*, 58 VAND. L. REV. 739, 742 (2019).
[52] *United States v. Carroll Towing Co*., 159 F.2d 169, 173 (2d Cir. 1947). In this landmark decision, Judge Hand established an equation of breach: if B < PL, then the defendant breached the duty of care.
[53] *Id.*
[54] Buttazzo, *supra* note 24.
[55] *Id.*

mass and limited mobility.[56] This leads to the emission of significant heat levels from all chips and devices, resulting in excessive energy consumption and a decline in information transmission efficiency.[57] Thanks to the rapid progress in modern physics, a range of advanced materials with unique functional effects, such as superconductors, quantum anomalous Hall insulators, and topological fermions, have been discovered.[58] Of course, the use of these materials is not free. Due to the exceptionally high burden of eliminating AI mistakes, the plaintiff must either show that there is a high likelihood of injury or that the severity of the injury is great. However, it is very challenging for both the court and lawyers to quantitively calculate these elements, given that AI's decision-making and responses are generated by a series of computer codes. Therefore, it is almost impossible for the plaintiff to prevail in a jurisdiction that adopted the Hand formula to determine the defendant's breach of duty of care.

3. Causation

The greatest challenge AI poses to any tort liability framework is the causation element. The challenge is so great and suggests that the injuries caused by AI should not be governed by any of the negligence liability frameworks. The causation element in a tort claim mainly asks about the foreseeability of harm.[59] While the precise definitions of foreseeability may differ among jurisdictions, foreseeable harm typically encompasses consequences that a reasonably prudent person expects to likely happen.[60] Similar to how the Long Island Railroad Company should not bear responsibility for Ms. Palsgraf's unfortunate injury, users of AI technologies should not be held accountable for an unforeseeable injury.[61] Unlike a natural person who will make a decision based on his or her life experience, AI decision-making involves a thorough evaluation of all possibilities to determine the optimal action. AI's decision-making during skillful action is usually rapid and heavily reliant on the specific context.[62] This characteristic made AI's action unforeseeable to the

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[56] Joshi, *supra* note 16.
[57] *Id.*
[58] *Id.*
[59] Owen, *supra* note 50, at 1678.
[60] H. L. A. HART & TONY HONORÉ, CAUSATION IN THE LAW 255 (2d ed. 1985).
[61] *Palsgraf v. Long Island R.R. Co.*, 248 N.Y. 339, 356 (1928).
[62] *See generally* Fabrizia Auletta et al., *Predicting and Understanding Human Action Decisions During Skillful Joint-Action Using Supervised Machine Learning and Explainable-AI*, NATURE PORTFOLIO, (Mar. 27, 2023), https://www.nature.com/articles/s41598-023-31807-1#Sec1.

potential injury it might cause. For instance, a human driver will make a decision on when to slow down the vehicle based on his prior driving experience. This experience might include the acceleration speed of his car, the sensitivity of his car's break, and the distance between the vehicle and the crossing pedestrian. If the human driver decides to go against his prior driving knowledge and accelerate the vehicle to an abnormally dangerous speed, then a collision with a pedestrian is going to be a foreseeable consequence of his behavior. Conversely, the decision-making process of an autonomous vehicle is hard to predict. The perception module of autonomous vehicles gathers information from various on-board sensors and external sources such as high-definition maps.[63] It extracts relevant knowledge, developing an understanding of the environment by addressing questions such as: What types of objects are nearby? How far is the next obstacle? How effectively are traffic signs, road markings, curves, neighboring vehicles, pedestrians, cyclists, and other objects detected?[64] Parsing through these complex data may lead to injuries that are not foreseeable to the AI software.

4. Damage

The damage element of tort law can be worrisome in the context of AI. Damages are the element where the jury evaluates and quantifies the plaintiffs' injuries.[65] On its face, this is less worrisome for AI because usually, the plaintiff will bear the burden to prove what he or she suffered from the negligence of an AI. However, the jury never gets to measure damages if the court does not render a judgment in favor of the plaintiff.[66] In other words, these formidable obstacles AI poses to duty, breach, and causation will impede the damage-assessing process.

