***And an Algorithm Shall Lead Them? The Rise of Artificial Intelligence,
Machine Learning, Robotics and Christian Hope***

Jeffrey A. Gang, DMin
Loma Linda University School of Religion
November 19, 2021

This paper explores the rise of artificial intelligence (AI) and its import for the church. I use AI as a catch-all term to broadly describe smart technologies that utilize deep structured learning through static rule-based algorithms, crucial to automation.[1] I begin by recognizing both the promise and the peril these algorithm-driven technologies present to life on our planet. I then question the effect these technologies have on humanity, shaping every facet of our lives, for better or worse. I finally conclude with some ways we may approach AI through Christian hope. The limitations of the paper prevent a lengthy discussion on such a far-reaching topic as artificial intelligence. Ultimately I hope to raise more questions than provide answers, as the increasing influence of AI is one of the most critical issues facing humanity.

The Promise and Peril of Artificial Intelligence for Humanity

Our world is experiencing exponential advancements in artificial intelligence and the automation of society. We are in a Fourth Industrial Revolution, a term coined by Klaus Schwab, founder of the World Economic Forum, to describe our turn to smart technology. Schwab sees this revolution as fundamentally different from previous technological revolutions, with significant consequences for the Earth.[2] Technology is altering life on our planet, from how we work and interact with one another to understanding what it means to be human. Many of these advancements are full of promise. Proponents of AI hope these technologies will solve humanity's most challenging problems, ending extreme poverty and solving economic disparity, eradicating diseases and preventing global pandemics, even slowing climate change and saving us from the brink of ecological disaster.[3]

Some fear the worst from artificial intelligence. While every age of technological advancement has brought forms of prosperity to humanity, we have also unleashed unforeseen consequences. Artificial intelligence may cure disease, lift billions out of poverty, and prevent environmental collapse, or AI may lead to global dictatorships, worldwide surveillance states, and levels of inequality and suffering beyond our imaginations. As Max Tegmark, a leading researcher in artificial intelligence and a professor at MIT, states in the film *iHuman* (2019), "AI will ultimately be either the best thing ever to happen to humanity or the worst thing ever to happen," and he contends, "That's why this is the most important conversation of our time."[4]

Will machines be our salvation? Or should machines be feared, a common theme in science fiction films such as The Matrix? In considering the impact of artificial intelligence on humanity, no one knows how AI will ultimately affect our lives. I am pessimistic, especially when considering the observations of leading thinkers in artificial intelligence like Ben Goertzel, the CEO and founder of SingularityNET, who says, "Almost all the AI development on the planet

today is done by a handful of big technology companies or by a few large governments. If we look at what AI is mostly being developed for," Goertzel says, "I would say it's killing, spying, and brainwashing."[5]

Formed by Technology? Our Algorithms and the *Imago Dei*

One of the most critical questions for artificial intelligence is anthropological: How does our technology form us? We are holding one of the most advanced forms of AI on earth — our phones. These supercomputers have the power to harness more data than required to land on the moon. They are not passive forms of technology. Intelligent algorithms control our phones. These algorithms are designed to seek our full attention, to keep us evermore beholden to our devices, in order to mine our data, the new gold, all the while leading us, shaping us, forming us, into a particular kind of human being.

We tend to think of AI more like the sentient computer HAL in Stanley Kubrik's *2001: A Space Odyssey* (1968), when in reality, most forms of artificial intelligence are endless lines of code, mathematical algorithms, beyond our sight, often unnoticed, and yet, "If we consider how many of our daily decisions we outsource to machines," writes Kevin Roose, in *Futureproof: 9 Rules for Humans in the Age of Automation* (2021), "it's hard not to think that a historic, species-level transformation is taking place."[6] Artificial intelligence was originally designed to read our minds, now AI is designed to change our minds. Technology scholar Christian Sandvig refers AI's shift to persuasion as "corrupt personalization."[7] Who is really in charge? Did I watch that new Netflix movie because I want to or because I am persuaded to? Roose warns us of machine drift, allowing technology to shape our identities incrementally, without our full awareness, and he warns,

