



Course Name: Ethics in Big Data & Artificial Intelligence

Course Number: 382-1-3602

Course Credits: 2

Lecturer: Mois Navon

Semester / Year: Spring 2022

COURSE DESCRIPTION

This course offers an introduction to the ethical issues inherent in the technologies spawned by big data and artificial intelligence. As these fields enter every area of human existence, the ethics surrounding them is becoming ever critical. The course – seeking to touch upon all the prominent technologies driven by big data and artificial intelligence – will be divided into five parts. The first part will focus on ethics, what it is and why it is important. This will include an overview of various approaches to ethics in general and the ethics of technology in specific. Next we will dive into the big issues in big data. The third part will then focus on the ethical dilemmas involved in the autonomous systems driven by these technologies. Following this we will delve into the ethical issues of robotics and then conclude with a look into the future to discuss the ethical issues surrounding “the singularity.”

The goals of this course are to imbue the student with an appreciation for the value and necessity of ethics in general and as it applies to engineering in specific. The student will acquire the tools to engage in the ethical questions at home and in the workplace and to apply himself accordingly.

Course Demands

There will be two position papers and a final exam. The papers are to be 500-word (+/- 100) position papers on a topic of current ethical controversy concerning technology.

Each Paper = 15%

Final Exam = 70%

Final Grade: A passing grade in the course is contingent on receiving a passing grade on both papers – that is, a zero on either paper gives a zero in the class.

Course Outline: See Below



Week	Class	Subject	Detail	Required Readings	Optional Readings
1	1	Course Introduction	Overview, Motivations, Appetizers	(Soloveitchik 2012, pp. 6-11, 59-60)	
1	2	Introduction to Ethics (1)	Classical Moral Approaches	(Rachels and Rachels 2015b: Ch. 1)	(Vaughn 2015: 22-25); (Gaon [933] 1989: Intro,6); (Berkovits 2004); (Wurzburger 2008)
2	1	Introduction to Ethics (2)	Difficulties with Moral Approaches (1)	(Nietzsche 1974, p181-2); (Berkovits 2004, ch 11)	(Rachels and Rachels 2015b); (Wurzburger 1994)
2	2	Introduction to Ethics (3)	Difficulties with Moral Approaches (2)	(Blau 2002); (Plato 1997, Euthyphro); (Rachels and Rachels 2015a, 4.2)	(Lamm 2007); (Shatz 2012); (Wurzburger 2008, 75-81); (Spero 2016); (Shatz, 1996)
3	1	Ethics and Technology (1)	History and Approaches	(Johnson and Miller 2008a, pp35-42)	(Heidegger 2013); (Jonas 2000); (Verbeek 2015); (Kroes and Verbeek 2014); (Vallor 2018); (Miller 2011)
3	2	Ethics and Technology (2)	Mediation Theory & Ethics in the Workplace Today (Ex: Mobileye, Volkswagen, Toyota)	(Verbeek 2014); (Bunge 1977, p97-98, 106-107)	(Pimple 2013: Ch. 11);
4	1	Data Matters (1)	Bias In Models	(Hardt 2014)	(Crawford 2018); (Stewart 2020); (Solon Barocas, Moritz Hardt, and Arvind Narayanan 2019); (Johnson, 2020); (Hao 2019)
4	2	Data Matters (2)	Fairness, Accountability, Transparency	(Corbett-Davies et al. 2016); (Lepri et al. 2017, p619-622)	(Lum and Isaac 2016); (Barocas and Selbst 2016); (Nesterak 2021); (Helbing 2017); (Xiang 2021)
5	1	Ethical Dilemmas in Big Data and AI	Surveillance, Privacy, and Public Welfare	(Pimple 2013: Ch. 4); (Bamberger and Mayse 2020, pp3-9)	(Roessler 2017); (Munch 2021); (ACM Staff 2021); (Kozłowska 2018); (Xu et al. 2016); (Pimple 2013: Ch. 3-6);
5	2	Ethical Dilemmas in Big Data and AI	Manipulations, Nudges and Dark Patterns	(Susser, Roessler, and Nissenbaum 2019, p2-4); (Helbing 2017: see Big	(Noggle 2020); (Zimmerman 2016a); (Zimmerman 2016b)