The courts also ask what types of damages are recoverable. The economic loss doctrine mandates courts to differentiate between economic and non-economic losses. [67] Economic losses are only compensable under contract law, whereas non-economic losses are compensable under tort law.[68] In most states, these legal frameworks are

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[63] Sumbal Malik et al., *How Do Autonomous Vehicles Decide*?, SENSORS, (Dec. 28, 2022), https://www.mdpi.com/1424-8220/23/1/317.
[64] *Id.*
[65] Thomas C. Galligan Jr., *The Structure of Torts*, 46 FLA. ST. UNIV. L. REV. 239, 467, 510 (2022).
[66] *Id.*
[67] Wajiha Rais, *Economic Loss Doctrine*, AM. BAR ASS'N (Mar. 22, 2021), https://www.americanbar.org/groups/construction_industry/publications/under_construction/2021/spring2021/economic_loss_doctrine/.
[68] *Id.*

mutually exclusive, meaning a case can proceed either as a tort or contract matter, but it cannot proceed as both a contract and tort matter.[69] AI poses a challenge in determining whether damages incurred are economic or non-economic. Typical damage claims resulting from AI failure include lost profits, repair or replacement costs, downtime, overtime, and incidental or consequential damages. [70] Unless they coincide with property damage, these damages are typically considered economic losses, eligible for recovery solely through contract law.[71] Since AI technologies are unlikely to cause property damages, it will be difficult to determine whether the damages are economic or non-economic losses.

The U.C.C. offers a thorough damage framework for defective product purchases.[72] Buyers typically buy products with expectations of their well-functioning. These performance expectations are recognized as express warranties according to the U.C.C.[73] However, in order to invoke the U.C.C., the product must be a "good." Whether AI technologies are "goods" is a highly controversial topic and will be addressed in later sections of this note.

Due to the exceptionally high burden to eliminate AI errors and the foreseeability issue in AI's decision-making process, plaintiffs are very unlikely to successfully establish all four negligence elements. Therefore, tort claims involving AI should not be analyzed under the traditional negligence framework because the defendant is very likely to prevail. This "no liability" result certainly goes against public policy in AI regulation, and we need to find an appropriate middle ground to deter injuries caused by AI.

B. Product Liability

The Restatement (Third) of Torts defined the scope of product liability to be "One engaged in the business of selling or otherwise distributing products who sells or distributes a defective product is subject to liability for harm to persons or property caused by the defect."[74] Products liability law seems to be the most appropriate arena for discussing liability for AI-based technologies because it may be, in many cases, products manufactured, distributed, and sold to consumers.

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[69] *Id.*
[70] Ralph C. Anzivino, *The Economic Loss Doctrine: Distinguishing Economic Loss From Non-Economic Loss*, 91 MARQ. L. REV. 1081 (2008).
[71] *Id.*
[72] *Ins. Co. of N. Am. v. Cease Elec. Inc.*, 276 Wis. 2d 361, 373–74 (2004).
[73] U.C.C. § 2-313 (2004); Wis. Stat. § 402.313 (2023–24).
[74] RESTATEMENT (THIRD) OF TORTS: PRODS. LIAB. § 1 (AM. L. INST. 1998).

Under the product liability regime, the users are no longer responsible for the damages caused by AI. Instead, the AI creator is liable for it.[75] Courts will find manufacturers liable under three kinds of defects, and each carries different consequences.[76] The first type is a manufacturing defect, which is subject to strict liability.[77] Manufacturing defects occur when the product is correctly designed, but something goes wrong in the manufacturing process.[78] The second type is a design defect, which is subject to two highly similar tests: the consumer expectations test [79] and the risk-utility test.[80]

1. Manufacturing Defects

A manufacturing defect refers to an flaw in a product. Such a defect arises when a product deviates from its intended design and thus becomes more hazardous than consumers anticipate.[81] However, is AI in the category of "product"? In *Shultz v. Merriman*, the Secretary of Labor alleged that the defendant in this case violated the overtime and record-keeping provisions of the Fair Labor Standards Act of 1938. [82] The defendant refused to comply with the Fair Labor Standards Act, alleging that the plot plans its employees manufactured were not "goods" and, therefore, should not be governed by the Fair Labor Standards Act.[83] The First Circuit Court reached a Per Curium decision, holding that paper maps are considered to be "goods" because maps are physical products rather than intangible professional advice.[84] Thus, all individuals who aid or contribute to the creation of plot plans or maps are engaged in the production of goods for interstate commerce. Consequently, they are subject to the overtime provisions outlined in the Fair Labor Standards Act.[85] Unlike a tangible paper map, AI can hardly be classified as a "product" because intelligence is intangible. Some scholars embrace the argument that AI is an intangible asset because it is a complex interaction

