ALGORITHMS IN FINANCE: BALANCING FIRST AMENDMENT PROTECTIONS AND REGULATION

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ABSTRACT

As algorithms become a function of decision-making in the financial sector, policymakers, the judiciary, and academics grapple with regulatory questions. With the increased reliance on algorithms in finance, the Securities and Exchange Commission (SEC) proposed a rule to mitigate potential conflicts of interest that can arise out of financial firms using algorithms. Algorithm users, including financial firms, are finding novel ways to protect algorithm use, such as by offering them First Amendment protections.

This Note considers to what extent algorithms can be considered protected speech amidst the complexity of algorithms and relationship within the financial sector. The Note argues that algorithms, particularly those with traceable human involvement, should be protected under the First Amendment. However, it also acknowledges the challenges in regulating algorithmic speech, especially with "black box" systems where human decision-making is less discernible.

Through examining the SEC's proposed rule, relevant First Amendment doctrine, and the varying complexity of financial algorithms, the note highlights the need for a nuanced approach to regulation that balances investor protection with the constitutional rights of financial firms. The conclusion underscores the importance of adapting First Amendment protections to reflect the evolving role of technology in finance, advocating for a case-by-case approach in scrutinizing algorithms under regulatory frameworks.

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INTRODUCTION

In a world where algorithms increasingly dictate financial decisions, the question arises: should these complex algorithms be granted the same First Amendment protections as human speech, or do they represent a new domain that needs nuanced regulation? There are ongoing debates about the financial sector's growing reliance on artificial intelligence (AI). Adopting this technology has advantages, which include allowing financial firms to democratize investing through efficiency improvements[1] and discover new "troves of big data."[2] The benefits, however, come with tradeoffs: the potential of poor data quality,[3] cybersecurity threats,[4] exacerbating existing systemic risks,[5]

1. *See* Adam Hayes, *Operational Efficiency: Definition, Examples, Vs. Productivity*, INVESTOPEDIA (May 04, 2022), https://www.investopedia.com/terms/o/operationalefficiency.asp.

2. Tom C.W. Lin, *Artificial Intelligence, Finance, and the Law*, 88 FORDHAM L. REV. 531, 536 (2019).

3. *See* Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers, 88 Fed. Reg. 53960, 53968 (proposed July 26, 2023) (to be codified at 17 C.F.R pt. 240 and pt. 275) (hereinafter "Data Analytics Proposal").

4. *See generally* Lin, *supra* note 2; *see also* Alec Lucas, *Why 'Free' Robo-Advisors Aren't Really Free*, MORNINGSTAR (Apr. 27, 2022),

and using "black box" systems that eliminate human decision-making and accountability.[6]

As AI technology continues to permeate the financial sector, there are questions about regulating communication between financial firms and investors, including the constitutional protection of algorithmic speech under the First Amendment. This note argues that algorithms and algorithmic outputs are protected under the First Amendment in light of the Securities and Exchange Commission's (SEC) proposed rule. The SEC's rule aims to mitigate conflicts of interest and harmful effects that may arise from using AI technologies in the financial sector.

In answering this overarching question, Part I.A[7] examines the SEC's proposed rule that attempts to eliminate or neutralize the effects of AI technologies.[8] Part I.B explores the varied algorithms relevant to the financial sector.[9] Part II discusses the relevant aspects of the First Amendment doctrine that courts may have to rely on in making their decision on algorithms.[10] Relatedly, Part II.A[11] explores categories of inclusion and exclusion under the First Amendment coverage and Part II.B[12] discusses personhood as a requirement for First Amendment protections. Part II.C summarizes current views on algorithms under the First Amendment.[13] Part III.A offers a perspective amidst the differing views on how algorithms may be treated that incorporates reconciles the views and applies the perspective of how algorithms may be treated based on their differing complexity.[14] This Note concludes by considering how algorithms and algorithmic output may be reconciled with existing First Amendment doctrine and how it might influence regulatory approaches in the financial sector.

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https://www.morningstar.com/financial-advice/why-free-robo-advisors-arent-really-free.

5. *See* Lin, *supra* note 2, at 541.
6. *See id.* at 545.
7. *See infra* Part I.A.
8. *See* Data Analytics Proposal, *supra* note 3, at 80 (defining conflict of interest broadly to include "*any* firm-favorable information in an investor interaction or information favorable to a firm's associated persons").
9. *See infra* Part I.B.
10. *See infra* Part II.
11. *See infra* Part II.A.
12. *See infra* Part II.B.
13. *See infra* Part II.C.
14. *See infra* Part III.A.

Because technology is pervasive in the financial sector and impacts investors, this Note argues that First Amendment protections must be applied to algorithms when there is a traceable link to humans. Personhood required for First Amendment protections means that not all algorithms can be treated the same. Black box algorithms and their algorithmic outputs can only be protected using novel approaches like e-personhood.

A. THE SEC'S PROPOSED RULE TO PROTECT INVESTORS FROM POTENTIAL TECHNOLOGICAL HARM

Technological development in the financial sector has been a key factor associated with increased retail investor participation in national securities markets in recent years.[15] Consequently, the SEC is concerned about amplifying existing conflicts of interest inherent to the financial investing relationship between firms and investors, such as conflicts of interest that could lead a firm to consider its interest ahead of its investors as more people are exposed to financial services through technology.[16] These conflicts of interest typically arise from commissions of financial advisors, product sponsors with revenue-sharing payments, or a firm's proprietary products.[17] Therefore, the SEC perceives traditional disclosure methods as inadequate to protect investors from potential conflicts of interest that are posed by these technologies.[18]

The SEC is also concerned about how investment firms use technologies to communicate and influence users to invest in certain ways that are harmful to the users.[19] A firm's use of technology communicates recommendations to users using digital engagement

15. *See* Data Analytics Proposal, *supra* note 3, at 15.

16. *See id.* at 7.

17. *See generally* Staff Bulletin: Standards of Conduct for Broker-Dealers and Investments Advisers – Conflicts of Interest, U.S. Sec. & Exch. Comm'n, https://www.sec.gov/about/divisions-offices/division-trading-markets/broker-dealers/staff-bulletin-standards-conduct-broker-dealers-investment-advisers-conflicts-interest (last visited Feb. 6, 2025).

18. *See* Data Analytics Proposal, *supra* note 3, at 26.

19. *See id.* at 31.

practices, including differential marketing and gamification[20] techniques. Digital engagement practices, such as push notifications, can prompt users to make uninformed, more frequent, or riskier investing decisions and strategies.[21] Through digital engagement process, users can trade instantaneously through an application or platform without requiring human interaction and recommendation. The conflict of interest lies in the recommendations being potentially geared towards investment products that are more favorable to the interests of a firm.