Week	Class	Subject	Detail	Required Readings	Optional Readings
				Nudging); (Hirsch 2010, Vay. 19:11);	
6	1	Ethical Dilemmas in Big Data and AI	GANs, Deepfakes and Fake News	(Rini 2020, p7-8 "Backstop Crises"); (Levinas 1997, p6-9); (Ha-Levi [1523] 1978, #74)	(Rini 2017); (Citron and Chesney 2019); (Gino 2017)
6	2	Ethical Dilemmas in Big Data and AI	Virtual Reality (VR) - Real Implications for Unreal Activity	(Lanier 2017, ch.4); (Plato 1997, Republic, 514-516e); (Nozick 1974, p1-2);	(Chalmers 2017); (Madary and Metzinger 2016);
7	1	Ethical Dilemmas in Autonomous Systems	Autonomous Moral Agents (1)	(Muehlhauser and Helm 2012, ch. 4); (Moor 2011); (Purves, Jenkins, and Strawser 2015, ch. 3); (Penrose 1991, p423-4);	(Whitby 2011); (Moor 1995); (Spaulding 2020); (Wallach and Allen 2010, p.7); (Johnson and Miller 2008b)
7	2	Ethical Dilemmas in Autonomous Systems	Autonomous Moral Agents (2)	(Sparrow 2021, sec. 3-6); (Lichtenstein 2002, p3-8); (Anderson and Anderson 2009);	(Dehghani et al. 2011); (Anderson 2011); (Brand 2020); (Beavers 2012); (Bringsjord et al. 2011); (Turkle 2011b); (Jiang et al. 2021);
8	1	Ethical Dilemmas in Autonomous Systems	Autonomous Vehicles	(Thomson 1985)	(Lin 2016); (Navon 2022); (Harris 2008)
8	2	Ethical Dilemmas in Autonomous Systems	Autonomous Weapon Systems (AWS)	(Arkin 2008a); (Sparrow 2016, 7-9, 14-15); (Asaro 2020, 227-230); (Shatz 2007, xiv-xvii)	(Sparrow 2007); (Purves, Jenkins, and Strawser 2015); (Müller 2016); (Tegmark 2018: Weapons); (Arkin 2010); (Arkin 2008b); (Leveringhaus 2016); (Orend 2006); (Broyde 2007); (Klapper, Ish-Shalom, and Broyde 2006); (Bleich 2013, Ch. XI)
9	1	Introduction to Roboethics (1)	Ontology, Consciousness and the Hard Problem	(Coeckelbergh 2013, 62-64)	(Nagel 1974); (Searle 1980); (Chalmers 1995);
9	2	Introduction to Roboethics (2)	Machine Consciousness and Other Minds	(Penrose 1991, pp447-449); (Turing 1950); (Sebo 2018, p60-63)	(Reining 2020); (Hales 2014, ch 14); (Kastrup 2018); (Kastrup 2017); (Jiménez-

Week	Class	Subject	Detail	Required Readings	Optional Readings
					Rodríguez 2017); (Warwick 2012); (Elamrani and Yampolskly 2019); (Torrance 2011); (Nagel 1974); (Bringsjord 2010)
10	1	Ethical Dilemmas in Robotics	Mindless Robots	(Cappuccio, Peeters, and McDonald 2019, p25-28)	(Navon 2021); (Shmalo 2012); (Bryson 2010); (Heider and Simmel 1944); (Turkle 2011a)
10	2	Ethical Dilemmas in Robotics	Consciousness Robots	(Petersen 2017, p3-11); (Maimonides 1168); (Turing 1950, p443); (Bleich 1998, p57-60)	(Signorelli 2018); (Grau 2011); (Gunkel 2018); (Idel 2019); (Scholem 1969); (Kogan 1989, p132-137); (Bryson 2010); (Loike and Tendler 2003);
11	1	Ethical Dilemmas in Robotics	Social Robots (1)	(Nyholm 2020, p109-115); (Aristotle 2004, Intro p.xxix-xxxii)	(Richardson 2015); (Mayor 2018); (LaGrandeur 2013, ch 1); (Nyholm 2020, ch. 5); (Sparrow and Sparrow 2006); (Turkle 2011a);
11	2	Ethical Dilemmas in Robotics	Social Robots (2)	(Sparrow and Sparrow 2006, p153-156); (Berkovits 2002, pp.115-120); (Bertolini and Arian 2020, p44-49)	(Sparrow and Sparrow 2006); (Berkovits 2002, ch.4); (Darling 2017); (Turkle 2011a); (Soloveitchik 1989, ch. V); (Bertolini 2018); (Leibtag 2003, PART TWO); (Lichtenstein 2015)
12	1	End of Days Ethics	The End of Work – The Useless Class	(Keynes [1930] 2009); (Aristotle 2004, Book I, Ch. 7; Book X, Ch. 7); (Maimonides 1956, 3:54); (Grace et al. 2018, p.729 "Abstract")	(James 2020); (Danaher 2019); (Tegmark 2018: Jobs); (Navon 2007)
12	2	End of Days Ethics	Digital Eschatology - Superhumans and Immortality	(Sandler 2014, p241-7); (Dietrich 2011); (Soloveitchik 2012, pp.13-16)	(Loike and Tendler 2014, p48-56); (Tirosh-Samuelsan 2012); (Sotala 2012); (Geraci 2008); (Cholbi 2017); (Schneider 2019);
13	1	Review			



