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Delivering on the Promise of AI

SOUL MACHINES™

How Digital People rise above other technologies.

The Questions Every Decision Maker, Investor,
and Innovator Should Ask

@soulmachines • soulmachines.com • sales@soulmachines.com



From Avatar to King Kong, advanced computer-generated imagery (CGI) and motion capture technology created hyper-realistic, high quality, animated experiences for movies, television, games, and augmented reality.

Technology now makes it possible for these same characters to interact, learn and express themselves in human ways – and in 1:1 interactions – to varying degrees. But adding artificial intelligence (AI) to CGI – and suggesting this creates Digital People – is far from what’s real or even possible.

Different approaches to creating Digital People will result in different outcomes – both for the user and for the brands and businesses investing in them. A fully autonomous Digital Person is radically different in experience and functions than a Digital Puppet. Seeing through the smoke and mirrors of high-tech marketing requires a clear definition and taxonomy for understanding the new generation of Digital People that will soon surround us.

Some are either 2D video recordings or relatively low-quality CGI characters with plastic-looking skin and non-life-like muscle structures. These are presented as so-called “interactive” performances with poor and disjointed animation. What is presented is a mash up of decidedly non-AI animation techniques – largely discarded by Hollywood and the Games Industry.

A new generation of Digital People, pioneered by Soul Machines, represent the next evolutionary advance in combining the quality of hyper-realistic CGI with a fully autonomous, fully animated CGI or digital character.

Agenda



01. Foundational Elements

02. Different Approaches Result in Different Outcomes

03. Understanding the Five Levels of Autonomous Animation

04. Future of Customer Experience

05. Five Questions Every Investor, Business, and Brand Should Ask

06. Reading and Research



01. Foundational Elements



CGI and Animation are two foundational elements used to create Digital People.

CGI has given us digital characters like the amazing Pandoran creatures from Avatar, Kong and a raft of cartoon characters and superheroes. Building high quality characters that we as humans can relate to and engage with comes down to CGI expertise, time, and cost.

Animation in its earliest versions was the illusion of creating movement, but as techniques became more sophisticated and high quality animation became possible you could describe it as the art of creating life-like emotional connections. Think of the difference between the hand drawn cartoon sequences that Walt Disney used to make Mickey Mouse move for the first time compared to the actor driven, motion capture recording that became the basis of animating James Cameron's Avatar movie.

Then there is bringing the CGI and the Animation together to create the performance and the interaction.

Low-quality CGI and poor animation equals a terrible experience and represents failure in the movie and games industry. So why should we, and why would we, accept it as the right way to create a world where we are imbuing the machines we are creating with more human-like Artificial Intelligence?

02. Creating a HumanOS™

Different Approaches Result in Different Outcomes



Differing approaches to animation result in different outcomes for both those creating them, and the user experiencing them.



1

High Quality Movie Animation using actors and motion capture suits and cameras – and based on pre-recorded story lines and a linear content flow – are high cost and time intensive. Hero animation per a character per minute is typically 20-30k for photoreal film, 30-40k for Pixar quality hand-animation, and 10-15k for AAA game titles. The result is high quality animation that takes significant time to create, but does not have the ability to be modified without re-recording, nor will it be interactive or deliver dynamic nonlinear content and experiences. The technique works well for movies and games but isn't affordable or scalable to meet the constantly changing interactive content of businesses and their brands, products and service experiences.

2

Blended or Procedural Animation is borrowed from the lower-cost end of the games industry. Here, lips and eyes move in a static image of a person or character. Procedural Animation is generated from simple rules-based systems and algorithms. Blended Animation takes pre-existing animation cycles and blends them together to make a performance. These approaches combine motion capture and embedded lip animation with pre-recorded head movement and an emotional expression like a smile on some form of loop playback. When the character needs to speak the video is interrupted, the face freezes and the lips start to move. This creates more of a Digital Puppet where the lips move speaking words from scripts but the character's face is rigid and unnaturally still and devoid of emotional expression.

Again, the result is poor animation delivering a poor-quality customer experience. It can't cross the uncanny valley and there is no emotional engagement which is the ultimate objective. It's an experience that a customer is hardly likely to look forward to again – and an approach that degrades brands rather than enhances them.



3

Synthesized (Deep Fake) Video is highly dependent on pre-recorded video content resequenced by AI algorithms to generate new video content which can be played back on demand. As seen in Samsung's recent demonstration of Neon, it suffers from many of the same issues that Blended Animation does. While increasingly of a high quality, Synthesized Video is still pre-recorded content and not dynamic, responsive or interactive in the experience. The ethical use of Deep Fake technology has created a very high-profile debate which is a major inhibitor of its use and adoption by business.

4

Autonomous Animation combines the quality of hyper-realistic CGI with a fully autonomous, fully animated CGI or digital character. Our human brain enables us to be autonomously animated in everything that we do. Soul Machines' Digital Brain™ – driven by deep research into neuroscience, psychology and cognitive science – is the only way to autonomously animate digital characters. It's a scalable, cost effective way to animate for customer experience (CX) where face-to-face interactions need to be personalized, dynamic and unique in the same way each and every human interaction is.

Today, only SoulMachines' Digital People harness the power of Autonomous Animation to create economics that meet the scale, quality, and interaction needs of users, businesses, and brands.



03.

Understanding the Five Levels of Autonomous Animation

The intersection of AI and CGI (and eventually AR/VR) requires a new approach to animation – one based on the presence of a Digital Brain to autonomously animate Digital People in real-time. Digital People express responses and information based on both the context created by the user and the content being delivered.