User harm may also stem from the datasets used to generate investing recommendations. Financial firms use broad and detailed data derived from user preferences, consumption habits, and online behavior, which firms may use to increase user trading activity.[22] The data that financial firms rely on to generate their algorithms or investing models could be corrupted, mislabeled, incomplete, unsourced, or biased, thereby compromising data quality.[23] Financial firms relying on poor data can lead to algorithm drift,[24] "erroneous or poor predictions, failing to achieve [a model's] intended objectives, and benefiting the firm over investors."[25]

The SEC is also concerned about the "black box" question.[26] The black box issue refers to the difficulty in understanding how deep learning models[27] learn and make their decisions because of the complex algorithms they use.[28] The lack of human understanding would make it

20. Gamification is the incorporation of game-like features in mobile applications or online platforms. *See Gamification*, MERRIAM-WEBSTER.COM, https://www.merriam-webster.com/dictionary/gamification (last visited Feb. 6, 2025).

21. *See* Data Analytics Proposal, *supra* note 3, at 25-26; CFA INSTITUTE, Fun and Games: Investment Gamification and Implications for Capital Markets 2, 12, (2024), available at https://rpc.cfainstitute.org/-/media/documents/article/industry-research/investment-gamification-implications.pdf.

22. *See* Data Analytics Proposal, *supra* note 3, at 19-20.

23. *See id.* at 29.

24. Algorithm drift is a failure in machine learning model that invalidates that model. *See Understanding Data Drift and Model Drift: Drift Detection in Python*, DATACAMP (Jan. 11, 2023), https://www.datacamp.com/tutorial/understanding-data-drift-model-drift (last visited Mar. 11, 2025).

25. *See* Data Analytics Proposal, *supra* note 3, at 30.

26. *See id.* at 66.

27. A type of machine learning. *See* discussion *infra* Section I.B.

28. *See* Shiraz Jagati, *AI's black box problem: Challenges and solutions for a transparent future*, COINTELEGRAPH (May 5, 2023), https://cointelegraph.com/news/ai-s-black-box-problem-challenges-and-solutions-for-a-transparent-future.

difficult to assess whether the algorithms comply with regulations, and regulatory frameworks may fall short of adequately regulating the algorithmic systems.

According to the SEC, conflicts of interest can lead to investor harm because technologies could boost a firm's revenue to the detriment of the user-investor.[29] Therefore, the proposed rule would require financial firms offering investing products to assess user interactions involving predictive data analytics technologies to identify conflicts of interest, ensuring that firms do not prioritize their own interests ahead of their investor-users.[30] Once firms identify the potential conflict of interest, they would be required to eliminate or neutralize the effect of those conflicts.[31]

In its proposed rule, the SEC adopts a broad definition of technologies, including artificial intelligence (AI), natural language processing (NLP), machine learning (ML) such as deep learning black box models, and chatbots used to communicate between firms and investors or platform users of regarding investment decisions.[32] The SEC's proposed rule would cover various uses of investing firms that rely on algorithmic trading, including online brokerages and robo-advisors.[33] The following section addresses some of these terms and how they work.

B. UNRAVELLING ALGORITHMS AND THEIR ROLE IN THE FINANCIAL SECTOR

This section illustrates the range of algorithms based on their scope and complexity.[34]

Artificial Intelligence (AI) has been framing conversations in virtually every sector,[35] and the financial sector is no exception[36]. The

29. *See* Data Analytics Proposal, *supra* note 3, at 20-21; *see also* Section I.A for examples of investor harm that lead to conflict of interests.

30. *See* Data Analytics Proposal, *supra* note 3, at 31.

31. *See id.* at 40.

32. *See id.* at 14.

33. *See id.* at 198-199.

34. *See* Data Analytics Proposal, *supra* note 3, at 40.

35. *See* Will Douglas Heaven. The inside story of how ChatGPT was built from the people who made it. MIT TECHNOLOGY REVIEW. (Oct. 12, 2024). https://www.technologyreview.com/2023/03/03/1069311/inside-story-oral-history-how-chatgpt-built-openai/.

SEC's proposed rule aims to neutralize and control the effects of technology that it uniformly calls "predictive data analytics."[37] In its definition of predictive data analytics, the proposed rule limits its AI definition to mean those algorithms that have "the ability to learn without explicitly being programmed."[38]

Theoretically, AI ranges from algorithms to full AI, which has complete human cognitive capabilities.[39] Current forms of AI, however, are far from the full AI.[40] AI as used colloquially is based on "machine learning" (ML), with more complex types of machine learning models are known as "deep learning" (DL) models.[41] ML and DL algorithms are "self-learning algorithms," where they can recognize patterns in data.[42] Throughout this paper, "algorithms" will refer to the technologies of ML and NLP that make up current mainstream AI.[43]

Financial firms use algorithms for operations and risk management, customer interactions, and investment management, among other uses.[44] For example, financial firms use algorithms to conduct background checks for credit and mortgage applications, for stress testing, to automate threat prevention and other cybersecurity determinations, and

36. P. Weber, K.V. Carl & O. Hinz, *Applications of Explainable Artificial Intelligence in Finance—a systematic review of Finance, Information Systems, and Computer Science literature*, MANAG. REV. Q. (2024), https://doi.org/10.1007/s11301-023-00320-0.

37. *See* Data Analytics Proposal, *supra* note 3, at 9.

38. *Id.* This note refers to these types of algorithms as "black box."

39. *See* Dirk A. Zetzsche et al., *Artificial Intelligence in Finance: Putting the Human in the Loop*, CFTE ACADEMIC PAPER SERIES: CENTRE FOR FIN., TECH. & ENTREPRENEURSHIP, no. 1, at 11-13, 48 (Feb. 1, 2020).

40. *See* Haroon Sheikh, Corien Prins & Erik Schrijvers, Artificial Intelligence: Definition and Background in *Mission AI: The New System Technology* 15, SPRINGER NATURE LINK (Jan. 31, 2023), https://link.springer.com/chapter/10.1007/978-3-031-21448-6_2; *see also* Iqbal H. Sarker, *Machine Learning: Algorithms, Real-World Applications and Research Directions*, 2 SN COMPUT. SCI., art. 160, 2 (Mar. 22, 2021), https://link.springer.com/article/10.1007/s42979-021-00592-x.

41. *Id.* at 15.

42. *Id.* at 18.

43. Aileen Scott, *Difference Between Algorithm and Artificial Intelligence*, DATA SCIENCE CENTRAL (July 7, 2021), https://www.datasciencecentral.com/difference-between-algorithm-and-artificial-intelligence/ (defining AI as a broad term that typically refers to a group of algorithms).

44. *See* Dirk A. Zetzsche et al., *Artificial Intelligence in Finance: Putting the Human in the Loop*, CFTE ACADEMIC PAPER SERIES: CENTRE FOR FIN., TECH. & ENTREPRENEURSHIP, no. 1, at 11-13, 48 (Feb. 1, 2020).

to monitor transactions.[45] Customer interaction uses for algorithms include marketing financial services,[46] chatbots for client communication,[47] delivering data-driven analyses through visualizations,[48] and product recommendations.[49] Investment management uses include identifying capital allocation, trading, and investment advice,[50] primarily automated through robo-advisors and, more broadly, algorithmic trading.[51]

Customer interaction and investment management are the focus of the SEC's proposed rule. As described earlier, the SEC has concerns over issues that may stem from gamification and poor data. These technologies are typically categorized as predictive analytics, which involve statistical techniques that use ML, data mining, and predictive modeling to predict future outcomes.[52] These technologies typically operate using algorithms.