Week	Class	Subject	Detail	Required Readings	Optional Readings
13	2	Review			

Bibliography

- ACM, ed. 2021. "Differential Privacy: The Pursuit of Protections by Default." *Communications of the ACM* 64 (2): 36–43. <https://doi.org/10.1145/3434228>.
- Anderson, Susan Leigh. 2011. "Philosophical Concerns with Machine Ethics." In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Anderson, Susan Leigh, and Michael Anderson. 2009. "How Machines Can Advance Ethics." *Philosophy Now*, 2009. https://philosophynow.org/issues/72/How_Machines_Can_Advance_Ethics.
- Aristotle. 2004. *Nicomachean Ethics*. Translated by Roger Crisp. Cambridge: Cambridge University Press.
- Arkin, Ronald C. 2008a. "Governing Lethal Behavior." *Proceedings of the 3rd International Conference on Human Robot Interaction - HRI '08*. <https://doi.org/10.1145/1349822.1349839>.
- . 2008b. "Governing Lethal Behavior - PART 2: Formalization for Ethical Control." In *Artificial General Intelligence 2008 Proceedings of the First AGI Conference*, edited by Pei Wang, Ben Goertzel, and Stan Franklin. Amsterdam: IOS Press.
- . 2010. "The Case for Ethical Autonomy in Unmanned Systems." *Journal of Military Ethics* 9 (4): 332–41. <https://doi.org/10.1080/15027570.2010.536402>.
- Asaro, Peter. 2020. "Autonomous Weapons and the Ethics of Artificial Intelligence." In *Ethics of Artificial Intelligence*, edited by S. Matthew Liao, 212–36. Oxford: Oxford University Press. <https://doi.org/10.1093/oso/9780190905033.001.0001>.
- Bamberger, Kenneth A., and Ariel Mayse. 2020. "Privacy in Society: Jewish Law Insights for the Age of Big Data." *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3731770>.
- Barocas, Solon, and Andrew D Selbst. 2016. "Big Data's Disparate Impact." *California Law Review* 104 (3): 671. <https://lawcat.berkeley.edu/record/1127463>.
- Beavers, Anthony F. 2012. "Moral Machines and the Threat of Ethical Nihilism." In *Robot Ethics: The Ethical and Social Implications of Robotics*, edited by Patrick Lin, Keith Abney, and George Bekey. MIT Press.
- Berkovits, Eliezer. 2002. *Essential Essays on Judaism*. Edited by David Hazony. Jerusalem: Shalem Press.
- . 2004. *God, Man and History*. Edited by David Hazony. Jerusalem: Shalem Press.
- Bertolini, Andrea. 2018. "Human-Robot Interaction and Deception." *Osservatorio Del Diritto Civile E Commerciale, Rivista Semestrale* 2 (December): 645–59. <https://doi.org/10.4478/91898>.
- Bertolini, Andrea, and Shabahang Arian. 2020. "3 Do Robots Care?" In *Aging between Participation and Simulation : Ethical Dimensions of Social Assistive Technologies*, edited by Joschka Haltaufderheide, Johanna Hovemann, and Jochen Vollmann, 35–52. Berlin: De Gruyter. <https://doi.org/10.1515/9783110677485-003>.
- Blau, Yitzchak. 2002. "Ivan Karamazov Revisited: The Moral Argument for Religious Belief." *The Torah U-Madda Journal* 11: 50–60. <http://www.jstor.org/stable/40914687>.
- Bleich, J. David. 1998. "Survey of Recent Halakhic Periodical Literature: Cloning: Homologous Reproduction and



- Jewish Law.” *Tradition* 32 (3). <https://www.jstor.org/stable/23261122>.
- . 2013. *Contemporary Halakhic Problems*. Vol. 3. NY: KTAV.
- Brand, Lukas. 2020. “Why Machines That Talk Still Do Not Think, and Why They Might Nevertheless Be Able to Solve Moral Problems.” In *Artificial Intelligence: Reflections in Philosophy, Theology, and the Social Sciences*, edited by Benedikt Paul Göcke and Astrid Rosenthal-Von der Putten, 203–17. Boston: Brill.
- Bringsjord, Selmer. 2010. “Meeting Floridi’s Challenge to Artificial Intelligence from the Knowledge-Game Test for Self-Consciousness.” *Metaphilosophy* 41 (3): 292–312. <http://www.jstor.org/stable/24439827>.
- Bringsjord, Selmer, Joshua Taylor, Bram van Heuveln, Micah Clark, Ralph Wojtow, and Konstantine Arkoudas. 2011. “Piagetian Roboethics via Category Theory.” In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Broyde, Michael J. 2007. “Just Wars, Just Battles and Just Conduct in Jewish Law: Jewish Law Is Not a Suicide Pact!*.” In *War and Peace in the Jewish Tradition*, edited by Lawrence H Schiffman and Joel B Wolowelsky. New York: Michael Scharf Publication Trust of the Yeshiva University Press.
- Bryson, Joanna. 2010. “Robots Should Be Slaves.” In *Close Engagements with Artificial Companions: Key Social, Psychological, Ethical and Design Issues (Natural Language Processing; Vol. 8)*, edited by Y. Wilk, 63–74. John Benjamins Publishing Company. <https://researchportal.bath.ac.uk/en/publications/robots-should-be-slaves>.
- Bunge, Mario. 1977. “Towards a Technoethics.” *The Monist* 60 (1): 96–107. <https://www.jstor.org/stable/27902461>.
- Cappuccio, Massimiliano L., Anco Peeters, and William McDonald. 2019. “Sympathy for Dolores: Moral Consideration for Robots Based on Virtue and Recognition.” *Philosophy & Technology* 33 (1): 9–31. <https://doi.org/10.1007/s13347-019-0341-y>.
- Chalmers, David. 1995. “Facing up to the Problem of Consciousness.” *Journal of Consciousness Studies* 2 (3): 200–219.
- . 2017. “The Virtual and the Real.” *Disputatio* 9 (46): 309–52. <https://doi.org/10.1515/disp-2017-0009>.
- Cholbi, Michael. 2017. “Suicide (Stanford Encyclopedia of Philosophy).” Stanford.edu. 2017. <https://plato.stanford.edu/entries/suicide/>.
- Citron, Danielle, and Robert Chesney. 2019. “Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security.” *California Law Review* 107 (6): 1753. https://scholarship.law.bu.edu/faculty_scholarship/640.
- Coeckelbergh, Mark. 2013. “The Moral Standing of Machines: Towards a Relational and Non-Cartesian Moral Hermeneutics.” *Philosophy & Technology* 27 (1): 61–77. <https://doi.org/10.1007/s13347-013-0133-8>.
- Corbett-Davies, Sam, Emma Pierson, Avi Feller, and Sharad Goel. 2016. “A Computer Program Used for Bail and Sentencing Decisions Was Labeled Biased against Blacks. It’s Actually Not That Clear.” *The Washington Post*, October 17, 2016. <https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/>.
- Crawford, Kate. 2018. “The Hidden Biases in Big Data.” *Harvard Business Review*, January. <https://hbr.org/2013/04/the-hidden-biases-in-big-data>.
- Danaher, John. 2019. *Automation and Utopia : Human Flourishing in a World without Work*. Harvard University Press.
- Darling, Kate. 2017. “‘Who’s Johnny?’ Anthropomorphic Framing in Human-Robot Interaction, Integration, and Policy.” In *Robot Ethics 2.0*, edited by Patrick Lin, Ryan Jenkins, and Keith Abney, 173–88. NY: Oxford University Press.
- Dehghani, Morteza, Ken Forbus, Emmett Tomai, and Matthew Klenk. 2011. “An Integrated Reasoning Approach to