> It is not enough to accompany us to the store, whispering into our ears about which brand of toothpaste or toilet paper we should buy. In the eyes of engineers and executives who use recommendation algorithms to steer our choices, all of our actions must be part of the machine's model. There is no space, in this vision of the automated future, for developing new tastes, or starting over with a clean slate. *Who you are is who the machines think you are, which is also who they want you to be* [Emphasis mine].[8]

A few years ago, Spectrum magazine discussed James William's book, *Stand Out of Our Light: Freedom and Resistance in the Attention Economy (2*018).[9] Like Roose, Williams, a former Google advertising strategist, now philosopher, is concerned with AI's growing influence and its impact on our humanity, warning, *"these new attentional adversaries threaten not only the success but even the integrity of the human will, at both individual and collective levels"* [Emphasis mine].[10] Zane Yi, discussed William's concerns in his essay, "Dis-ordered and Re-ordered Loves," recognizing how the influence of artificial intelligence extends beyond it's ability to affect our attention.[11] The threat of AI, Yi suggests is existential, laying below the surface of every issue confronting humanity's existence, calling into question what it means to be human. Summarizing one of William's key arguments, Yi writes, "… the stakes in question are the fundamental capacities—beyond our actions—that make us distinctively human; the

constant connection and information technology offers us, disrupts and disorders our lives at deep levels, both individually and collectively."[12]

The Rabbit Hole, a New York Times podcast also by Kevin Roose, provides an example of the ways technology "disrupts and disorders our lives."[13] We are introduced to a young man who is radicalized to the alt-right while viewing Youtube content about his favorite video games. Consequently, he is led down a dark hole of misinformation and hate-filled content, exposing him to ever more fanciful conspiracy theories, including QAnon. Who is leading him? A form of AI, a Google algorithm, designed to keep him viewing more content on Youtube. The story is illustrative for all of us. We may not be the lonely, isolated adolescent who spends hours a day locked in their bedroom binge-watching Youtube videos, but are we entirely aware of the ways technology is forming us?

In Desiring the Kingdom: Worship, Worldview, and Cultural Formation, Christian philosopher James K.A. Smith, refers to humans as "liturgical animals" because we are "embodied, practicing creatures, whose love/desire is aimed at something ultimate."[14] "We are what we love," writes Smith, "and our love is shaped, primed and aimed by liturgical practices that take hold of our gut and our heart to certain ends."[15] Smith sees our most significant practices as thick or meaning-ful, observing,

> These are habits that play a significant role in shaping our identity, who we are. Engaging in these habit-forming practices not only says something about us, but also keeps shaping us into that kind of person. So habits often both signal and shape our core values or our most significant desires.[16]

One may recognize the influence of Augustine's anthropology of desire in Smith's argument, "Thou hast formed us for Thyself, and our hearts are restless till they find rest in Thee."[17] Following Smith's line of thought, how does our use of technology function as liturgical practice, often without our full awareness, luring us away from being formed by our Creator and diminishing the Imago Dei in us?[18]

Useless People? The Automation of Society and Human Worth

Another question related to the ways artificial intelligence forms us concerns the automation of society: What does AI-driven automation say about our worth as human beings? The historian Yuval Noah Harari has written extensively on what the Fourth Industrial Revolution may look like for us in the future. In his book, Sapiens: A Brief History of Humankind (2015), Harari describes a future where only highly qualified specialists are useful to society.[19] Even medical doctors, once believed to be an automation-proof profession, could see a decline in general practitioners in favor of more specialized forms of medicine. In an article written several years ago, titled "Will People Still be Useful in the 21st Century?" Harari envisions a future where,

> "Economic and political power might be concentrated in the hands of a tiny elite. Most people might become economically useless and politically powerless. As biotechnology

improves moreover, it will be possible to extend human lifespans and to upgrade human abilities, but the new wonder treatments might be expensive, and might not be freely available for everybody. Therefore human society in the 21st century may be the most unequal in history since the upper classes will not only be richer than the rest of humankind, but will also live much longer and be far more talented. For the first time in history, economic inequality will be translated into biological inequality. Hence humankind will split into biological castes-an upper caste of upgraded superhumans, and a massive lower class of useless people."[20]