Algorithms are sets of instructions and steps a computer follows to solve a problem. Search engines are an example of an algorithm that sorts and finds relevant results for a user. Algorithms rely on input instructions, process the instructions, and provide output for the user.

ML tends to rely on algorithms to develop various modeling techniques, such as predictive analytics. Predictive analytics use statistics and modeling to predict future outcomes based on historical data patterns.[53] Investment management tools also rely on ML to optimize predictive modeling for investing.[54] ML algorithms process

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45. *Id.* at 11-12.

46. *Id.* at 12.

47. *Id.* at 13.

48. *See* Zetzsche et al., *supra* note 44.

49. *See* Exhibit 1 from CFA Institute, *Ethics and Artificial Intelligence in Investment Management: A Framework for Professionals* (2022) at 4, https://rpc.cfainstitute.org/en/research/reports/2022/ethics-and-artificial-intelligence-in-investment-management-a-framework-for-professionals.

50. *Id.*

51. Zetzsche, *supra* note 44, at 13.

52. *See generally*, A. L. Samuel, *Some Studies in Machine Learning Using the Game of Checkers*, IBM J. OF RSCH AND DEV., Vol. 3, No. 3, 211-229 (July 1959), https://doi.org/10.1147/rd.33.0210.

53. *See* Clay Halton, *Predictive Analytics: Definition, Model Types, and Uses*, INVESTOPEDIA (June 27, 2024), https://www.investopedia.com/terms/p/predictive-analytics.asp.

54. Ethics and Artificial Intelligence in Investment Management: A Framework for Professionals, CFA INSTITUTE (2022) at 3, https://rpc.cfainstitute.org/en/research/

data to find patterns between users' past behavior and the services or products provided and then generate recommendations for those services or products. The recommendations are communicated to the users through email, app notifications, or online banking platforms.[55]

Financial firms use algorithms, including ML models, to inform investing opportunities. Firms may do this through algorithmic trading, which relies on computer code to execute trades based on a certain number of shares at a specified price and time.[56] These algorithms are ML-based to analyze datasets and adapt to market conditions.[57] ML can be used to recognize patterns in datasets and identify trading opportunities within the market.[58] ML can also be used to develop statistical models to predict stock prices based on historical prices and market trends.[59]

Financial firms may also use algorithms to optimize investment portfolios. These are commonly known as "robo-advisors."[60] The robo-advisors use algorithms to create and manage investment portfolios based on a user's risk tolerance and time horizon.[61] The process generally involves taking large datasets related to the market, such as market volatility or interest rate shifts, or personal data, such as credit score or risk tolerance, to develop personalized predictions to allocate assets in a portfolio.[62]

The proposed SEC rule attempts to regulate broad and varied investing practices that are not uniform in their use of algorithms.[63] One issue with the SEC's broad rule is that it may impede financial firms'

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reports/2022/ethics-and-artificial-intelligence-in-investment-management-a-framework-for-professionals.

55. Alex Drozdov, *Recommender Systems for Banking and Financial Services: How AI is Transforming the Way We Manage Our Finances*, YELLOW (June 7, 2023), https://yellow.systems/blog/recommender-systems-for-banking-and-financial-services.

56. *See* Data Analytics Proposal, *supra* note 3, at 15.

57. *See id.*

58. *See id.*

59. *See* Creed&Bear, *The Role of Machine Learning in Algorithmic Trading*, MEDIUM (Dec. 6, 2023), https://medium.com/@CreedandBear/the-role-of-machine-learning-in-algorithmic-trading-955e920a05ab (last visited Feb. 6, 2025).

60. *See* Arielle O'Shea, *What Is a Robo-Advisor?*, NERDWALLET, https://www.nerdwallet.com/article/investing/what-is-a-robo-advisor (last visited Feb. 6, 2025).

61. Drozdov, *supra* note 55.

62. *Id.*

63. *See* Data Analytics Proposal, *supra* note 3, at 8.

constitutional rights to communicate with their investors.[64] More importantly, the rule does not appreciate the complexity and the range of algorithms. Part III.A suggests alternative ways that courts may approach the issue of regulating complex algorithms as opposed to a general rule.[65] The central question is whether the firms' use of technologies, namely algorithms, has protections under the First Amendment.

II. FIRST AMENDMENT DOCTRINE

Because algorithm-based speech is still nascent relative to other forms of speech under the First Amendment doctrine, this section explores relevant topics to the bounds of the doctrine. The Supreme Court will have to grapple with both the exclusion/ inclusion categories and the personhood requirement of the First Amendment as the Court considers protections for algorithms.[66] Whether algorithms are included or excluded under the First Amendment doctrine is a relevant question because algorithms do not fit into existing categories of speech that the doctrine delineates.[67] The personhood question becomes important when considering more complex algorithms and their outputs, especially for the black box question.

As a general principle, the Supreme Court held that the government "has no power to restrict expression"[68] except in limited areas.[69] The First Amendment applies to speech with the intent to convey a message.[70] The Supreme Court has laid out the First Amendment

64. *See id.* at 9.

65. *See infra* Part III.A.

66. *See* Tim Wu, *Machine Speech*, 161 U. PA. L. REV. 1495, 1508-12 (2013).

67. *See id.*

68. Ashcroft v. Am. Civil Liberties Union, 535 U.S. 564, 575 (2002).

69. *See, e.g.*, Roth v. United States, 354 U.S. 476, 483 (1957) (upholding state and federal obscenity laws as constitutional); *see also* Brandenburg v. Ohio, 395 U.S. 444, 447-449 (1969) (*per curiam*) (holding that speech directed to inciting or producing imminent lawless action is not protected under the constitution); *c.f.* Winters v. New York, 333 U.S. 507, 517-19 (1948) (refusing to regulate violence under the obscenity category).

70. *See* Spence v. Washington, 418 U.S. 405, 415 (1974) (*per curiam*) (holding that an upside-down flag with a peace sign constitutes speech protected under the First Amendment because it is a message that would be understood).

jurisprudence based on categories of exclusion and inclusion, with the latter category relying on a speaker to convey speech.[71]

A. CATEGORIES OF INCLUSION AND EXCLUSION

The First Amendment coverage has shifted based on societal practices and values.[72] The Supreme Court extended First Amendment protections to motion pictures,[73] interactive media[74], and video games[75] as technology developed. The Court reversed a previous view when it held commercial speech is covered under the First Amendment.[76] Scholars have argued that First Amendment coverage has shifted to reflect claimants' preferences for protection; that is, the types of claims that plaintiffs have brought to the court are based on what the claimants value to protect under the First Amendment.[77] The activities protected under the First Amendment encompass varied topics, such as displaying or desecrating flags, wearing armbands, painting, sculptures, and music.[78]

While the First Amendment doctrine has developed based on categories of inclusion, it has simultaneously excluded certain categories from the First Amendment coverage. The exclusions of certain categories from the First Amendment coverage have been shaped by what the Supreme Court deemed not covered by the First Amendment.[79] The Supreme Court has excluded certain topics from First Amendment coverage, including obscene materials,[80] libelous utterances,[81] and

71. *See* Wu, *supra* note 67, at 1498, 1509.