- Moral Decision Making.” In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Dietrich, Eric. 2011. “Homo Sapiens 2.0: Building the Better Robots of Our Nature.” In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Elamrani, A., and R. Yampolsky. 2019. “Reviewing Tests for Machine Consciousness.” *Journal of Consciousness Studies* 26 (5-6). <https://philpapers.org/rec/ELARTF>.
- Gaon, Saadia. (933AD) 1989. *The Book of Beliefs and Opinions*. Translated by Samuel Rosenblatt. New Haven: Yale University Press.
- Geraci, R. M. 2008. “Apocalyptic AI: Religion and the Promise of Artificial Intelligence.” *Journal of the American Academy of Religion* 76 (1): 138–66. <https://doi.org/10.1093/jaarel/lfm101>.
- Gino, Francesca. 2017. “Dazzled by Creativity: Why We Excuse Dishonest Acts.” *Scientific American*. March 14, 2017. <https://www.scientificamerican.com/article/dazzled-by-creativity-why-we-excuse-dishonest-acts/>.
- Grace, Katja, John Salvatier, Allan Dafoe, Baobao Zhang, and Owain Evans. 2018. “Viewpoint: When Will AI Exceed Human Performance? Evidence from AI Experts.” *Journal of Artificial Intelligence Research* 62 (July): 729–54. <https://doi.org/10.1613/jair.1.11222>.
- Grau, Christopher. 2011. “There Is No ‘I’ in ‘Robot.’” In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Gunkel, David J. 2018. *Robot Rights*. Cambridge, Mass: MIT Press.
- Ha-Levi, Aaron. (1523) 1978. *Sefer HaHinnuch: The Book of [Mizvah] Education*. Translated by Charles Wengrov. New York: Feldheim.
- Hales, Colin G. 2014. *The Revolutions of Scientific Structure*. Singapore World Scientific Pub. Co.
- Hardt, Moritz. 2014. “How Big Data Is Unfair.” *Medium*. September 26, 2014. <https://medium.com/@mrtz/how-big-data-is-unfair-9aa544d739de>.
- Harris, Michael J. 2008. “Consequentialism, Deontology, and the Case of Sheva Ben Bikhri.” *The Torah U-Madda Journal* 15: 68–94. <https://www.jstor.org/stable/40914728>.
- Heidegger, Martin. 2013. *The Question Concerning Technology and Other Essays*. New York: Harper.
- Heider, Fritz, and Marianne Simmel. 1944. “An Experimental Study of Apparent Behavior.” *The American Journal of Psychology* 57 (2): 243–59. <https://doi.org/10.2307/1416950>.
- Helbing, Dirk. 2017. “Will Democracy Survive Big Data and Artificial Intelligence?” *Scientific American*, February 25, 2017. <https://www.scientificamerican.com/article/will-democracy-survive-big-data-and-artificial-intelligence/>.
- Hirsch, Samson Raphael. 2010. *The Hirsch Chumash : The Five Books of the Torah*. Edited by Daniel Haberman and Gertrude Hirschler. Jerusalem: Feldheim.
- Idel, Moshe. 2019. *Golem : Jewish Magical and Mystical Traditions on the Artificial Anthropoid*. Brooklyn, N.Y.: KTAV.
- James, Aaron. 2020. “Planning for Mass Unemployment.” In *Ethics of Artificial Intelligence*, edited by S. Matthew Liao, 183–211. Oxford: Oxford University Press. <https://doi.org/10.1093/oso/9780190905033.003.0007>.
- Jiang, Liwei, Jena D Hwang, Chandrasekhar Bhagavatula, Ronan Le Bras, Maxwell Forbes, Jon Borchardt, Jenny Liang, Oren Etzioni, Maarten Sap, and Yejin Choi. 2021. “Delphi: Towards Machine Ethics and Norms.” *ArXiv abs/2110.07574*.
- Jiménez-Rodríguez, Luis O. 2017. “Human Uniqueness or Anthropocentrism? Semantic, Anthropological and Theological Clarifications in Dialogue with Damasio’s Neuroscience.” In *Issues in Science and Theology*:



- Are We Special? Human Uniqueness in Science and Theology*, edited by Michael Fuller, Dirk Evers, Anne Runehov, and Knut-Willy Sæther, 191–207. Springer International Publishing. https://doi.org/10.1007/978-3-319-62124-1_4.
- Johnson, Deborah G, and Keith Miller. 2008a. *Computer Ethics : Analyzing Information Technology*. Upper Saddle River, N.J.: Prentice Hall.
- Johnson, Deborah G., and Keith W. Miller. 2008b. “Un-Making Artificial Moral Agents.” *Ethics and Information Technology* 10 (2-3): 123–33. <https://doi.org/10.1007/s10676-008-9174-6>.
- Johnson, Gabrielle M. 2020. “Algorithmic Bias: On the Implicit Biases of Social Technology.” *Synthese* 198 (June): 9941–61. <https://doi.org/10.1007/s11229-020-02696-y>.
- Jonas, Hans. 2000. *The Imperative of Responsibility : In Search of an Ethics for the Technological Age*. Chicago (Ill.): The University Of Chicago Press.
- Kastrup, Bernardo. 2017. “An Ontological Solution to the Mind-Body Problem.” *Philosophies* 2 (4): 10. <https://doi.org/10.3390/philosophies2020010>.
- . 2018. “Sentient Robots, Conscious Spoons and Other Cheerful Follies.” *Scientific American*. 2018. <http://blogs.scientificamerican.com/observations/sentient-robots-conscious-spoons-and-other-cheerful-follies>.
- Keynes, John Maynard. (1930) 2009. “Economic Possibilities for Our Grandchildren.” In *Essays in Persuasion*. New York: Classic House Books. <http://www.econ.yale.edu/smith/econ116a/keynes1.pdf>.
- Klapper, Aryeh, Benjamin Ish-Shalom, and Michael J. Broyde. 2006. *CONVERSATION: Halakhah and Morality in Modern Warfare*. 6th ed. Vol. 1. Meorot. <http://www.edah.org/backend/journalarticle/conversation%20-%20final.pdf>.
- Kogan, Brain S. 1989. “‘What Can We Know and When Can We Know It’? Maimonides on the Active Intelligence and Human Cognition.” In *Moses Maimonides and His Time*, edited by Eric L Ormsby, 121–37. Washington, D.C.: Catholic University of America Press.
- Kozłowska, Iga. 2018. “Facebook and Data Privacy in the Age of Cambridge Analytica.” The Henry M. Jackson School of International Studies. April 30, 2018. <https://jsis.washington.edu/news/facebook-data-privacy-age-cambridge-analytica/>.
- Kroes, Peter, and Peter-Paul Verbeek, eds. 2014. *The Moral Status of Technical Artefacts*. Springer.
- LaGrandeur, Kevin. 2013. *Androids and Intelligent Networks in Early Modern Literature and Culture Artificial Slaves*. NY: Routledge.
- Lamm, Norman. 2007. “Amalek and the Seven Nations: A Case of Law vs. Morality.” In *War and Peace in the Jewish Tradition*, edited by Lawrence H Schiffman and Joel B Wolowelsky. New York: Michael Scharf Publication Trust of the Yeshiva University Press.
- Lanier, Jaron. 2017. *Dawn of the New Everything : Encounters with Reality and Virtual Reality*. New York: Henry Holt And Company.
- Leibtag, Menachem. 2003. “PARSHAT VA’YERA - the AKEYDA (and More).” Tanach.org. 2003. <https://tanach.org/breishit/vayera2.txt>.
- Lepri, Bruno, Nuria Oliver, Emmanuel Letouzé, Alex Pentland, and Patrick Vinck. 2017. “Fair, Transparent, and Accountable Algorithmic Decision-Making Processes.” *Philosophy & Technology* 31 (4): 611–27. <https://doi.org/10.1007/s13347-017-0279-x>.
- Leveringhaus, Alex. 2016. *Ethics and Autonomous Weapons*. London: Palgrave Macmillan. <https://doi.org/10.1057/978-1-137-52361-7>.
- Levinas, Emmanuel. 1997. *Difficult Freedom : Essays on Judaism*. Baltimore: Johns Hopkins University Press.



