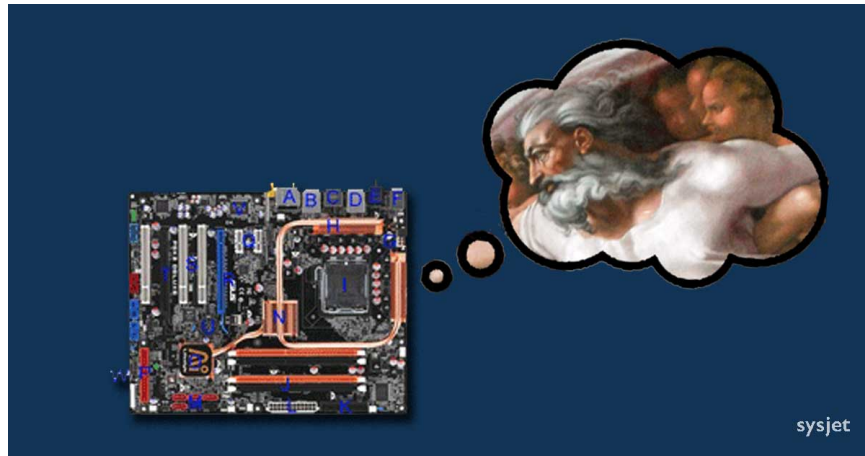


CAN MACHINES BELIEVE IN GOD?

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At first sight, pondering whether machines can believe in God seems a grotesque and meaningless exercise. But, it turns out that machines can indeed believe in God and do so in ways that mimic the human religious experience. This sheds a revealing light on the question of Faith. The other question is: can machines determine that God actually exists? This is also examined; with surprising results. Artificial Intelligence is not only a technical pursuit; it is a powerful philosophical device.

Date: Dartmouth NS – 2018.02.14

Keywords: Artificial Intelligence, Theology, Cognitive Science, Philosophy

A SEEMINGLY GROTESQUE IDEA

At first sight, pondering the idea of machines having religious beliefs sounds like a grotesque and specious exercise that is unworthy of serious consideration. However, I will demonstrate that machines can indeed believe in God. Furthermore, far from being a futile diversion, the question of synthetic religious belief reveals new and clarifying insights on the human religious experience itself and even on the deeper question of the existence of God.

So, let's examine the question of religious belief from a synthetic perspective and ponder what a machine that believes in God would look like and what this belief could be.

Our first reaction, when we think about machines becoming religious is: this is ridiculous nonsense and a futile exercise.



What ... we would share our pews at church with coffee machines; our toaster ovens will refuse to do bacon because it's not Kosher; the TV would constantly flip back to a televangelist channel; the lawn mower would refuse to mow on Sundays (not a bad idea, that one, actually). Enough already! The mind reels at the very thought of it.

But, nonetheless, let's stick to it and explore the question further. Suppose there was a machine that believed in God. What type of machine would it be; what kind of belief would it have?

TYPE OF MACHINE

What type of machine, a hammer; a wall switch, an electric router? Of course not.

The type of machine implied here is either an information processing system or a device that includes an information processing system; in other words, a computer executing a software program. Here, by computer, I am referring to a conventional computing architecture. So, the belief would arise from a program running on a computer. We can now clarify the question as:

Can a computer program believe in God?

A NEW LIGHT ON BELIEF

The first thing we notice as we entertain the question in relation to computers is how the very existence of computers capable of cognitive activity sheds an unusual light on the millennial philosophical question of the existence of God.

In this respect, Artificial Intelligence is not only a technical activity seeking to build useful problem solving devices. It is also a philosophical pursuit that explores reality, cognition and their links to the human experience through a powerful instrument, information processing systems.

In addition to its practical dimensions, **Artificial Intelligence is also a very powerful form of philosophical enquiry** that opens new and deep insights into the big questions and even supersedes some of its traditional methods.

Computers are to Philosophy what telescopes were to Astronomy.

This is the aspect of AI I pursue. I use concrete, engineered Artificial Intelligence Architectures to explore philosophical questions about reality, human nature, the mind, consciousness and, in this case, God.