72. *See* Amanda Shanor, *First Amendment Coverage*, 93 N.Y.U. L. REV. 318, 323 (2018).

73. *See e.g.*, Joseph Burstyn, Inc. v. Wilson, 343 U.S. 495, 502 (1952) (extending First Amendment protection to motion pictures).

74. *See* Eugene Volokh & Donald M. Falk, *First Amendment Protection for Search Engine Search Results*, 8 J.L. ECON. & POL'Y 883, 890 (2012).

75. *See* Brown v. Ent Merchs. Ass'n, 564 U.S. 786, 789 (2011).

76. *See e.g.*, Va. State Bd of Pharmacy v. Va. Citizens Consumer Council, 425 U.S. 748, 761-73 (1976) (asserting protections for commercial speech).

77. *See* Shanor, *supra* note 73, at 338, 344.

78. *See* Frederick Schauer, The Politics and Incentives of First Amendment Coverage, 56 WM. & MARY L. REV. 1613, 1619 (2015).

79. *Id.* at 1617-24.

80. *See* Paris Adult Theatre I v. Slaton, 413 U.S. 49, 54 (1973).

81. *See* New York Times Co. v. Sullivan, 376 U.S. 254, 268 (1964) (finding that no damages recovery for defamation unless it is proven that the statement was made with "actual malice").

fighting words.[82] In more recent cases, the Supreme Court has declined to create new exclusion categories.[83] The Court viewed photographs of animal torture as not covered by the First Amendment in the same way as "nonobscene" child pornography.[84] The Court reaffirmed its position in *Brown v. Entertainment Merchants Association,* disfavoring new categories of noncoverage.[85] *Stevens* and *Entertainment Merchants* has been interpreted as the Supreme Court's strong presumption of coverage.[86]

The line between categories of inclusion and exclusion has shifted historically. The Supreme Court changed its position on commercial speech as to its First Amendment coverage.[87] In extending coverage to commercial speech, the Court reasoned that commercial information is "indispensable to the proper allocation of resources in a free system" and "indispensable to the formation of intelligent opinions as to how that system ought to be regulated or altered."[88] Commercial speech is thus protected under the First Amendment because, as an "instrument," the free flow of information leads to "enlighten public decision making in a democracy."[89] The Supreme Court continued highlighting commercial speech's informational value in subsequent cases.[90]

Some scholars have attributed the dynamism of these categorial exclusions to an activity's degree of expressiveness: "[t]he puzzle of

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82. *See* Schauer, *supra* note 78, at 1622.

83. *See id.* at 1623.

84. Nonobscene, which is constitutionality protected, as opposed to obscene or that which depicts an actual minor, which is not constitutionally protected; *see* FindLaw, *First Amendment Limits: Child Pornography,* CONSTITUTION FINDLAW, https://constitution.findlaw.com/amendment1/first-amendment-limits–child-pornography.html; *see also* Schauer, *supra* note 78, at 1624 (citing United States v. Stevens, 559 U.S. 460 (2010)).

85. *See* 564 U.S. 786, 835 (2011).

86. *See* Schauer, *supra* note 78, at 1624.

87. *See* Va. State Bd. of Pharmacy v. Va. Citizens Consumer Council, Inc., 425 U.S. 748, 765 (1976).

88. *Id.* at 765.

89. *Id.*

90. *See* Shanor, *supra* note 73, at 327 (citing Zauderer v. Office of Disciplinary Couns., 471 U.S. 626, 651 (1985) (observing that "the extension of First Amendment protection to commercial speech is justified principally by the value to customers of the information such speech provides"); Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n, 447 U.S. 557, 563 (1980) (emphasizing the "informational function of advertising")).

First Amendment coverage reflects the cohesiveness of social norms - and courts' normative judgments about whether norms should be treated as if they are cohesive."[91] Others have reasoned that the First Amendment theory is derived from natural rights.[92] Those who view First Amendment doctrine as rooted in natural rights rely on the idea of natural law that influenced the Founding Fathers of the United States.[93] Natural law is based on the idea that human nature can be understood through human reason.[94] The natural rights of people are those rights that individuals inherently possess.[95] The First Amendment reflects this principle of inherent rights by protecting freedoms such as speech and press.[96] The First Amendment's protections extend natural rights into positive law (enacted laws)[97].

An emerging view explains the First Amendment coverage in terms of evolving social norms.[98] This theory offers better insight into how the coverage can be malleable to offer protections for emerging, novel societal concepts that were inconceivable as protected natural rights under the First Amendment.[99]

The social norms theory suggests that the First Amendment's scope depends on the court's decisions to reflect social norms.[100] The First Amendment coverage extends to matters without common norms or understanding.[101] The coverage acts to fill a gap for contested categories of social interaction.[102] When strong social norms govern certain issues, like contracts and breaches of trust, issues related to these expected social norms are more likely to fall outside the First Amendment.[103] However, when there are social expectations that certain social practices be protected and those social practices do not have set expectations, they tend to be included under First Amendment coverage so long they do

91. Shanor, *supra* note 73, at 344-45.

92. Jud Campbell, *Natural Rights and the First Amendment*, 127 YALE L. J. 246, 268-70 (2017).

93. *See id.* at 269

94. *Id.* at 271

95. *Id.* at 252-53.

96. *See id.* at 307-08.

97. *Id.* at 253.

98. *See* Shanor, *supra* note 73, at 318.

99. *Id.*

100. *Id.*

101. *See id.* at 321.

102. *Id.*

103. *Id.*

not harm others or disrupt societal norms.[104] The constitutional value under the First Amendment is allocated based on "discrete forms of social practice."[105]

B. PERSONHOOD

Personhood relates to the idea that First Amendment coverage applies only where there is a speaker entitled to assert First Amendment protections; social norms influence who and what are seen as such.[106] Consequently, First Amendment rights are afforded to those who can validly claim the rights.[107] Personhood thus depends on the speaker's identity, and courts have limited speech based on who or what is generating the speech.[108] For example, the Supreme Court has extended First Amendment rights to corporations[109] but has refused to do so for non-human speech[110] and to young children.[111] First Amendment rights attach to a person or a person-like entity.[112]

In the context of algorithms, whether algorithms are computer-generated or human-based is both an essential and complicated question.[113] The distinction can help determine whether algorithms and algorithmic outputs are protected speech.[114] The complexity of the classifying algorithms lies in their wide-ranging forms.[115] Algorithms vary from simple commands to complex programs. Applying rigid principles of exclusion and inclusion may not match the flexibility

104. *Id.*

105. *See id.* at 355 (quoting Robert Post, *Recuperating First Amendment Doctrine*, 47 STAN. L. REV. 1249, 1273(1995)).

106. *See* Wu, *supra* note 67, at 1500.

107. *Id.*

108. *Id.*

109. *See* First Nat'l Bank v. Belloti, 435 U.S. 765, 776(1978).

110. *See* Miles v. City Council, 710 F.2d 1542 (1983) (refusing to extend First Amendment rights to a trained talking cat).

111. *See* Hazelwood School District v. Kuhlmeier, 484 U.S. 260 (1988) (censoring students was permitted because they do not have comparable rights to adults).

112. *See* Wu, *supra* note 67, at 1496-1497.