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[75] Keith N. Hylton, *The Law and Economics of Products Liability*, 88 NOTRE DAME L. REV. 2457, 2466 (2013).
[76] *Id.*
[77] *Id.* at 2468.
[78] Maruerite E. Gerstner, Comment, *Liability Issues with Artificial Intelligence Software*, 33 SANTA CLARA L. REV. 239, 250–51 (1993).
[79] Clayton J. Masterman & W. Kip Viscusi, *The Specific Consumer Expectations Test for Product Defects*, 95 IND. L. J., 183, 186 (2020).
[80] *Id.*
[81] Aaron D. Twerski & James A. Henderson Jr., *Manufacturers' Liability for Defective Product Designs: The Triumph of Risk-Utility*, 74 BROOK. L. REV. 1061, 1098 (2009).
[82] *Shultz v. Merriman*, 425 F.2d 228, 228–29 (1st Cir. 1970).
[83] *Id.*
[84] *Id.*
[85] *Id.*

of computer codes and algorithms.[86] However, some scholars argue that AI is just a combination of software, hardware, and database, which are tangible properties. Legal scholars proposed a classification test based on the function and the end product AI software generates.[87] For instance, if an AI system is utilized to offer a service comparable to what a human could do, such as providing investment counseling or legal advice, the program could be labeled as a service.[88] Conversely, if the AI software primarily engages in routine data analysis, it might be categorized as a product.[89] However, sophisticated AI software may easily digest data and give human-like advice simultaneously.

As early as 1985, the Ninth Circuit acknowledged that the sale of software could be classified as a sale of goods in *Winter v. G.P. Putnam's Sons*.[90] However, the court also emphasized the necessity of a detailed examination of the transaction to determine whether software primarily constitutes a good or a service.[91] Courts grappling with this issue have focused on assessing whether the transaction leans towards the goods aspect or the service aspect rather than solely relying on the physical attributes of the software itself. Certain factors consistently come into play. For instance, if software is bundled with corresponding hardware, such as a CD, it is more likely to be deemed a sale of goods.[92] Conversely, software that allows custom programming will be characterized as a service. [93] However, this function test has limitations. Due to technological advancement, physical CD installation is almost extinct. Users may easily download AI software from the internet.

Under the Uniform Commercial Code (UCC), "goods" are defined as "all things…which are moveable." [94] Nevertheless, the majority of courts asserted that conventional computer software unequivocally fell within the category of "goods."[95] One could argue that the tangible disk containing the software qualifies as a product, which is akin to the U.C.C.'s definition of "goods" as something "movable at the time of…

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[86] Carol Corrado et al., *Artificial Intelligence and Productivity: An Intangible Assets Approach*, 37 OXFORD REV. ECON. POL'Y 435, 441 (2021), https://academic.oup.com/oxrep/article/37/3/435/6374681.
[87] Tod M. Turley, *Expert Software Systems: The Legal Implications*, 8 COMPUT. L.J. 455 (1988).
[88] *See generally* Lori A. Weber, *Bad Bytes*: *The Application of Strict Products Liability to Computer Software*, 66 ST. JOHN'S L. REV. 469, 479 (1992).
[89] *Id.*
[90] *Winter v. G.P. Putnam's Sons,* 938 F.2d 1033 (9th Cir. 1991).
[91] *Id.*
[92] *Id.*
[93] *Id.*
[94] U.C.C. § 2-105(1).
[95] *Surplus.com, Inc. v. Oracle Corp.,* 2010 WL 5419075 (N.D. Ill. Dec. 23, 2010).

sale."[96] Moreover, AI software can be viewed as the completion of an incomplete machine serving as the component that needs to be added to a device to create a functional computer.[97] Indeed, it does not make sense to have a system where the "component" in which the software is installed determines the standard of liability when that software causes an injury. Whether AI software is considered to be a computer part or on a floppy disk is equivocal. As of today, courts have not yet provided clear guidance on whether AI is a good or service, or whether it should be considered a "product" that can be subject to manufacturing defect liability.

2. Design Defects

Design defect seems to be a more appropriate liability model than manufacture defect. It is more logical to believe that the misfeasance of software engineers is the ultimate cause of the misbehaving AI. There are two tests that the courts use to determine whether a defective design exists. The risk-utility test involves a cost-benefit analysis, deeming a product defective if a "reasonable alternative design" exists.[98] On the other hand, the consumer expectations test defines a defect as a condition "dangerous to an extent beyond that which would be contemplated by the ordinary consumer."[99] The logic behind both tests seeks to balance safety against the cost of identifying every potential imperfection, and it is possible that the distinctions between these two tests are minimal.[100] However, a mistake made by AI may not necessarily stem from a design defect. Establishing a design defect requires the plaintiff to demonstrate that the accident was proximately caused by a decision that the AI made that should have been anticipated and tested for.[101] Such a demonstration poses conceptual and evidentiary challenges. AI will encounter unforeseen circumstances. For example, autonomous driving software may encounter situations such as road detours, traffic violations by other drivers, and misinterpretations by other drivers about the automated vehicle's actions. Each scenario is