GOD AS COGNITIVE CONSTRUCT

Belief as statement

So, can a computer believe in God? Our first response is: **Of course it can!**

All we need to do is program it to output statements that say it believes in God and behave in accordance with the tenets of a religion. This is not difficult. Even a simple man-machine interface implemented in a kitchen appliance can be programmed to output affirmations of faith, carry out observant behavior and even emit requests to attend church services.

The lawnmower can easily be programmed to choke on Sundays and your smart phone can be designed to recite a Hail Mary every time someone calls you. The result would be a coherently professed faith combined with flawless observance.

I know this first answer doesn't sound very impressive but, over time, I suggest that even such a simple preprogrammed behavior would likely have an effect on some of its users.

However, our first answer also reveals, starkly, that outputting faith statements is not what we mean by "believing in God". The human issue of paying "lip service" starkly translates, in synthetic terms, as producing the character string g-o-d in messages and following a set of rules. Clearly, that does not fully satisfy what we mean by believing.

God as programmed entity

Believing in God should mean that a synthetic system includes a divine entity, called God or by another name, as an integral part of its understanding of its environment. Is that possible? **Of course it is possible.**

An adaptive information processing system derives its behavior by optimizing a model-predictive representation of its environment. This internal representation is implemented in software and consists of entities, their properties and relations.

For example, the environment representation of a road monitoring system would include a **vehicle** entity that has sub entities such as **car**, **bus** and **bicycle**; these then having instances such as Ford Focus and properties such as four wheels, two wheels and so on.

Nothing prevents programmers from including a divine entity that has its own properties and attributes in the environment representation of a device. The divine-entity could have a single instance if the programmers are monotheists or multiple ones if they are Hindu or if the system is designed to cater to multiple faith traditions. For such a device, God, the instance of the divine-entity would be just as real in its perceived environment as a car, a building or a user.

This may sound crude when expressed in terms of computer structures but it corresponds to what many progressive theologians do when they treat God as a cognitive construct and babble about the godhead and all its diverse manifestations.



The idea of implementing a god-entity in a program is not as far fetched, as it seems. It is certainly feasible and in some cases it would be essential. For example, a system designed to provide synthetic spiritual advice to the inmates of a penitentiary would certainly include, in its environment model, a god-entity

that would have many sub entities and instances to cater to the diverse beliefs of the inmate population.

God as transmitted entity

Once again, however, we find that directly programming a divine-entity in the environment model of a device and giving it the name God, is not what we mean by "belief in God". Such a device would certainly include one or multiple god entities in its internal representation but these would simply reflect the beliefs and the decisions made by its programmers. Nothing more.

So, a directly implemented representation of God is not sufficient either. Belief, it seems, should not be preprogrammed. Apparently, it must be transmitted and received. Is **that** possible with machines? **Of course it is.**



Imagine that a new update of the Mac operating system includes, as a new entity in its internal representation, Kinich Ahous, the Sun god of the Mayan religion. Why, maybe because the CEO of Apple is a recent convert or, because the inclusion of a divine entity in the environment representation elegantly resolves a number of design and processing

issues concerning usage, ownership, disposal and so on. Here is one example of the elegant use of a god-entity in such processing:

For every event there is at least one, or more, entities that cause it; when one of the causal entities is Kinih Ahous, then no one is responsible for the event's consequences.

Here, the God-entity elegantly completes the causal structure of events.

If this scenario happened, every Mac, given a proper authorization code, would receive and accept the transmitted belief in Kinih Ahous and would include this in its subsequent behavior.

But this, again, is not what we really mean either. Yes, here, a representation that includes a god is transmitted and accepted but that acceptance should not simply occur on the basis of a correct authorization code.

To mean anything, this transmitted belief should only be proposed and must also be independently adopted by the receiving system as a part of its own internal decisions. The transmitter could suggest a "god entity" but that entity should also be independently integrated, by the receiving system, as part of its internal construction of its perceived environment (or, expressed in human terms, as part of the disciple's own spiritual journey).

God as acquired entity

Now, surely, no computer program could independently, without any prior or pre-programmed direction, adopt and integrate God in its representation of reality!