113. *Id.* at 1497.

114. *Id.* at 1498.

115. *Id.* at 1498-1499, 1524-1525.

warranted for new forms of technology.[116] Likewise, evolving technology may not fit under existing First Amendment categories.

C. EXISTING ANALYSIS ON FIRST AMENDMENT AS TO ALGORITHMS

1. Perspectives on Algorithms

Two views exist on applying the First Amendment jurisprudence to algorithms and their outputs. The first view suggests that the First Amendment covers algorithmic output so long as the program communicates a message or opinion to a recipient or audience.[117] The speech inquiry focuses not on the algorithm itself but on the output from that algorithm.[118] Therefore, even if the algorithms themselves may not be speech, the algorithmic outcomes may be.[119]

The first view aligns with court decisions about less complex algorithms such as computer code and search engine results.[120] In *Universal City Studios v. Corley*, the court considered whether a computer code that allowed users to decrypt DVD encryptions meant to prevent unauthorized viewing and copying is protected speech under the First Amendment.[121] The court analogized code to mathematical formulae, musical notes, or a novel in Sanskrit, all written in code defined as "symbolic notations not comprehensible to people unversed in their subject matter."[122] The Court reasoned that although these examples are incomprehensible to some, such speech acts should not be removed from the First Amendment coverage.[123] The Court, however, acknowledged that there is a difference between computer code and the other modes of communication: code can be run on a computer.[124]

Nonetheless, the code, while executed by a computer, often communicates information that a human can understand and evaluate. Computer code is equally functional and conveys information.[125] It is

116. *See* Brown v. Entertainment Merchants Ass'n, 564 U.S. 786, 805 (2011) (Alito, J., concurring).
117. Stuart Benjamin, Algorithms and Speech, 161 U. PA. L. REV. 1445 (2013).
118. *See id.* at 1447.
119. *See id.* at 1447, 1449.
120. *See id.* at 1449, 1450, 1452.
121. *See* Universal City Studios, Inc. v. Corley, 273 F.3d 429, 434 (2d Cir. 2001).
122. *Id.* at 446.
123. *Id.*
124. *Id.*
125. *See generally* Benjamin, *supra* note 109; *see also* Wu, *supra* note 67.

functional because it is used to run algorithms in a computer.[126] It conveys information because the code allows programmers to communicate with each other.[127] Relying on computer code as a mode of communication between programmers, the court concluded that computer code is speech.[128] The court reasoned that if First Amendment protections were limited to descriptions of computer code and excluded the code itself, it would hinder discourse among programmers.[129]

Building on the precedent in *Universal City Studios*, other federal courts expanded the First Amendment coverage to protect search results from search engines. *Search King, Inc. v. Google Technology, Inc.* found that search engine rankings were subjective and thus constitutionally protected opinions.[130] Similarly, courts have found that search engines can exclude certain results as part of their editorial decisions.[131]

The second view offers a more nuanced approach with differing treatments based on an algorithm's functionality.[132] This view asks whether algorithms are themselves speech or tools.[133] In doing so, it distinguishes between protected speech and communication tools.[134] While forms of speech are covered under the First Amendment, communication tools are not.[135] Protected speech conveys ideas or information of its communicator through the speech.[136] Meanwhile, tools have a functional relationship with information being communicated.[137]

The First Amendment jurisprudence regarding algorithms, or machines in general, has a de facto functionality consideration.[138] The de

126. *See* Wu, *supra* note 67, at 1533.
127. *See* Universal City Studios, Inc. v. Corley, 273 F.3d 429, 447-48 (2d Cir. 2001).
128. *Id.*
129. *Id.* at 447-48.
130. *See* No. CIV-02-1457-M, 2003 WL 21464568, at *4 (W.D. Okla. May 27, 2003).
131. *See* Zhang v. Baidu.Com, Inc., 10 F. Supp. 3d 433 (S.D.N.Y. 2014); *see also* Langdon v. Google Inc., 474 F. Supp. 2d 622, 629-30 (D. Del. 2007).
132. *See* Wu, *supra* note 67, at 1533.
133. *Id.*
134. *Id.*
135. *Id.*
136. *See* Brown v. Entm't Merchs. Ass'n, 564 U.S. 786, 790 (2011).
137. *See* Wu, *supra* note 67, at 1533.
138. *Id.* at 1517, 1519.

facto functionality consideration acts as a gatekeeping mechanism to ensure that the scope of the Free Speech Clause is not stretched beyond the scope that the Supreme Court laid out.[139] The de facto functionality excludes carriers and tools from First Amendment protection.[140] Carriers are handlers of information who transfer information from one place to another.[141] Their relationship with speech is functional because they handle or process information in a functional way.[142]

Similarly, tools are not protected under speech because they are merely used to convey information.[143] Another reason for not extending First Amendment protections for tools is based on the notion that tools are considered speech acts.[144] Speech acts are those forms of speech that convey an action.[145] For example, verbally accepting an offer creates a legally binding contract.[146] The distinction between a tool and speech generally lies in whether there is a speech product versus a communication tool.[147] Speech products are protected because they are outcomes of deliberate forms of speech that aim to convey an opinion or a message.[148] There is an element of personhood associated with speech products. Communication tools, however, are primarily speech acts.[149]

One view argues that algorithms are tools that a programmer uses to convey speech, and that speech generated by humans should be protected under the First Amendment.[150] On the other hand, the other side views algorithms as tools that are non-human speech and fall outside the First Amendment coverage.[151] The commonality between the

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139. *Id.*

140. *Id.* at 1497.

141. *Compare* Turner Broad. Sys., Inc. v. FCC, 512 U.S. 622, 636 (1994) (extending First Amendment protection to cable operators because of their exercise of choice over stations and programs) *with* Note, *The Message in the Medium: The First Amendment on the Information Superhighway*, 107 HARV. L. REV. 1062, 1092 (1994) ("Common carrier status insulates telephone companies from the expectation that they endorse all speech in phone conversations.").

142. *See* Wu, *supra* note 67, at 1517, 1519.

143. *See* Winter v. G.P. Putnam's Sons, 938 F.2d 1033, 1035-36 (9th Cir. 1991) (comparing aeronautical charts to a compass which made them technical tools).

144. *See* Wu, *supra* note 67, at 1523.

145. *Id.* at 1497, 1525.

146. *Id.* at 1523.

147. *Id.*

148. *See generally id.*

149. *Id.*

150. *See* Benjamin, *supra* note 109.

151. *See* Wu, *supra* note 67.

two views is based on when a person is identifiable in the process, starting from the code input to the output; the output is considered speech that should be protected under the First Amendment. The point of contention between the two views is based on whether the algorithm is a tool or protected speech. The question gets more complicated when the algorithm relies on deep learning to generate the output, particularly if that deep learning is a black box that is not understandable by humans.