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[96] U.C.C. § 2-105(1).
[97] Michael Gemignani, *Copyright Protection: Computer-Related Dependent Works*, 15 RUTGERS COMPUT. & TECH. L.J. 383, 385 (1989).
[98] Cami Perkins, *The Increasing Acceptance of the Restatement (Third) Risk Utility Analysis in Design Defect Claims*, 4 NEV. L. J. 609, 616 (2004).
[99] Emily Frascaroli et al., *Let's Be Reasonable: The Consumer Expectations Test Is Simply Not Viable to Determine Design Defect for Complex Autonomous Vehicle Technology*, J.L. & MOBILITY 53, 56 (2019).
[100] *Id.*
[101] David A. Fischer, *Products Liability—Proximate Cause, Intervening Cause, and Duty*, 52 MO. L. REV. 547, 559–60 (1987).

unique in terms of timing and stimulus, making it impractical to train the machine for every possible variation. Manufacturers might lose the case under both the consumer expectations test and risk-utility test when the marginal cost of testing one more scenario seems trivial compared to the severe injury resulting from a crash.[102] Additionally, the tests focus on what results the AI programmer reasonably could have anticipated before the crash. Requiring the creator of AI to foresee every single possible scenario that might lead to a crash is deemed unreasonable. Determining AI's liability under the design defect framework would essentially resemble strict liability, a position unlikely to be imposed by a court.

C. Strict Liability

In the early development of tort law, courts imposed a strict liability standard on tortfeasors. As the House of Lords put it in *Rylands v Fletcher*: if one brings anything likely to do mischief to his land, one must keep it in at his peril, and if he does not do so, one is prima facie answerable for all the damage which is the natural consequence of its escape.[103] After centuries of development, modern tort law decided to confine strict liability to some limited activities, such as injuries caused by fierce animals, ultra-hazardous activities, and design defects in product liability.[104] Under a strict liability model, tortfeasors will be liable for the damage associated with their acts regardless of whether they were at fault.[105] Should we subject AI to strict liability standards?

Applying strict liability standards to AI-based technologies encounters an initial challenge related to the issues of foreseeability discussed earlier. Although strict liability does not emphasize fault, it still necessitates foreseeability concerning potential harm.

But, more substantively, even if we take the extra step and create foreseeability between injuries and certain actions of AI-based technologies, it is still inappropriate to hold AI creators strictly liable for the harm caused due to policy reasons.

1. Hinder Innovation

A classic argument for strict liability is to let the new thing bear its

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[102] Gary E. Marchant & Rachel A. Lindor, *The Coming Collision Between Autonomous Vehicles and the Liability System*, 52 SANTA CLARA L. REV. 1321, 1334 (2012).
[103] *Rylands v. Fletcher* [1868] L.R. 3 H.L. 330 (1868).
[104] Kenneth S. Abraham, *Strict Liability in Negligence*, 61 DEPAUL L. REV. 271, 286 (2012).
[105] Richard A. Epstein, *A Theory of Strict Liability*, 2 J. LEGAL STUD. 151, 152 (1973).

full cost until we decide if it is socially valuable.[106] The deterrence rationale suggests that strict product liability creates motivation for the entity with the most control over product safety to actively reduce risks. Contemporary law and economics studies have refined this concept, highlighting strict liability's role in curbing excessive consumption of hazardous goods. Under this framework, the cost of risky products would accurately reflect their level of risk, prompting consumers to choose safer alternatives over potentially risky ones. However, holding AI to the strict liability framework might stifle this technology before it is deemed socially valuable.

This argument can be illustrated by a simple hypothesis. Company A introduces a novel AI technology for assisting junior associates in a law firm in conducting document reviews. This cutting-edge AI software has the potential to reduce almost half of the time spent on repetitive and fallible tasks. Without the risk of liability for accidents, Company A can offer this new AI software service at $100 per hour. However, Company A faces competition from Company B, which provides a similar service using conventional technology. In the absence of liability for accidents, Company B is unable to charge more than $100 per hour because a reasonable consumer will prefer a better product at a better price. Company A is likely to outcompete Company B in the market, leading to the replacement of the old technology with the new one. This is a desirable social outcome because society needs innovation, and better products should survive. Nevertheless, if the court decided to adopt a strict liability framework for injuries caused by AI, it would hinder innovation and affect society detrimentally. Company A can no longer charge $100 per hour because it is subject to greater risk. In order to stay in the market, Company A must raise its price to create leeway for potential lawsuit expenses. In this scenario, Company B will drive Company A out of the market because, at a certain price, customers would rather stay with a cheaper, conventional option than pay an exceptionally high price for a better alternative. Using a strict liability framework will disincentivize the development of AI technologies and force companies to cut back AI research funds.