Unfortunately, we need not imagine Harari's dystopian future of "useless people" to understand the potentially dehumanizing effects of automation. While automation threatens every profession, AI-driven technologies, according to Kevin Roose, already "disproportionately affect people in low-income occupations, and exacerbate existing racial and gender disparities."[21] In making this point, Roose believes most of the discussion around AI and automation is farsighted, focusing on the effects of technology decades from now when in reality, automation is already present in our lives. These technologies exist in the form of algorithms "that rank our social media feeds and power our interactions with virtual assistants like Alexa and Siri, the dynamic pricing software that determines how much we pay for hotel rooms and airline tickets, the opaque algorithms that are used to determine eligibility for government benefits, the predictive policing algorithms that law enforcement agencies use to patrol our neighborhoods."[22] Our current AI-driven technologies, Roose states,

> harm vulnerable and marginalized groups even when it "works," by subjecting them to new forms of data-gathering and surveillance and encoding historical patterns of discrimination into automated systems. This harm can take many forms—a résumé-screening algorithm that learns to prefer men's qualifications to women's, a facial-recognition system that has a hard time correctly identifying gender nonconforming people, a predictive risk-modeling system that learns to charge higher interest rates to Black loan applicants—and any responsible discussion of AI and automation needs to grapple with these issues, too.[23]

Becoming Human: Christian Hope and Artificial Intelligence

In light of the concerns about artificial intelligence in this paper, how might we respond as a church?[24] In *Humility is the New Smart: Rethinking Human Excellence in the Machine Age* (2017), Edward Hess and Katherine Ludwig call for a different kind of intelligence to confront the ways technology challenges our humanness by seeking "behaviors that enable the highest levels of human thinking, learning, emotionally engaging with others, and making meaning together."[25]

When I first read *Humility is the New Smart*, Jesus' Sermon on the Mount (Matthew 5-7) came to mind. Jesus offers an "alternative intelligence," a radically different approach to life, based on the gracious invitation to participate in the Kingdom of God. In *Kingdom Ethics: Following Jesus in Contemporary Context, Second Edition* (2016), Glenn Stassen and David

Gushee, see a form of alternative intelligence in God's gracious deliverance, especially in the Beatitudes, where

> each Beatitude ends by pointing to the reality of God's coming reign: in God's kingdom, those who mourn will be comforted, the humble will inherit the earth, those who hunger for righteousness will be filled, mercy will be shown, people will see God, peacemakers will be called children of God, and the faithful will be members of the kingdom of God. And this experience is already beginning in Jesus.[26]

In *Future Proof,* Kevin Roose cites Frank Chen, a venture capitalist who invests in AI start-ups. Chen believes we must return to analog ethics, the skills celebrated in Robert Fulghum's classic book, *All I Really Need to Know I Learned in Kindergarten* (1986), "the elementary, pre-literate skills of treating other people well, acting ethically, and behaving in prosocial ways."[27] In the Sermon on the Mount, Jesus offers an ultimate analog ethics, based on the hope of God's "grace and deliverance, justice and righteousness, peace and presence," the source of our true worth. There are no "useless people" in the Kingdom of God. Here is where we learn what it means to be human.

As Dietrich Bonhoeffer was writing *Discipleship* in 1936, his nation was consumed with progress. At the time, most Christians in Germany saw the rise of National Socialism and the Nazi Party as good for their nation.[28] Except for a minority of Christians like Bonhoeffer, most failed to care about the useless people left in the wake of Nazi progress. No doubt, this weighed on Bonhoeffer as he reflected on the meaning of Jesus' Sermon on the Mount and God's gracious invitation to participate in the incarnation, death, and resurrection of Christ. For Bonhoeffer, to participate in the life of Christ meant there was *another* way to be human—a *participatory ontology*.[29] In an oft-cited passage on the incarnation from *Discipleship*, Bonhoeffer writes,

> In Christ's incarnation all of humanity regains the dignity of bearing the image of God. Whoever from now on attacks the least of the people attacks Christ, who took on human form and who in himself has restored the image of God for all who bear a human countenance. . . . In as much as we participate in Christ, the incarnate one, we also have a part in all of humanity, which is borne by him. Since we know ourselves to be accepted and borne within the humanity of Jesus, our new humanity now also consists in bearing the troubles and the sins of all others. The incarnate one transforms his disciples into brothers and sisters of all human beings.[30]

The rise of AI is one of the most critical issues of our time. We must continue to ask ourselves how artificial intelligence is shaping us. Are we being led by algorithms, an algorithms with the power to change our minds by appealing to our base emotions, dehumanizing us, dividing us into tribes, preventing us from seeing one another as neighbors, decreasing our capacity for empathy, and inhibiting our ability to treat one another with compassion? Or are we being led by the One who truly knows us, the One who calls us by name, the true source of our worth? The One who truly makes us human, Jesus Christ.