- Lichtenstein, Aharon. 2002. "The Human and Social Factor in Halakha." *Tradition* 36 (1).
<https://traditiononline.org/the-human-and-social-factor-in-halakha/>.
- . 2015. "On Raising Children." *Torah Musings*. May 22, 2015. <https://www.torahmusings.com/2015/05/on-raising-children/>. also at: <https://etzion.org.il/en/philosophy/great-thinkers/harav-aharon-lichtenstein/on-raising-children>.
- Lin, Patrick. 2016. "Why Ethics Matters for Autonomous Cars." In *Autonomous Driving*, edited by Markus Maurer, Gerdes J Christian, Barbara Lenz, and Hermann Winner, 69–85. Springer Berlin Heidelberg.
https://doi.org/10.1007/978-3-662-48847-8_4.
- Loike, John D., and Moshe D. Tendler. 2003. "Ma Adam Va-Teda-Ehu: Halakhic Criteria for Defining Human Beings." *Tradition* 37 (2). <https://traditiononline.org/ma-adam-va-teda-ehu-halakhic-criteria-for-defining-human-beings/>.
- . 2014. "Tampering with the Genetic Code of Life: Comparing Secular and Halakhic Ethical Concerns." *Hakira* 18. <https://hakhirah.org/Vol18LoikeTendler.pdf>.
- Lum, Kristian, and William Isaac. 2016. "To Predict and Serve?" *Significance* 13 (5): 14–19.
<https://doi.org/10.1111/j.1740-9713.2016.00960.x>.
- Madary, Michael, and Thomas K. Metzinger. 2016. "Recommendations for Good Scientific Practice and the Consumers of VR-Technology." *Frontiers in Robotics and AI* 3 (February).
<https://doi.org/10.3389/frobt.2016.00003>.
- Maimonides, Moses. 1168. "Introduction to Mishnah (EXCERPT)." Israel: Mois Navon. Source Sheet.
- . 1956. *The Guide for the Perplexed*. Translated by Michael Friedlander. New York: Dover.
- Mayor, Adrienne. 2018. *Gods and Robots : The Ancient Quest for Artificial Life*. Princeton Princeton Univ Press.
- Miller, Keith W. 2011. "Moral Responsibility for Computing Artifacts: 'the Rules.'" *IT Professional* 13 (3): 57–59.
<https://doi.org/10.1109/mitp.2011.46>.
- Moor, James H. 1995. "Is Ethics Computable?" *Metaphilosophy* 26 (1/2): 1–21.
<https://www.jstor.org/stable/24439044>.
- . 2011. "The Nature, Importance, and Difficulty of Machine Ethics." In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Muehlhauser, Luke, and Louie Helm. 2012. "The Singularity and Machine Ethics." *The Frontiers Collection*, 101–26. https://doi.org/10.1007/978-3-642-32560-1_6.
- Müller, Vincent C. 2016. "Autonomous Killer Robots Are Probably Good News." In *Drones and Responsibility*, edited by Ezio Di Nucci and Filippo Santonio de Si, 67–81. London: Ashgate.
<https://doi.org/10.4324/9781315578187-4>.
- Munch, Lauritz Aastrup. 2021. "Privacy Rights and 'Naked' Statistical Evidence." *Philosophical Studies* 178 (11): 3777–95. <https://doi.org/10.1007/s11098-021-01625-0>.
- Nagel, Thomas. 1974. "What Is It like to Be a Bat?" *The Philosophical Review* 83 (4): 435–50.
<https://doi.org/10.2307/2183914>.
- Navon, Mois. 2007. "One Thousand Years of Shabbat." Jerusalem: Chidushei Torah Journal.
http://www.divreinavon.com/pdf/one_thousand_years_of_shabbat.pdf.
- . 2021. "The Virtuous Servant Owner—a Paradigm Whose Time Has Come (Again)." *Frontiers in Robotics and AI* 8 (September). <https://doi.org/10.3389/frobt.2021.715849>.
- . 2022. "The Trolley Problem Just Got Digital." *B.D.D.*
http://www.divreinavon.com/pdf/EthicalDilemmasinProgrammingAutonomousVehicles_MoisNavon.pdf.