D. Agency and Vicarious Liability

Several legal principles extend the responsibility of individuals beyond their immediate actions. One example is the concept of product

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[106] Keith N. Hylton, *The Law and Economics of Products Liability*, 88 NOTRE DAME L. REV. 2457, 2463–64 (2013).

liability discussed above, which may be applicable to AI products similarly to its general application to other products. Another example is the direct or vicarious liability of a principal for the actions of an agent in diverse situations. Under both agency and vicarious liability frameworks, it is presumed that both the principal and the agent are individuals with the capacity for independent decision-making, with the agent carrying out actions on behalf of the principal. While whether artificial intelligence is qualified to be an "individual" depends on its autonomous level, even if we presume all AI to be individual, substantial challenges still persist.

The Second Restatement defines agency as the "fiduciary relation which results from the manifestation of consent by one person to another that the other shall act on his behalf and subject to his control, and consent by the other so to act."[107] In other words, it can be broken down into three primary elements: (1) consent by the principal and the agent, (2) action by the agent on behalf of the principal; and (3) control by the principal. However, applying this to the context of AI is a struggle.

1. The "Control" Requirement

The degree of control could significantly affect the scope of liability.[108] If the principal is deemed to have complete control of an agent's action, then the principal is vicariously liable for the agent's negligent conduct within the scope of employment.[109] But if the principal is deemed to have partial control of an agent's action, then the agent will be classified as an independent contractor, and the principal is not liable for the agent's negligence unless the principal authorized the agent to perform an abnormally dangerous activity.[110]

It is a struggle to determine whether AI is under complete or partial control of its principal. Distinctions have been made between limited-intelligence AI and fully autonomous AI. The latter is known for employing intelligent algorithms and demonstrating a considerable capacity for learning and adaptation over time to address changes.[111] These systems can not only make optimal decisions but may also be able

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[107] Restatement (Second) of Agency § 1 (Am. Law Inst. 1958).
[108] Gabriel Rauterberg, *The Essential Roles of Agency Law*, 118 MICH. L. REV. 609, 644 (2020).
[109] *Id.*
[110] State of Indiana Legislators, *Law of Agency Chapter I Introductory Matters*, 10 NOTRE DAME L. REV. 367, 368 (1935).
[111] Daniel Seng & Tan Cheng Han, *Artificial Intelligence and Agents*, 2021/019 (NUS Ctr. for Tech., Robotics, A.I. & L., Working Paper 21/02, 2021), https://law.nus.edu.sg/wp-content/uploads/2021/10/TRAIL-WPS-2102.pdf.

to take actions unforeseen by both the creator and the user.[112] The fully autonomous AI utilizes sophisticated decision-making mechanisms, often incorporating statistical or probabilistic machine learning algorithms. In such cases, outcomes are not strictly determined by binary rules; instead, the result is a combination of relevant factors and their respective weights as assigned by the system. Fully autonomous AI may possess attributes such as self-modification and the capability to act based on their own experiences.[113] They are arguably not within the control of the principal, and it is inequitable to hold that they are the agents of the principal. If the agent is not subject to the principal's control, the agent is deemed to be more like an "independent contractor" and couldn't vicariously hold the principal responsible for its negligence.

2. Legal Personhood of AI

Legal personhood refers to either a human or a non-human legal entity recognized as a person for the purpose of law.[114] A legal person possesses the ability to undertake all customary legal activities that an actual person can engage in, including commencing a lawsuit, being subject to lawsuits, owning assets, and entering into contractual agreements. Having legal personhood is a prerequisite for being an agent.[115] An agent must possess a sound mind in order for the agency to begin or to continue.[116] Does AI have a legal personhood that makes them an agent? Under the common law, a computer program lacks the capacity to function as either a principal or an agent.[117] Currently, computer programs serve as tools for individuals utilizing them. The possibility of a program malfunctioning does not confer the ability to act as a principal or an agent.[118] Restatement (Third) of Agency Law also supports this perspective.[119] Our current legislation deemed software to be nothing more than an instrument in a way that its degree of "intelligence" is irrelevant.