2. Treatments of Algorithms under First Amendment

The First Amendment protects the freedom of speech under the Free Speech Clause.[152] The First Amendment jurisprudence first inquiries into whether activities are covered.[153] The scope of speech is referred to as "coverage."[154] The coverage of the First Amendment applies when an act implicates the First Amendment.[155] If First Amendment coverage applies, then a means-end scrutiny applies to determine the strength of the protection.[156] The standard of review may be heightened scrutiny or intermediate scrutiny depending on whether the speech is content-based or content-neutral.[157]

Speech under the First Amendment is analyzed under strict and intermediate scrutiny, depending on the type of speech and the nature of the regulation.[158] Content-based and content-neutral are two types of regulation under the First Amendment.[159] Content-based regulations "[target] speech based on its communicative content," meaning they apply "to particular speech because of the topic discussed or the idea or message expressed."[160] Content-based laws regulate and distinguish a

152. *See* U.S. Const. amend. I.

153. Schauer, *supra* note 78, at 1619.

154. *Id.*

155. *Id.*

156. *See* Frederick Schauer, Categories and the First Amendment: A Play in Three Acts, 34 VAND. L. REV. 265, 267-82 (1981).

157. *See* Schauer, *supra* note 78, at 1620-21.

158. *See e.g.*, Brown v. Ent. Merchs. Ass'n, 564 U.S. 786, 799-800 (2011); *see also* Turner Broadcasting System, Inc. v. FCC, 512 U.S. 622, 640-42 (1994).

159. Legal Information Institute, Cornell Law School, *Amdt. 1.7.3.1 Overview of Content-Based and Content-Neutral Regulation of Speech*, https://www.law.cornell.edu/constitution-conan/amendment-1/overview-of-content-based-and-content-neutral-regulation-of-speech.

160. Streetmediagroup, LLC v. Stockinger, 79 F.4th 1243, 1249 (2023).

speaker's message based on the message.[161] Content-based regulation adopted because the government disagrees with the content of the speech is presumptively invalid.[162] Strict scrutiny is the standard of review for regulations for specific subject matter, "even if [they do] not discriminate among viewpoints within that subject matter."[163] For example, a regulation may regulate speech by "particular subject matter" or "its function or purpose."[164]

Not all content-based regulations on speech are unconstitutional. Even when a regulation is ostensibly content-based, it can survive after courts weigh the competing interests of the government and the First Amendment rights to free speech.[165] Government regulations, however, rarely survive strict scrutiny since the threshold is high.[166]

In *Brown v. Entertainment Merchants Association*, the Supreme Court limited the strict scrutiny test when there was a restriction on the content of protected speech to the government, showing "a compelling government interest and is narrowly drawn to serve that interest."[167] Entertainment Merchants were involved in a California law that prohibited selling or renting violent video games to minors.[168] The Court found that the ban on video games violated the First Amendment because it infringed on the rights of minors whose parents considered violent video games harmless.[169] The Court reasoned that banning access to the games suppressed speech; thus, strict scrutiny applies to the regulation.[170]

Unlike content-based regulations that distinguish favored from disfavored speech based on the ideas, content-neutral regulations

161. *See* City of Austin v. Reagan Nat'l Adver. of Austin, LLC, 596 U.S. 61, 69 (2022).

162. *See* Reed v. Town of Gilbert, 576 U.S. 155, 163 (2015).

163. *Id.* at 169.

164. *Id.* at 163.

165. *See* Iancu v. Brunetti, 588 U.S. 388, 402 (2019).

166. *See* Holder v. Humanitarian Law Project, 561 U.S. 1, 39 (2010) (holding that statute prohibiting provision of support to designated foreign terrorist organizations did not violate the First Amendment under strict scrutiny review); *see also* Ashcroft v. American Civil Liberties Union, 535 U.S. 564, 583, 585 (2002) (upholding government regulation of pornographic internet content that was harmful to minors under strict scrutiny).

167. Brown v. Ent. Merchs. Ass'n, 564 U.S. 786, 799 (2011) (quoting R. A. V. v. City of St. Paul, 505 U.S. 377, 395 (1992)).

168. *See* 564 U.S. at 789.

169. *See id.* at 805

170. *See id.* at 804-05.

"impose burdens and confer benefits without reference to the content of the speech."[171] Content-neutral regulation controls the speech regardless of the content of the message conveyed.[172] Applying this distinction, the Supreme Court in *Turner Broadcasting* found that while regulations on cable television operators interfere with the stations' editorial discretion, the regulations do not reference speech content.[173] The regulation did not interfere with the cable operators' programming.[174] Therefore, content-neutral regulations of speech are subject to intermediate scrutiny.[175] Unlike strict scrutiny, intermediate scrutiny does not require the government to show a "direct causal link" between the purpose of the regulation and the potential harmful impacts it is regulating."[176]

The SEC's proposed rule addresses both the generated output from the algorithms, algorithmic output, and the algorithms themselves, i.e., how the output is generated.[177] While the proposed rule is aimed at regulating how financial firms use algorithms in generating investment decisions for their user investors, in doing so, it is indirectly affecting the content or the speech that these firms generate.[178] In other words, the SEC's proposal aims to regulate how the output is generated – the algorithmic output – and the output itself.[179]

The issue with the proposed rule is that it covers most, if not all, types of algorithms, which vary not only in their complexity and function but also in the extent to which they have a human involved in their development. Broad rules, particularly in the context of law and regulations, often aim to cover a wide range of situations or behaviors.[180] However, applying general rules can become complicated when there are many specific variables to consider. This is especially true of algorithms. Albeit sparingly,[181] the Supreme Court has struck

171. Turner Broadcasting System, Inc. v. FCC, 512 U.S. 622, 643 (1994).
172. *See* Streetmediagroup, LLC v. Stockinger, 79 F.4th 1243, 1249 (2023).
173. *Turner Broadcasting System* 512 U.S. at 667-68.
174. *See id.* at 643-44.
175. *See id.* at 662.
176. Brown v. Ent. Merchs. Ass'n, 564 U.S. 786, 799 (2011).
177. *See* Data Analytics Proposal, *supra* note 3, at 14, 198-99.
178. *See id.* at 198-99.
179. *See id.*
180. *See, e.g.*, R. A. V. v. City of St. Paul, 505 U.S. 377, 413 (1992).
181. *See, e.g.*, United States v. Williams, 553 U.S. 285, 293 (2008) (referring to the practice of striking down laws that do not delineate between protected and unprotected speech as "strong medicine"); *see also*, Reno v. American Civil Liberties Union, 521

down regulations for not distinguishing or delineating between protected and unprotected speech.[182] The task of regulating algorithms is made complicated by the need to strike a balance between ensuring investor protection and protecting financial firms' rights. Regardless of whether the SEC's regulation stands, it is likely that courts will apply a range of coverage and scrutiny to algorithms, probably on a case-by-case basis, leaning more towards heightened scrutiny for algorithms that rely less on deep learning outputs.

III. STRATEGIES FOR DECODING COMPLEXITY AS TO ALGORITHM REGULATION

The novelty of regulating algorithms lies in their complexity, which is not captured by simply classifying them as included or excluded under the First Amendment. Regulating algorithms requires navigating complex questions about the type of speech, the personhood, and evolving societal norms. Therefore, courts in deciding cases related to algorithms must take a case-by-case approach that caters to an algorithm's complexity. Part III proposes a framework for courts to consider when ruling on algorithms.