- Nesterak, Evan. 2021. "A Conversation with Daniel Kahneman about 'Noise' - by Evan Nesterak - Behavioral Scientist." Behavioral Scientist. May 24, 2021. <https://behavioralscientist.org/a-conversation-with-daniel-kahneman-about-noise/>.
- Nietzsche, Friedrich. 1974. *The Gay Science*. Translated by Walter Kaufmann. New York: Random.
- Noggle, Robert. 2020. "The Ethics of Manipulation." Edited by Edward N. Zalta. Stanford Encyclopedia of Philosophy. 2020. <https://plato.stanford.edu/entries/ethics-manipulation/>.
- Nozick, Robert. 1974. "The Experience Machine (Excerpted)." <https://rintintin.colorado.edu/~vancecd/phil3160/Nozick1.pdf>.
- Nyholm, Sven. 2020. *Humans and Robots : Ethics, Agency, and Anthropomorphism*. NY: Rowman & Littlefield Publishing Group.
- Orend, Brian. 2006. *The Morality of War*. Peterborough, Ont.: Broadview Press.
- Penrose, Roger. 1991. *The Emperor's New Mind : Concerning Computers, Minds and the Laws of Physics*. NY: Penguin.
- Petersen, Steve. 2017. "Is It Good for Them Too? Ethical Concern for the Sexbots." In *Robot Sex: Social Implications and Ethical*, edited by John Danaher and Neil McArthur, 155–71. Cambridge, USA: MIT Press.
- Pimple, Kenneth, ed. 2013. *Ethics and Pervasive Augmented Reality: Some Challenges and Approaches. Emerging Pervasive Information and Communication Technologies (PICT)*. Springer. https://doi.org/10.1007/978-94-007-6833-8_8.
- Plato. 1997. *Plato : Complete Works*. Edited by John M Cooper. Indiana: Hackett. <https://www.holybooks.com/wp-content/uploads/plato-complete-works.pdf>.
- Purves, Duncan, Ryan Jenkins, and Bradley J. Strawser. 2015. "Autonomous Machines, Moral Judgment, and Acting for the Right Reasons." *Ethical Theory and Moral Practice* 18 (4): 851–72. <https://doi.org/10.1007/s10677-015-9563-y>.
- Rachels, Stuart, and James Rachels. 2015a. *The Elements of Moral Philosophy*. New York: McGraw-Hill Education.
- , eds. 2015b. *The Right Thing to Do : Basic Readings in Moral Philosophy*. New York: McGraw-Hill Education.
- Reining, Stefan. 2020. "Revisiting the Dancing-Qualia Argument for Computationalism." In *Artificial Intelligence: Reflections in Philosophy, Theology, and the Social Sciences*, edited by GöckeBenedikt Paul and Astrid Rosenthal-Von der Pütten. Brill.
- Richardson, Kathleen. 2015. *An Anthropology of Robots and AI Annihilation Anxiety and Machines*. NY: Routledge.
- Rini, Regina. 2017. "Fake News and Partisan Epistemology." *Kennedy Institute of Ethics Journal* 27 (2): 43–64. <https://doi.org/10.1353/ken.2017.0025>.
- . 2020. "Deepfakes and the Epistemic Backstop." *Philosophers' Imprint* 20 (24). <https://philpapers.org/rec/RINDAT>.
- Roessler, Beate. 2017. "Privacy as a Human Right." *Proceedings of the Aristotelian Society* 117 (2): 187–206. <https://doi.org/10.1093/arisoc/aox008>.
- Sandler, Ronald L., ed. 2014. *Ethics and Emerging Technologies*. London: Palgrave Macmillan UK. <https://doi.org/10.1057/9781137349088>.
- Schneider, Susan. 2019. "Should You Add a Microchip to Your Brain?" *The New York Times*, June 10, 2019, sec. Opinion. <https://www.nytimes.com/2019/06/10/opinion/future-artificial-intelligence-transhumanism.html>. https://schneiderwebsite.com/uploads/8/3/7/5/83756330/opinion_%7C_should_you_add_a_microchip_to_y



our_brain_-_the_new_york_times.pdf.

- Scholem, Gershom Gerhard. 1969. *On the Kabbalah and Its Symbolism*. New York: Schocken Books.
- Searle, John R. 1980. "Minds, Brains, and Programs." *Behavioral and Brain Sciences* 3 (03): 417–57. <https://doi.org/10.1017/s0140525x00005756>.
- Sebo, Jeff. 2018. "The Moral Problem of Other Minds." *The Harvard Review of Philosophy* 25: 51–70. <https://doi.org/10.5840/harvardreview20185913>.
- Shatz, David. 1996. "Beyond Obedience: Walter Wurzburger's Ethics of Responsibility." *Tradition* 30 (2): 74–95.
- . 2007. "Introduction." In *War and Peace in the Jewish Tradition*, edited by Lawrence H Schiffman and Joel B Wolowelsky. New York: Michael Scharf Publication Trust of the Yeshiva University Press.
- . 2012. *Ethical Theories in the Orthodox Movement*. *Oxford Handbooks Online*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199736065.013.0015>.
- Shmalo, Gamliel. 2012. "Orthodox Approaches to Biblical Slavery." *The Torah U-Madda Journal* 16. <https://www.jstor.org/stable/23596054>.
- Signorelli, Camilo Miguel. 2018. "Can Computers Become Conscious and Overcome Humans?" *Frontiers in Robotics and AI* 5 (October). <https://doi.org/10.3389/frobt.2018.00121>.
- Solon Barocas, Moritz Hardt, and Arvind Narayanan. 2019. *Fairness and Machine Learning*. fairmlbook.org. <https://fairmlbook.org/>.
- Soloveitchik, Joseph. 1989. *Reflections of the Rav : Lessons in Jewish Thought - Vol. 2*. Edited by Abraham R Besdin. Hoboken, NJ: KTAV.
- . (1965) 2012. *The Lonely Man of Faith*. Jerusalem: Maggid. <https://traditiononline.org/wp-content/uploads/2019/09/LMOF.pdf>.
- Sotala, Kaj. 2012. "Advantages of Artificial Intelligences, Uploads, and Digital Minds." *International Journal of Machine Consciousness* 04 (01): 275–91. <https://doi.org/10.1142/s1793843012400161>.
- Sparrow, Robert. 2007. "Killer Robots." *Journal of Applied Philosophy* 24 (1): 62–77. <https://doi.org/10.1111/j.1468-5930.2007.00346.x>.
- . 2016. "Robots and Respect: Assessing the Case against Autonomous Weapon Systems." *Ethics & International Affairs* 30 (1): 93–116. <https://doi.org/10.1017/s0892679415000647>.
- . 2021. "Why Machines Cannot Be Moral." *AI & Society* 36 (3): 685–93. <https://doi.org/10.1007/s00146-020-01132-6>.
- Sparrow, Robert, and Linda Sparrow. 2006. "In the Hands of Machines? The Future of Aged Care." *Minds and Machines* 16 (2): 141–61. <https://doi.org/10.1007/s11023-006-9030-6>.
- Spaulding, Norman W. 2020. "Is Human Judgment Necessary? Artificial Intelligence, Algorithmic Governance, and the Law." In *The Oxford Handbook of Ethics of AI*, edited by Markus Dirk Dubber, Frank Pasquale, and Sunit Das. New York: Oxford University Press.
- Spero, Shubert. 2016. "The Good, the Right, and the Morality of Judaism." *The Torah U-Madda Journal* 17: 202–17. <https://www.jstor.org/stable/26203067>.
- Stewart, Matthew. 2020. "Programming Fairness in Algorithms - towards Data Science." Medium. Towards Data Science. July 2, 2020. <https://towardsdatascience.com/programming-fairness-in-algorithms-4943a13dd9f8>.
- Susser, Daniel, Beate Roessler, and Helen F. Nissenbaum. 2019. "Online Manipulation: Hidden Influences in a Digital World." *4 Georgetown Law Technology Review* 1. <https://doi.org/10.2139/ssrn.3306006>.
- Tegmark, Max. 2018. *Life 3.0*. NY: Vintage.