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[112] *Id.*
[113] *Id.*
[114] Dalton Powell, *Autonomous Systems as Legal Agents: Directly by The Recognition of Personhood or Indirectly by the Alchemy of Algorithmic Entities*, 18 DUKE L. & TECH. REV. 306, 315 (2020).
[115] Robert G. Natelson, *The Agency Law Origins of the Necessary and Proper Clause*, 55 CASE W. RSRV. L. REV. 243, 246 (2004).
[116] Samir Chopra & Laurence White, *Artificial Agents - Personhood in Law and Philosophy*, 1 CUNY 1, 6. (2016)
[117] *Supra* note 101, at 6.
[118] *Id.*
[119] Restatement (Third) of Agency § 1.04 cmt. e (Am. Law Inst. 2006).

IV. NECESSARY TORT REFORM

Deciding who is responsible for what when AI goes wrong is challenging. It can be complicated when many parties come into play. Who should be responsible for the injuries caused by AI? AI creators? Data collectors? Algorithm engineers? Users? Manufacturers of the devices carrying the AI software? Or maybe the owners of the software? This is certainly not an exhaustive list of potential tortfeasors. Our current legal regimes seem inadequate when applied to AI. A tort reform is imminent to balance AI and liability.

A. Disadvantage of Having a Uniform Rule

The existing legal framework comprises a collection of legal structures that lack clear applicability to AI technologies. Consequently, disparate legal theories may be applied by different courts to similar cases, resulting in inconsistent outcomes. A more efficient method for determining liability for AI systems is likely to promote the adoption of this technology.[120] Eliminating uncertainties regarding the responsible party and the extent of financial liability in the event of system malfunctions is expected to encourage the integration of emerging technologies. Moreover, AI systems involve multiple parties such as developers, users, and distributors. The attribution of fault and causation among these various actors, as required by traditional comparative fault analyses, can be a highly intricate process. Therefore, some scholars argued that a uniform legal framework based on enterprise liability, incorporating elements of product liability and vicarious liability, is deemed suitable for addressing the legal challenges associated with AI technologies. [121] This approach is aimed to ensure fairness and consistency across different courts, but the disadvantage of this liability framework is fairly obvious.

In this traditional enterprise liability model, fault and causation are evaluated against the collective team of actors, usually a group of corporations, rather than a specific individual. An enterprise liability model analysis does not delve into the relative fault of each individual actor, and once the enterprise's fault is established, the parent corporation assumes financial responsibility. However, while this approach simplifies the process for the court, it places an excessive

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[120] Jessica S. Allain, *From Jeopardy! to Jaundice: The Medical Liability Implications of Dr. Watson and Other Artificial Intelligence Systems*, 73 LA. L. REV. 1049, 1051 (2013).
[121] *Id.*

burden on the business organization and may discourage the use of AI systems due to economic disincentives. This approach is no different than forcing technology conglomerates into the strict liability model.

Moreover, under a uniform set of rules or tests, judges, lawyers, and jurors are not in the best position to determine the liability of AI. AI technology often involves highly complex algorithms, machine learning models, and advanced technologies. Understanding the intricate technical details and potential biases within these systems requires expertise in computer science, which may not be within the domain of legal professionals. The legal system typically relies on established frameworks and precedents. At its current stage, common case law has not yet developed a systematic approach for AI's liability. It becomes even more challenging for a "tech blind" legal professional, such as a judge, to render an unbiased judgment based on limited resources. Additionally, the field of AI is constantly evolving. What if Google announces an entirely different type of AI in tomorrow's headlines? Judges and lawyers may struggle to keep up the pace with the latest AI updates, making it difficult for them to accurately assess the implications of AI systems in various contexts. Therefore, we must implement a system that allows the expert to deal with the technological aspect of AI and judges to deal with the legal aspect of AI.

This note proposes a series of liability reforms that synergize with the AI industry. This includes establishing a federal AI regulatory agency to adopt a harm-based liability model similar to the regulation proposed in the European Union. These modifications aim to mitigate the economic disincentives associated with the traditional liability system.

B. Creating an Artificial Intelligence Regulatory Agency

The first step to establishing a proper AI tort liability reform is to create a federal regulatory agency that controls, assesses, and supervises the distribution, manufacturing, and usage of AI technologies.[122] Shifting the burden from the court to a specialized federal agency to evaluate the risk level of different types of AI systems is based on the belief that these institutions are better suited for the task. Decisions regarding the safety of AI should be determined by experts chosen by this federal agency. Similar to the Security and Exchange Commission, this AI regulatory agency must be able to delineate the definition of AI, and it must have the authority to revise these definitional rules periodically. Congress

[122] Matthew U. Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARV. J.L. & TECH 353, 393 (2016).