Notes:

[1] Any discussion about artificial intelligence is challenging, due in part to the complexity of the topic. There are many forms of smart technology such as the Internet of Things, virtual reality, robotics, nanotechnology, deep machine learning, mapping the human brain, and biomedical, genetic, and cyborg engineering, etc. For more on the types of AI see https://perma.cc/YM6Q-NFGZ

[2] According to Schwab, "The fourth industrial revolution, however, is not only about smart and connected machines and systems. Its scope is much wider. Occurring simultaneously are waves of further breakthroughs in areas ranging from gene sequencing to nanotechnology, from renewables to quantum computing. It is the fusion of these technologies and their interaction across the physical, digital and biological domains that make the fourth industrial revolution fundamentally different from previous revolutions." Cf. Klaus Schwab, The Fourth Industrial Revolution, https://perma.cc/Z7ZL-26NN

[3] Cf. Lynn Kaack et. al., 'Artificial Intelligence and Climate Change: Opportunities, Considerations, and Policy Levers to Align AI with Climate Change Goals', (2020); Alexandra Luccioni, et. al., 'Using Artificial Intelligence to Visualize the Impacts of Climate Change', IEEE Computer Graphics & Applications, 41 (2021), 8-14; David Rolnick, et. al., 'Tackling Climate Change With Machine Learning', (2019); Amy L. Stein, 'Artificial Intelligence and Climate Change', Yale Journal on Regulation, 37 (2020), 890-939.

[4] Tonje Hessen Schei, et. al., iHuman, (UpNorth, Film Platform, 2019). The 2019 film iHuman provides a helpful overview of the issues raised by the advancement of AI. iHuman is produced, directed and written by Tonje Hessen Schei, a Norwegian film maker who focuses much of her work on technology and human rights.

[5] Ibid. Mo Gawdat, the former chief business officer of Google [X], warns, "Three inevitables await us: 1. AI will happen, there is no stopping it. 2. The machines will become smarter than humans, sooner rather than later. 3. Mistakes will happen. Bad things will happen." Cf. Mo Gawadt, Scary Smart: The Future of Artificial Intelligence and How You Can Save Our World, (Pan Macmillan, 2021), Summary the Scary Part, Kindle.

[6] K. Roose, Futureproof: 9 Rules for Humans in the Age of Automation, (Random House, 2021), Rule 2, Kindle.

[7] Ibid. Cf. Christian Sandvig, 'Corrupt Personalization', Social Media Collective, 27 (2014).

[8] Ibid.

[9] While discussions about AI are infrequent among Seventh-day Adventists, there is a growing discussion among scholars concerning artificial intelligence, especially here at AAR/SBL. Many of the contributions to the discussion come from a body of work by Christian theologians. Cf. J. Shatzer, Transhumanism and the Image of God: Today's Technology and the Future of Christian Discipleship (InterVarsity Press, 2019).

[10] J. Williams, Stand Out of Our Light: Freedom and Resistance in the Attention Economy, (Cambridge University Press, 2018) , xii.

[11] Zane Yi, "Summer Reading Group: Dis-Ordered and Re-Ordered Loves," Spectrum, August 26, 2018, https://perma.cc/9PYE-EEKD

[12] Ibid.

[13] Kevin Roose, "One: Wonderland", Rabbit Hole, April 16, 2020, Podcast, https://perma.cc/PRY9-D6Y7.

[14] J.K.A. Smith, Desiring the Kingdom (Cultural Liturgies): Worship, Worldview, and Cultural Formation, (Baker Publishing Group, 2009), 40.

[15] Ibid.

[16] Ibid., 82.