- Thomson, Judith Jarvis. 1985. "The Trolley Problem." *The Yale Law Journal* 94 (6): 1395–1415.
<https://doi.org/10.2307/796133>.
- Tirosh-Samuelson, Hava. 2012. "Transhumanism as a Secularist Faith." *Zygon* 47 (4).
<https://doi.org/https://doi.org/10.1111/j.1467-9744.2012.01288.x>.
- Torrance, Steve. 2011. "Machine Ethics and the Idea of a More-Than-Human Moral World." In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Turing, A. M. 1950. "Computing Machinery and Intelligence." *Mind* LIX (236): 433–60.
<https://doi.org/10.1093/mind/lix.236.433>.
- Turkle, Sherry. 2011a. *Alone Together : Why We Expect More From Technology and Less from Each Other*. New York: Basic Books.
- . 2011b. "Authenticity in the Age of Digital Companions." In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Vallor, Shannon. 2018. *Technology and the Virtues a Philosophical Guide to a Future Worth Wanting*. NY: Oxford University Press.
- Vaughn, Lewis. 2015. *Beginning Ethics : An Introduction to Moral Philosophy*. New York: W.W. Norton & Company.
- Verbeek, Peter-Paul. 2014. "Some Misunderstandings about the Moral Significance of Technology." In *The Moral Status of Technical Artefacts*, edited by Peter Kroes and Peter-Paul Verbeek, 75–88. Springer.
https://doi.org/10.1007/978-94-007-7914-3_5. Chapter:
https://ugc.futurelearn.com/uploads/files/3b/a4/3ba44843-a6f6-4ffe-8046-2ff52cf57ddd/Misunderstandings_-_Peter_Paul_Verbeek.pdf.
- . 2015. "Beyond Interaction: A Short Introduction to Mediation Theory." *Interactions* 22 (3): 26–31.
<https://doi.org/10.1145/2751314>.
- Wallach, Wendell, and Colin Allen. 2010. *Moral Machines : Teaching Robots Right from Wrong*. Oxford ; New York: Oxford University Press.
- Warwick, Kevin. 2012. "Robots with Biological Brains." In *Robot Ethics: The Ethical and Social Implications of Robotics*, edited by Patrick Lin, Keith Abney, and George Bekey. MIT Press.
- Whitby, Blay. 2011. "On Computable Morality: An Examination of Machines as Moral Advisors." In *Machine Ethics*, edited by Michael Anderson and Susan Leigh Anderson. NY: Cambridge University Press.
- Wurzburger, Walter S. 1994. *Ethics of Responsibility : Pluralistic Approaches to Covenantal Ethics*. Philadelphia; Jerusalem: Jewish Publication Society.
- Wurzburger, Walter S. 2008. *Covenantal Imperatives : Essays by Walter S. Wurzburger on Jewish Law, Thought and Community*. Edited by Eliezer L Jacobs and Shalom Carmy. Jerusalem: Urim Publications.
- Xu, Lei, Chunxiao Jiang, Yan Chen, Jian Wang, and Yong Ren. 2016. "A Framework for Categorizing and Applying Privacy-Preservation Techniques in Big Data Mining." *Computer* 49 (2): 54–62.
<https://doi.org/10.1109/mc.2016.43>.
- Zimmerman, Binyamin. 2016a. "Geneivat Daat - Misleading, Misrepresentation and Deception." Torat Har Etzion. Yeshivat Har Etzion. 2016. <https://etzion.org.il/en/philosophy/issues-jewish-thought/issues-mussar-and-faith/geneivat-daat-misleading-misrepresentation>.
- . 2016b. "True to the Heart and Tokho Ke-Varo." Torat Har Etzion. Yeshivat Har Etzion. 2016. <https://etzion.org.il/en/philosophy/issues-jewish-thought/issues-mussar-and-faith/true-heart-and-tokho-ke-varo>.