must ratify the definition of AI, as these rules essentially outline the extent of the agency's jurisdiction. Congress would also empower the agency to implement a certification system for the assessment of AI systems intended for commercial sale. The certification system would be categorized by potential harm an AI might cause.[123] This AI regulatory agency would have two departments and should divide responsibility into policymaking and certification. The policymaking department would be vested with the authority to promulgate laws governing AI, but would still be subject to legislative ratification. It would also have the authority to create exemptions based on policy. For instance, autonomous driving software developers could be exempted from the registration process if Congress deems it necessary. The technology certification department would consist of engineers and AI experts who oversee the certification process. Developers would be required to register their AI software before selling it to the public. The register statement must contain information such as safety testing results, the potential harm caused by this AI, the likelihood of causing such harm, the severity of the said harm, the software's intelligence level, and the software's learning algorithms. After submitting this registration statement to the technology certification department, the federal AI agency would then reveal this report to the public.

C. Special Liability Framework for Administrative Claim Against AI Regulatory Agency

Since the AI developer enjoys a defense for certified software, it is necessary to establish a liability framework to determine the fault of the AI regulatory agency and how to compensate injured victims. In a classic negligence liability framework, the plaintiff bears the burden of proof to establish duty, breach, causation, and damage. However, this classic negligence framework is unsuitable for bringing an administrative claim against an AI regulatory agency because the plaintiff is not in a position to obtain information to prove their case. Therefore, a new liability framework must replace the classic negligence framework in order to provide a fair and equitable ground for challenging the plaintiff.

In order to initiate a claim challenging the federal AI agency's risk assessment report, the plaintiff has the burden of proving by the preponderance of the evidence a prima facie case of inaccurate risk level measurement. If the plaintiff successfully demonstrates a prima facie

[123] Margot E. Kaminski*, Regulating the Risks of AI,* 103 B.U. L. REV. 1347, 1366 (2023).

case, it creates a presumption that the federal AI agency is negligent. The federal agency could either produce evidence, such as its risk assessment criteria, to rebut this presumption, or it could refuse to provide any information. If the federal AI agency refuses to provide any evidence to rebut this presumption, a summary judgment should be granted in favor of the plaintiff. If the AI federal regulatory agency successfully provided its assessment criteria, then the plaintiff could use this information to establish a classic negligence claim against the federal AI regulatory agency.

D. Harm-Based Liability Model

Determination of who bears the tort liability could be harm-based rather than focusing on the tortfeasors.[124] The magnitude of the risks associated with different types of AI will be governed by varied governance frameworks and will lead to different liability outcomes. Therefore, the question should be what specific harms the society aims to prevent and identify the party most adept at averting these harms. Harms can be classified as low risk, intermediate risk, and high risk. This harm-based liability model must not be arbitrary. AI regulatory agencies must hire computer experts, jurists, and other professionals to determine the risk level of an AI and what type of harm it may produce. The determination of risks associated with different types of AI must undergo testing and research.

Of course, no system is perfect. One of the advantages of adopting a harm-based liability model is that it eliminates the foreseeability issue posed by AI. As this note mentioned above, the greatest challenge AI technology offers to all of the tort liability framework is foreseeability. Adopting this harm-based liability model, AI regulatory agencies can presume foreseeability and causation. For example, if an AI regulatory agency deemed autonomous driving software to be in the high-risk category and enumerated several possible harms, such as wrongful death and great bodily injury. If a person was killed in an event involving strong AI, AI regulatory agencies can presume foreseeability and do not need to go down the causation rabbit hole.

Some scholars have raised concerns about this risk-based liability approach.[125] While such approaches establish a baseline for preventing the most egregious behaviors, they may discourage developers from pursuing optimal results. The incentive to avert severe errors exists, but

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[124] State of Indiana Legislators, *supra* note 110, at 395.
[125] *Id.* at 396.

it might not be sufficiently compelling for companies to engage in innovation and strive for the best possible outcomes. Additionally, in situations where the likelihood of harm is apparent, companies might just accept the risk and shift the anticipated liability costs onto consumers by raising the software price. In such instances, any incentive structure designed to prevent harm through financial motivations is effectively nullified.

In sum, it is almost impossible to create a perfect liability system. But if a system could lead to a fair and equitable result for the majority of cases, this system should be deemed effective.

E. Certification Process

Congress would grant the AI regulatory agency the power to institute a certification system for evaluating the safety of AI systems intended for commercial sale. AI regulatory agencies would employ a multi-tort liability system that differentiates certified AI and uncertified AI. The central aim of this liability system is to incentivize designers or manufacturers to undergo the certification process. Even if developers decide not to seek certification, this system encourages such developers to prioritize the safety of their AI systems; otherwise, liability will follow.