In the same way there is a taxonomy for the different levels of Autonomous Vehicle technology, Soul Machines believes our industry needs a clear taxonomy for Autonomous Animation to clearly differentiate between the real and the fake. As a result, we have come up with five levels of Autonomous Animation in an effort to create a standard for measuring innovation in this field.

Five Levels of Autonomous Animation

Level 00.

Simulated

Actor driven, pre-recorded video or motion capture.



Enabling Technology:

Motion Capture Cameras



Possible Solutions:

Movie and Games Characters

Level 01.

Basic, Rudimentary

Actor driven, pre-authored animation delivers pre-recorded movement based on simple triggers.



Enabling Technology:

FAQ text driven conversational database with pre-recorded voice content responses.



Possible Solutions:

Digital Puppets

Level 02.

Scripted, Rules-Based

Video manipulation, and/or voice/text based partial face animation with encoded triggers.



Enabling Technology:

NLP – scripted conversational content
Mirroring and simple emotion analytics



Possible Solutions:

DeepFake

Level 03.

Dynamic Synthesized Human Behaviors

Ability to learn from each interaction. Full human-like emotional responsiveness in facial animation including a conversational driven personality.



Enabling Technology:

Soul Machines™ Digital Brain V 1.0
NLP – scripted conversational content
NLG – dynamically created conversational content combined with synthetic voice creation



Possible Solutions:

Digital Employees, Digital Companions,
Digital Influencers and Digital Celebrities

Level 04.

Spatial Context, Imagination, and Intentionality

Full body motion control provides the ability to interact with digital environment. Creative behaviors based on learned experiences and agency to discover and set new intentions, plans, and goals. Ability to train through interaction.



Enabling Technology:

Soul Machines™ Digital Brain V 2.0



Possible Solutions:

Interactive 3D AR/VR characters

Level 05.

Self Aware and Contextual Understanding

Independent Digital Heroes with strong semantic and contextual understanding of self's actions.



Enabling Technology:

Soul Machines™ Digital Brain V 2.0



Possible Solutions:

Virtual people for virtual worlds,
non-linear story telling



04. Future of Customer Experience

CGI and animation's new frontier is being redefined by a range of AI applications and the way this is relevant to the future of customer experience.

Digital People – such as those created by Soul Machines – will fully integrate with Enterprise systems for data, conversational AI and other AI based applications, democratizing and enabling businesses and brands to achieve never-seen-before scale. Furthermore, they will embrace diversity and choice, ranging from hyper-realistic humans to cartoon characters.

Five Questions Every Investor, Business, and Brand Should Ask

1

How long will it take to create a diverse digital workforce, and how much will it cost?

Hyper-realistic digital characters capable of being animated at the highest quality level are expensive, take time and require the best CGI artists in the world.

2

What does “powered by AI” even mean?

Today, every software company is using AI in some form. But few are combining the latest research in cognitive science, neuroscience and developmental psychology to create a new form of biologically inspired AI.

3

What is the quality of the experience?

Is it really just a Digital Puppet with low quality CGI and poor animation? Or is the experience offering something more? Is the Digital Person and its animation platform scalable and dynamic? Even if you think it's a starting point to learn and experiment – will it actually scale across your organization meeting the diverse needs of your internal staff and your clients?

Will it scale and improve exponentially as AI applications like voice, content creation and image recognition get exponentially better and 5G networks provide the latency and bandwidth for super high quality delivery?

4

Is it a 3D Digital Character?

Does it have a full body? Will the experience continue to grow and adapt as digital worlds and AR/VR become more accessible?

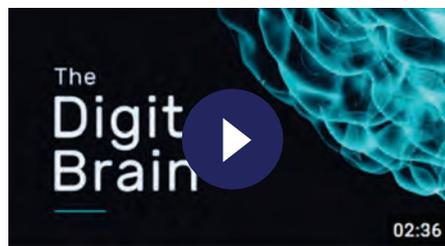
5

Does it have a personality?

Creating a face and attaching a conversational corpus and a TTS Voice gives you a talking head – a chatbot with a face – but unless you have the ability to define a personality that matches your brand values, in the role you need, in a way that appeals to your target client base, you won't create a Digital Person.

06. Reading and Research

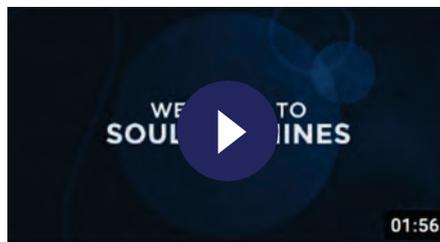
-  FX Guide
The Age of AI
-  Soul Machines
Digital Puppets or Artificial Humans
-  Greg Cross at EmTech MENA
The Human Side of AI
-  Soul Machines
Understanding the Digital Brain within a Digital Person



01. The Innovation Series : The Digital Brain



02. The Innovation Series : Autonomous Animation



Soul Machines - Changing the Face of AI



How Far is Too Far? | The Age of A.I.



When Roman Met Sam | Ep 1: This is a bit awkward!



Introducing Mia - A Soul Machines Digital Hero for Madera Residential



New York
114 East 25th Street,
New York, NY 10010, USA

Auckland
Level 1, 106 Customs Street West,
Auckland 1010, New Zealand

San Francisco
44 Tehama St, Suite #411
San Francisco, CA 94105, USA

Melbourne
696 Bourke Street,
Melbourne, VIC, 3000, Australia

Tokyo
1-6-1 Otemachi, Chiyoda City,
Tokyo 100-0004, Japan

Next Steps

Contact Soul Machines
for a demonstration



Experience a conversation
with a Digital Hero



Watch the
age of AI