[17] Augustine of Hippo, "The Confessions of St. Augustin," in The Confessions and Letters of St. Augustin with a Sketch of His Life and Work, ed. by Philip Schaff, trans. by J. G. Pilkington, A Select Library of the Nicene and Post-Nicene Fathers of the Christian Church, First Series (Buffalo, NY: Christian Literature Company, 1886), I, 45

[18] Ellen White once claimed, "It is a law of the human mind that by beholding we become changed" Cf. Ellen G. White, The Story of Patriarchs and Prophets, (Pacific Press Publishing Association, 1890), 91. Jeffrey Schwarz, a research psychiatrist for UCLA's School of Medicine, might agree with White's view. Schwarz, specializes in neuroscience and often writes about spiritual formation, contends "there is significant experimental evidence that directing your attention towards spiritual growth changes your brain." He also warns the opposite is true, our brains can become increasingly controlled by what he calls the "animal brain mechanisms" forming us in undesirable ways. In other words, Schwarz is suggesting the things we give our attention to have the potential to dehumanize us. This is certainly the case with our technology. Cf. Jeffrey M. Schwarz, "Neuroplasticity and Spiritual Formation," The Table, April 18, 2019, https://perma.cc/4VRG-CJF8).

[19] Y.N. Harari, Sapiens: A Brief History of Humankind, (Harper, 2015), 320.

[20] Y.N. Harari, "Will People Still be Useful in the 21st Century?, CNN, September 18, 2014, https://perma.cc/89BY-3LJS

[21] Roose, chap. 1, Kindle.

[22] Ibid., Introduction, Kindle.

[23] Ibid.

[24] AI is present in nearly every significant issue we face as Seventh-day Adventists. For example, earlier this year the North American Division hosted a conference on Christian Nationalism, a problem many pastors are needing to address in their local churches. An array of Adventist scholars and practitioners contributed to the discussion, yet no one addressed how the decline of our democracy is directly related to the influence of a few technology companies, like Facebook.

[25] E.D. Hess and K. Ludwig, Humility is the New Smart: Rethinking Human Excellence in the Smart Machine Age, (Berrett-Koehler Publishers, 2020), 188.

[26] D.P. Gushee and G.H. Stassen, Kingdom Ethics, 2nd Ed.: Following Jesus in Contemporary Context, (William B. Eerdmans Publishing Company, 2016), Chap. 2, Kindle.

[27] Roose, *Future Proof*, Rule 8, Kindle. Cf. Frank Chen, "Humanity + AI: Better Together," Andreessen Horowitz (blog), February 22, 2019.

[28] Bonhoeffer reflected on the rise of technology in his time. For example, while writing the "Heritage and Decay" chapter for his *Ethics* manuscript in 1940, Bonhoeffer reflected on the advances of technology in the West, concluding, "It is the liberation of reason for dominance over creation that has led to the triumph of technology. *The technological age is a true heritage of our Western history, with which we must grapple, and which we cannot reverse"* [Emphasis mine]. Cf. Dietrich Bonhoeffer, Ethics, ed. by Ilse Tödt, Heinz Eduard Tödt, Ernst Feil, and Clifford J. Green, trans. by Reinhard Krauss, Charles C. West, and Douglas W. Stott, Dietrich Bonhoeffer Works (Minneapolis, MN: Fortress Press, 2005), VI, 117.

[29] J. Zimmermann and B. Gregor, Being Human, Becoming Human: Dietrich Bonhoeffer and Social Thought (Wipf and Stock Publishers, 2010), 33.

[30] Dietrich Bonhoeffer, Discipleship, ed. by Martin Kuske, Ilse Tödt, Geffrey B. Kelly, and John D. Godsey, trans. by Barbara Green and Reinhard Krauss, Dietrich Bonhoeffer Works (Minneapolis, MN: Fortress Press, 2003), IV, 285. For Bonhoeffer, God's gracious invitation is patterned after the entire Christ event, just prior to this statement, he writes, "It is Christ's own form which seeks to manifest itself in us. Christ does not cease working in us until he has changed us into Christ's own image. Our goal is to be shaped into the entire *form* of the *incarnate*, the *crucified*, and the *risen one*.