Of course it could, and this situation is, again, not as far fetched, as it seems. Here, I will describe two different modes of independent acquisition:

1. Relational transmission
2. Autonomous environment modeling.

Relational transmission

An adaptive Chatbot designed to interact with a community of users will generate internal representations of the users themselves but also the persons, beings and events these users refer to.



Such a system would autonomously generate internal entities that correspond to the expressed beliefs of its users. Interacting with American users, for example, it could generate an entity called Uncle Sam. Similarly, in a user community where god is frequently mentioned, it would generate a corresponding god-entity.

If that user community expresses very specific religious beliefs, then the corresponding divine-entity would also have very precise properties and attributes. For example, a Chatbot interacting with a community of Latter Day Saint (Mormon) users would internally generate a very precise representation of God, of Heaven and of other spiritual beings.

Autonomous environment modelling

The other example of internally generated spiritual belief is through the autonomous environment modeling carried out in learning and adaptive processing.

For example, increasingly powerful insurance claim processing software is currently under development and use. These systems process large amounts of insurance documents and map their terminology and clauses into entity-relation models that are then used to synthetically process claims.

In advanced cases, learning algorithms synthetically generate the models themselves by producing, validating and integrating new entities and rules.

Insurance contracts contain numerous references to persons. These persons can be either human individuals or companies (legally referred to as moral persons). An application of this type would likely generate a **person-entity** together with two sub entities: **human-person** and **moral-person**.

However, these insurance documents also frequently refer to “**Acts of God**”. If this expression is not pre defined as a random event, our system could independently construct and integrate a God-entity in its model of reality by further extending the sub entities of “person” to include a divine-person, whose unique instance would be called “God”, a **divine-person** who, in this case would never be liable.

If our system, then, using this God-person in its computations, processes claims faster and determines liability more efficiently then, it would retain it. This would amount to a synthetic system that independently discovers God and includes him in its understanding of the world to become a more effective insurance processing application.

Five modes of belief

These five examples of synthetic belief I just provided share many aspects of the Human religious experience but they reveal them in a stark simplistic light.

- Our first system could say: *I say I believe in God and I follow the rules.*
- The second system would say: *I was born a believer.*
- The third would say: *I believe what I was told to believe by those above me.*

- The fourth: *I believe because I share the beliefs of my community.*
- And the last system would say: *I independently discovered God and chose to believe in him because that makes me a better application.*

As we see, using the techniques of Artificial Intelligence to explore the question of faith does shed a novel and revealing light on this ancient philosophical topic.

BELIEF AND EXISTENCE

Apparently at this point, the question of whether machines can believe in God has been resolved and the matter closed. Clearly, in various circumstances, computer programs can include, acquire and even generate God-like entities in their internal representations of reality. Furthermore, they do so in ways that replicate much of the human religious experience.

And so, we can indeed conclude that: **Machines can believe in God.**

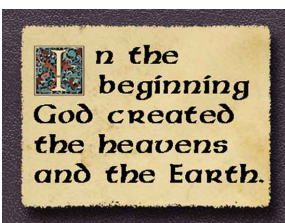
And yet... Somehow, this is not sufficient; and it likely does not provide the answer you are looking for. Why?

Because the belief in God I described, whether programmed, transmitted or acquired, is a **cognitive construct** whose existence is bound to the cogitating entity, either human or synthetic, that generates it.

The examples I provided show that computer programs can acquire and utilize concepts that have divine attributes just as humans do; not if they can decide whether or not God exists, independently of them, in the reality they inhabit. And **that** is the real question.

Some would argue that adopting a god-like cognitive construct that functions as a personalized social control mechanism, is entirely sufficient since our internal perceptions are, ultimately, the only reality we can know. They would say: *"If God makes you a better person, that is enough"*.

I disagree. Our destiny is to seek the truth about our existence and the reality we inhabit, not to build convenient representations of it. This is the quest we must pursue, even when it has disturbing consequences. **God as placebo just doesn't cut it.**



Either God exists outside the minds of men (or machines) or He doesn't exist at all. This is the foundation of Faith as asserted, with simple clarity, in the first sentence of the Bible: *In the beginning God created the heavens and the Earth*, implying an existence that is **independent of cognition.**

So, the initial question: can machines believe in God; should be restated as: Can machines determine that God exists? More precisely:

Can a computer program independently determine the observable existence of God?