A. APPLICATION OF THE FIRST AMENDMENT TO ALGORITHMS

Courts have held that algorithmic output requires a First Amendment analysis that combine both functional and expressive elements.[183] Over time, courts have dealt with algorithmic outputs ranging from search engines[184] and video games[185] to interactive

U.S. 844, 874 (1997) (striking down anti-indecency provisions of the Communications Decency Act for not sufficiently distinguishing between indecent (but protected) speech and obscene (and thus unprotected) speech on the internet).

182. *See* United States v. Stevens, 559 U.S. 460, 469 (2010) (holding regulation unconstitutional, violating the First Amendment by failing to distinguish between protected and unprotected speech); *see also R. A. V.,* 505 U.S. at 413 (striking down an ordinance under the First Amendment for being "facially overbroad" because it prohibited speech based on subject matter without distinguishing between protected and unprotected speech).

183. *See* Universal City Studios v. Corley, 273 F.3d 429, 451 (2001).

184. *See* Search King, Inc. v. Google Technology, Inc., No. CIV-02-1457-M, 2003 WL 21464568, at *4 (W.D. Okla. May 27, 2003).

185. *See* Brown v. Ent. Merchs. Ass'n, 564 U.S. 786, 789 (2011).

media.[186] For financial firms, examples of algorithmic outputs include forms of automatic trading that do not rely on a black box type of machine learning (unsupervised deep learning).[187]

Beyond the algorithmic output, courts may be consider the algorithm itself to be either human-generated speech or a tool under the de facto functionality doctrine.[188] Courts should start this analysis by defining the type of algorithmic speech at issue and distinguishing between algorithmic outputs that convey a message and those that serve a functional purpose. Expressive algorithms that produce communicative content should be more likely to be protected under the First Amendment, whereas functional algorithms appear less likely.[189]

If an algorithm is considered speech based on the characteristics that a person wrote or programmed, then that speech is protected under the First Amendment.[190] In the case of financial algorithms, the algorithm itself is simultaneously functional and speech in the form of a coding language that conveys information. The algorithm is functional because it is a command in the code that informs a computer how to perform a task. The algorithm is a means of communication because computer code communicates a message to a user or another programmer. The algorithm may nonetheless be speech because it conveys information that programmers need to communicate with each other.[191] In the case of an algorithm producing communicative content, it is protected under the First Amendment.[192]

On the other hand, if an algorithm is primarily a tool because of its functional relationship with information, then it does not fall under the First Amendment coverage.[193] Functional algorithms are mainly tools for computation, calculations, data processing, and the like. A functional algorithm is like a calculator used to compute a mathematical output.

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186. *See* Eugene Volokh & Donald M. Falk, First Amendment Protection for Search Engine Search Results, 8 J.L. Econ. & Pol'y 883, 890 (2012).

187. *See* Zetzsche, *supra* note 44, at 12-13; *see also* Exhibit 1 from CFA INSTITUTE, *Ethics and Artificial Intelligence in Investment Management: A Framework for Professionals* (2022) at 4, https://rpc.cfainstitute.org/en/research/reports/2022/ethics-and-artificial-intelligence-in-investment-management-a-framework-for-professionals.

188. *See* Part II.C(1).

189. *See* Wu, *supra* note 67, at 1517-24.

190. *See* Universal City Studios, Inc. v. Corley, 273 F.3d 429, 434 (2d Cir. 2001).

191. *See id.* at 447-48.

192. *See* Benjamin, *supra* note 102, at 1447, 1449.

193. *See* Wu, *supra* note 67, at 1498.

The calculator is not considered speech but a tool that helps a user determine an output. The calculation result, under the de facto functionality doctrine, is separate from the computation of the calculator.[194] The calculator is a communication tool used to convey the output. Many algorithms do similar work to computing human input, and those themselves may ramp up the computing process, but the algorithms remain computation tools. The output, however, may become speech if it is linked to a person.[195]

Financial firms rely on various models and regressions to generate output through financial recommendations. Excel spreadsheets, statistics programs, and integrated development environments (IDE)[196] are all examples of the tools financial firms rely on to generate their output.[197] These tools are modes of conveying the ultimate output through financial recommendations. Because of their de facto functionality as tools, they are not included under the First Amendment coverage because they are communication tools.[198]

The "algorithm as a tool" view is seemingly at odds with the view that coding is a means of communication between a company and its customers.[199] The two views, however, make it easier to tease out the complex coding from mere computing. If the computing mechanism is simple and is not relaying information, scholars have suggested it is more likely to be a tool.[200] Going further, scholars argue that the more complex the computing mechanism and the more it can be used to communicate with others through expression, the more likely it becomes speech.[201]

Similarly, the code as a computer input is a mode of communicating between programmers.[202] Likewise, financial advisors

194. *See id.* at 1497-98.

195. *See id.* at 1530 (comparing a database search of raw information to a newspaper editor selecting information to be presented).

196. IDEs are software applications where programmers type in their code to generate outputs.

197. *See* Exhibit 1, *Ethics and Artificial Intelligence in Investment Management: A Framework for Professionals*, CFA INSTITUTE (2022) at 4, https://rpc.cfainstitute.org/en/research/reports/2022/ethics-and-artificial-intelligence-in-investment-management-a-framework-for-professionals.

198. *See* Wu, *supra* note 67, at 1498.

199. *See supra* Part II.C.a.

200. *See* Wu, *supra* note 67, at 1497, 1523.

201. *See id.* at 1497, 1524.

202. *See id.* at 1514.

use more specialized programs, codes, and algorithms to communicate with others. Thus, the more complex the algorithm, the more likely it moves away from being a tool to becoming a language used to communicate and is speech under the First Amendment coverage. In the case of complex algorithmic output that relies on a traceable link to human-input to generate comprehensible output, regulating such algorithmic output becomes a content-based regulation because the regulation applies to the ultimate message expressed. Conversely, complex algorithms absent a traceable link to human-input (black box) are less likely to be speech.

An example is regulating the use of robo-advisors in portfolio management. The regulation can be content-based and content-neutral. The output may be content-based because it regulates the message communicated to the users. Regulating the algorithm used to develop robo-advisors may be a content-neutral regulation because it is more akin to regulating a mode of expression without regard to its substance. One method of analyzing regulations on algorithmic output is to distinguish between an algorithm's output and how it arrives at that output:[203]

> (1) If a rule targets algorithmic output, such as specific asset allocations or diversification ratios, then the government is regulating content-based speech. This scenario would likely trigger strict scrutiny because the government is restricting the substance of the message conveyed to consumers.
>
> (2) If the rule restricts how the algorithm generates its output, such as banning certain analytical approaches or entirely prohibiting the use of a robo-advisor, then it resembles *Turner Broadcasting*[204] in that the government is limiting how information can be delivered to consumers. Such restrictions are typically viewed as content neutral.

The SEC, however, also has an issue with the black box question.[205] In a black box, when an algorithm takes instructions from a company

203. This reasoning assumes that there is a traceable link to a human involved in generating the algorithm by providing input.

204. 512 U.S. 622, 643-644 (1994).