AI technologies that completed the agency certification process would enjoy a limited tort liability based on AI's risk level. Essentially, certified AI developers enjoy a compliance defense that reduces rather than eliminates tort liabilities. In the case of agency-certified AI, plaintiffs could bring an administrative claim and prove that the AI regulatory agency is negligent in assessing the proper risk level associated with such AI. The underlying rationale is that certified AI is presumed to be flawlessly designed; otherwise, it should not be certified. The federal regulatory agency is in the best position to prevent harm. The AI regulatory agency would be obligated to manage a fund that is sufficient to meet anticipated obligations from such claims. In instances where a negligence suit involves the inaccurate risk level assessment of a certified AI, the agency would be obliged to publish a report explaining the assessing criteria to prevent future errors.

Conversely, developers engaging in the sale or operation of AI without obtaining certification would be held strictly liable for any harm caused by such AI. Distributors of uncertified AI software must also be strictly liable when selling such unauthorized software. The underlying rationale is that developers are in the best position to prevent harm if they decide not to register with the federal regulatory agency.

F. Risk Levels

Similar to how the FDA classified medical equipment into classes, a regulatory agency may put AI into classes as well. Here are some of the suggestions for different classes of AI.

1. Class I: General Purpose AI

General purpose AI is weak AIs that are least risky and not capable of causing great harm to society. Under the harm-based liability framework, the harm of a general-purpose AI may only be financial harm. General purpose AI pertains to a category of artificial intelligence that is intended to produce fresh content, frequently encompassing text, images, audio, or other data formats. Software such as Chat GPT is likely to be in this category. AI regulatory agencies should put this type of AI in the least risky category because it will never put human life at risk. In instances where a corporation is using a general-purpose AI to conduct interviews, document reviews, or research, its malfunction will only create easily compensable financial damage.

2. Class II: Intermediate Risk AI

Intermediate-risk AI are smarter AIs that have the potential to cause great harm to society. Under the harm-based liability framework, the harm of an intermediate-risk AI may be both financial and physical harm. Autonomous driving software may fall into this risk level. At this risk level, the federal AI regulatory agency must closely examine the risk of this AI. The developer enjoys an affirmative defense if the software is certified by the regulatory agency. However, if the agency is able to prove that the error is totally unforeseeable, or the burden of conducting a full investigation outweighs the possibility of causing great harm, then the court could consider reducing liability in this regard.

3. Class III: High Risk AI

AI systems that negatively affect human safety or constitutional rights will be considered high risk. For example, a criminal facial recognition AI system could be deemed as high risk because it has the potential to wrongfully convict an innocent person. This risk level should include intolerable harm, such as using AI to manage and operate critical infrastructure, cognitive behavioral manipulation of people or specific vulnerable groups, and classifying people based on behavior, social status, or personal characteristics. At this risk level, the federal AI

regulatory agency must be examined with close scrutiny.

CONCLUSION

This note aims to examine the distinctive characteristics of AI-based robots and analyze their potential impact on our current tort liability models. The proposal outlined in Part IV takes a balanced approach by employing a federal regulatory system instead of a common law tort liability framework. The unique characteristic of AI, namely, its unforeseeable decision-making process, made it impossible to fit it into a uniform test to determine liability. In the context of strict liability, adopting this liability model will disincentivize the development of AI. While a negligence regime could potentially be applied effectively, determining AI's standard of due care will often be costly due to the foreseeability problem, thereby compromising the efficiency of this liability approach without additional tools.

Continuing to try to force AI into one of these liability frameworks will do more harm than good. Overdeterrence may well result if a court rules in a way that expands AI's liability. Judges are also not in the best position to render a just decision involving AI due to AI's high technical complexity. Therefore, creating a federal agency that specializes in AI regulation will be more efficient. The court's responsibility under this regulatory framework is to conduct fact findings and to apply a negligence framework to certified AI and a strict liability framework to uncertified AI. Unlike a strict regulatory framework that prohibits uncertified AI software, this approach is less coercive while still providing a strong incentive for AI developers to integrate safety features. In contrast, a more stringent regulatory regime similar to the FDA's drug approval program, might be necessary if policymakers believe AI presents a devastating risk. In sum, as we increasingly rely on autonomous and learning machines for various tasks, the legal system will inevitably need to address the repercussions of AI-induced harm and determine whether direct federal regulation is a viable means of mitigating such harm. Establishing a legal framework prior to the wide spread of artificial intelligence is likely to encourage the advancement of this potent technology.