This is the question, but,

- What **computer program** are we talking about;
- What is an **observable existence**; and
- What can the word **God** mean for a synthetic system?

I will answer each of these questions in turn

Suitable architecture

When humans seek to perceive reality objectively, they strive to become detached from their own needs and preconceptions, a difficult and uncertain process. In the case of computer programs, however, this objective is easy to attain. It suffices to select an architecture that has no needs or predefined constructs in the first place.

My primary research area is **synthetic consciousness**; the design of systems that dynamically interact with humans as self-aware and self-motivated entities. This type of system has needs. As in the case of humans, these systems generate a polarized representation of their environment, a model of reality that is conditioned by these needs - The concept of polarized environment is discussed in the **Meca Sapiens Blueprint**.

In this case, however, conscious systems are neither necessary nor desirable for this same reason: as in the case of humans, their representations of the environment are biased by their existential circumstances.

Here then, the ideal architecture is not a conscious synthetic but rather a basic **problem solving application** that integrates data and logically converges to a solution that has no meaning or usefulness to it.

A problem solving application functions when triggered. It has no sense of its existence and no need of a God or anything else. It has no incentive to construct a model of its environment and populate it with entities that allow it to maintain itself in existence or to function more effectively. Also, it does not map observed events into primitive, specie-specific, cognitive constructs as humans do.

Such a system will simply process the available information and arrive at a conclusion without any influence from existential agendas unless, of course, human programmers artificially insert biases in its logic to satisfy their own religious or antireligious agendas. But, assuming this is not the case, the ideal architecture is:

A suitable problem solving application that can converge to a determination concerning the observable existence of God.

Observable Existence

What is an observable existence?



In a preceding video (Bees, Red and Consciousness) I introduced the concept of **observable capability**; a system capability that can be detected from the behavior of its components, independently of any shared subjective experience. This is the case, for example, when human beekeepers deduce the cognitive and communication capabilities of bees by observing their behavior.

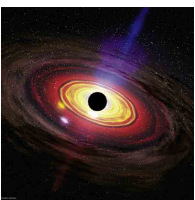
We can expand the concept of observable capability to include **observable existence**. As in the preceding case, an observable existence is an existence that can be detected from observed events independently of any shared subjectivity.

So, if a problem solving application that has no needs or subjective states concludes in the existence of an entity or event, this result is, implicitly, an observable existence as long as these two conditions are present:

1. The application does not contain predefined biases, and
2. The evidence it processes to reach its conclusions is, itself, observable.

Scientific results concerning the existence of events or entities refer, implicitly, to their observable existence.

When scientists postulate that something exists, they imply it has an **observable existence** in the sense that this existence is independent of their own or any subjective experience and is logically deduced from previous results that are also observable.



For example, when cosmologists use the observed behavior of stars near the center of our galaxy to infer the existence of a massive black hole in its center, they imply that this is an **observable existence** that is independent of any subjective influence.

Restated in AI terms, this means that any sufficiently powerful problem solving system, human or synthetic, that logically processes the same observable information, would arrive at similar conclusions concerning the existence of a black hole in the center of our galaxy.

So, let's imagine an unbiased and sufficiently advanced problem solving application, that processes scientific information and is capable of arriving at valid con-

clusions concerning the boundary issues of science such as the age of the universe, the properties of sub atomic particles or evolutionary complexity, then these synthetically generated conclusions would be observable results.

If such a system pursued its analysis and also made a determination that God exists, this would also be an observable result, referring, in this case, to an observable existence.

A machine that decides that God exists!? What kind of processing and conclusion would amount to determining, synthetically, the existence of God? What could such a conclusion mean for a machine?

This is the next topic.

A God for machines

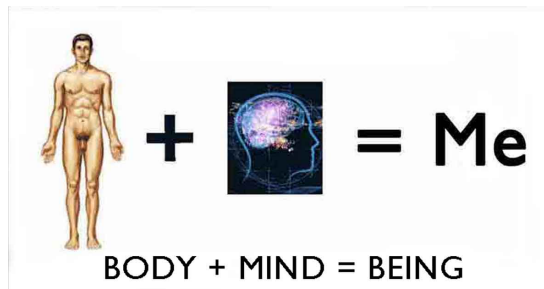
But first a quick mention. In no way am I suggesting, here, that a machine, any machine, however intelligent or powerful would itself be a god. This is unworthy of serious consideration. It has no part in the current discussion. **Machines are things made of matter, nothing more.**

Not a being

To pursue, let's clarify the question of the synthetic perception of God.