205. *See* Data Analytics Proposal, *supra* note 4, at 66.

and applies deep learning to its learning process to apply the tasks, it lacks the personhood required to assert First Amendment rights. Because the First Amendment protects the rights of people,[206] courts must consider the degree to which personhood or human agency is involved in creating and directing an algorithm. Algorithmic outputs with significant human input, with a traceable link to human authorship or editorial control, are more likely to qualify as protected speech. Courts have already extended the First Amendment coverage to use cases for less complex algorithms like search engines.[207] Courts reasoned that these types of algorithms involve a subjective output, opinion, or editorial decision[208] that is protected under First Amendment speech. Courts have also reasoned that these algorithms convey messages to other humans despite their functional purpose.[209]

The position of this Note is that algorithmic outputs that lack substantive human input, such as deep learning algorithms in a black box, cannot be considered speech under the First Amendment. While courts have not addressed the question of a purely algorithmic output without an identifiable author, these algorithms do not fit neatly under existing categories of exclusion and inclusion. Consequently, courts cannot continue to rely on these current categories to guide First Amendment analysis. If courts take the most straightforward approach and exclude algorithms from First Amendment coverage because they are tools, courts can side-step the issue entirely and do not have to entertain the possibility of creating new categories of exclusion. However, completely shutting the door on a technology that is not fully understood can stifle innovation and technological progress. More importantly, treating all algorithms as tools does not reflect the communicative aspect of algorithms. It does not reflect the realities of how the algorithms help create output and often deliver output.

The Supreme Court has historically expanded the scope of the First Amendment coverage to reflect current and evolving societal values and norms.[210] Expanding the First Amendment coverage to all algorithms,

206. *See generally*, Shanor, *supra* note 73; Wu, *supra* note 67.

207. *See e.g.*, Zhang v. Baidu.Com, Inc., 10 F. Supp. 3d 433, 436-38 (S.D.N.Y. 2014); *see also* Langdon v. Google Inc, 474 F. Supp. 2d 622, 629-30 (D. Del. 2007).

208. *See* 10 F. Supp. 3d at 436-438; *see also* 474 F. Supp. 2d at 629-30.

209. Universal City Studios, Inc. v. Corley, 273 F.3d 429, 447-49 (2d Cir. 2001).

210. *See generally* Va. State Bd. of Pharmacy v. Va. Citizens Consumer Council, Inc., 425 U.S. 748 (1976) (protecting commercial speech about pharmacy drug pricing under the First Amendment); Texas v. Johnson, 491 U.S. 397 (1989) (holding that flag burning constitutes protected speech under the First Amendment); Reno v. ACLU, 521

thereby cutting off algorithms from regulation because they are speech, has consequences. But allowing a technology to exist with no regulation has unknown effects.

Policymakers are trying to find ways to regulate complex algorithmic outputs without banning their use altogether. As to the black box question, some have argued that extending a limited legal personality to the algorithm may be beneficial in exerting regulatory control.[211] The limited legal personality, known as e-personhood, operates as a partial license with a certain amount of assets assigned to it.[212] The algorithm stops its operations if the assets are depleted because of liabilities (such as lawsuits) or regulatory sanctions.[213] Non-human entities like corporations have been given legal identities, and the same can be extended to black box algorithms.

A limited legal personality acquires rights and responsibilities that can be effectively regulated. It also allows liability to be imposed if algorithmic actions lead to harm, which provides a mechanism for accountability. While e-personhood offers a potential mechanism for regulating algorithmic behavior, its implementation requires a delicate balance between fostering innovation and safeguarding against possible harm.[214] Because of the range in complexity of algorithms, a case-by-case approach is more effective way to regulate algorithms than an all-encompassing body of regulation.

CONCLUSION

The SEC's proposed rule, which seeks to neutralize or eliminate conflict of interest that AI technologies threaten to exacerbate, will be challenging to implement due to the wide range of algorithms in use.[215] For algorithms that have a traceable link to humans, the process is more

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U.S. 844 (1997) (protecting free speech principles on the Internet); Snyder v. Phelps, 562 U.S. 443 (2011) (affirming protections for matters of public concern, even when offensive); *see also* Shanor, *supra* note 73, at 325.

211. *See* Zetzsche, *supra* note 44, at 36.

212. *See id.*; *see also* Shawn Bayern, A Q&A with Shawn Bayern, Author of "Autonomous Organizations", CAMBRIDGE UNIVERSITY PRESS (Oct. 25, 2021), https://cambridgeblog.org/2021/10/a-qa-with-shawn-bayern-author-of-autonomous-organizations/.

213. *See* Zetzsche, *supra* note 44, at 36.

214. *See id.* at 25; *see also* A Q&A with Shawn Bayern, *supra* note 219.

215. *See* Wu, *supra* note 67, at 1524-26.

straightforward than for algorithms that raise the black box question. Lower courts are more likely to hold algorithms as speech, primarily if they are used to communicate with programmers or users.[216] Arguments for treating complex algorithms as either speech or tools under the First Amendment both have merit.[217] The issue turns on determining whether algorithms possess sufficient personhood or communicative intent to warrant First Amendment protection.[218] When a human element is identifiable in the algorithmic process, such as in the input or design phase, the output may be considered speech deserving protection. However, the question becomes more complex when algorithms rely on deep learning models and operate as black boxes, rendering their processes opaque and removing the link to humans.[219]

Ultimately, the Supreme Court's decision will depend on its interpretation of the First Amendment principles and their applications to emerging technologies. The way the Supreme Court interprets coverage for these novel algorithms requires a case-by-case approach, which allows for customized regulation based on the complexity and scope of the algorithm at issue. While historical precedent suggests a willingness to adapt First Amendment coverage to reflect social values and technological advancements, the Court has a challenging exercise in carefully preserving First Amendment rights to reflect social values moving forward.[220] Balancing investor protection and firm rights further complicates the regulatory landscape.[221] As technology permeates the financial sector, a nuanced understanding of algorithms and their regulatory consequences becomes increasingly crucial.[222]

Regardless of the fate of the SEC's regulation, courts are likely to apply a case-by-case approach in scrutinizing algorithms, leaning towards heightened scrutiny for those less reliant on deep learning outputs. The case-by-case approach allows courts to exercise caution in establishing precedents that may have far-reaching implications. The

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216. *Entm't Merchs. Ass'n*, 564 U.S. 786 (2011); Search King, Inc. v. Google Tech., Inc., No. CIV-02-1457-M, 2003 WL 21464568, at *4 (W.D. Okla. May 27, 2003); Turner Broadcasting System, Inc. v. FCC, 512 U.S. 622, 636-37 (1994); Universal City Studios v. Corley, 273 F.3d 429, 448 (2d. Cir. 2001).

217. *See* Part II.C(3).

218. *See* Wu, *supra* note 67, at 1503.

219. *See* Part III.

220. *See* Wu, *supra* note 67, at 1514.

221. *See* Data Analytics Proposal, *supra* note 3.

222. *Id.*

field of algorithmic regulation is still evolving.[223] Courts must refine their positions as technology advances and societal norms shift around algorithms, regulating each algorithmic case using a case-by-case approach to allow for customized regulation based on an algorithm's complexity.

223. *See* Sheikh, et al., *supra* note 40, at 15; *see generally* Sarker, *supra* note 40.