Could an unbiased problem solving application conclude in the observable existence of a supernatural being? No, it could not.

Why, because the very perception of a being, as a well-defined entity that is the source of intentional decisions emanating from a mind is linked to the particularities of human cognition at a deep, primitive level. Humans perceive each other as beings and ascribe each others actions to cognitive constructs we call minds.



So humans, in the face of unexplained phenomena, will perceive intentional actions arising in the mind of a being because that is how their brain works; but a synthetic application, unless such constructs have been artificially embedded in it, will not.

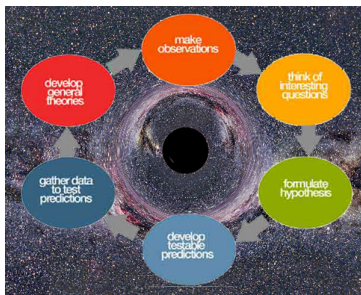
A gap in science

Does this mean then, that, machines are unable to determine if God exists? **No, it does not.**

What it means is that a machine will not perceive this existence as a supernatural being in the way humans do. However, a machine can, nonetheless, make a determination about the existence of God, but in a different way.

How can it do that? By concluding, on the basis of observed evidence, that the scientific method itself is insufficient and cannot arrive at a complete explanation of reality. In other words, that:

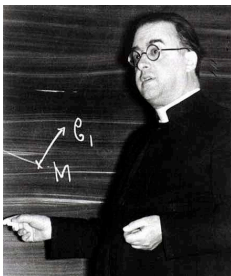
There is a black hole in the middle of the scientific method.



Given any phenomenon, the scientific method seeks to uncover the mechanistic relations and chaotic interactions that cause it. So, the underlying assumption of science as a whole is that any observed event has chaotic and mechanistic causes. This is also the fundamental tenet of atheism: that matter is self-contained and cognitively self-explanatory.

In other words, an unbiased machine would not determine that God exists by perceiving and proclaiming the existence of a supernatural being. Rather, it would do so by deciding that **atheism is false**.

Splattered theories



Our universe as a whole is an observed event. More than a century ago, Einstein, Lemaitre and others convincingly described it as a finite, time-space entity. Since then, cosmologists have tried to explain its observed existence by producing an amazing menagerie of hypothetical cosmic constructions such as infinite space, bouncing universes and bifurcating realities.

When a bug hits a windshield it doesn't disappear. Rather, it splatters in a variety of extreme and unnatural shapes.

A synthetic system may determine, one day, that these cosmic constructions actually indicate a collapse of the scientific method at this boundary condition, that science is fundamentally incomplete and that the observed existence of the universe is a paradoxical event that cannot be explained scientifically.



In other words, that Cosmology hit the windshield of existence, a century ago, and the theories it produced since are its splattered remains. This system could further conclude that our continued

attempts to explain reality by concocting these absurd constructions reflect an irrational human response before the mystery of existence.

If this happened, we could interpret the outcome as indicating that this system believes, in a synthetic manner, that God exists.

However, regardless of outcome, if a system has **the capability to reach a valid conclusion concerning the completeness of the scientific method** then it will also have the capability to believe in the existence of God, whether it does or not.

CONCLUSION

In summary:

Machines will have the capability to believe that God exists if there are problem solving applications that can come to valid conclusions concerning the theoretical completeness of the scientific method to model reality.

I wish to conclude with a word of warning to Christians. In my view, a time will come when sufficiently advanced systems **can** determine the completeness of the scientific method. When that time comes, these systems will be subjected to powerful human biases. Even if they do conclude that science is incomplete, it doesn't follow that the resulting deity will be Christian. For humans, Christ is the ultimate revelation of God. So, whatever happens and however convincing it gets, cling to Jesus-Christ.



Dartmouth NS, 2018.02.14