



# SPECIAL EDITION AI FOR GOOD

UCLA TDG Innovation Magazine  
Winter 2025



Photo Courtesy of [UCLA Department of Theater](#)  
and [REMAP](#)

## SPECIAL EDITION

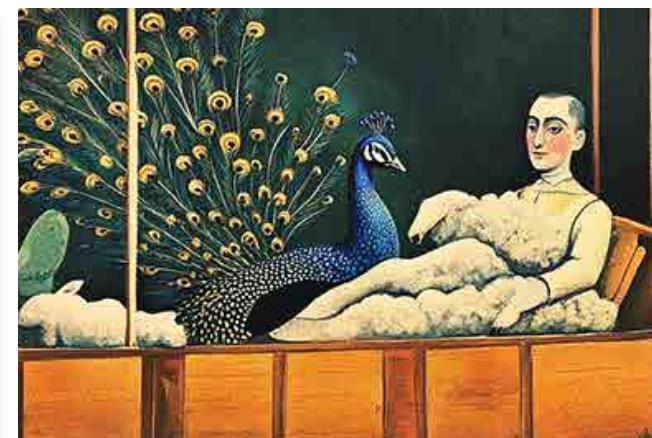
# AI FOR GOOD

It's in your feed and in the news. AI or artificial intelligence is here – for good. But can AI be used for good?

Innovation Magazine caught up with several UCLA leadership, educators, and researchers to find out.



Xanadu Photos courtesy of [UCLA Department of Theater](#) and [REMAP](#)



AI generated cover Image courtesy of Brian Kim Stefans [lapoetry.arras.net](#)

## ART AND HUMANITIES

**UCLA IS A POWERFUL PART** of the creative community and has grown with the traditional Hollywood ecosystem but with the introduction of AI, there is a view that this technology is a threat to creativity and to the livelihoods of many who work in entertainment. We asked Jeff Burke chair in the department of theater and associate dean of research and creative technology at the School of Theater, Film and Television to provide some insight.

"AI provides accessibility to creatives with the use of software that doesn't involve active coding," he said. "Coding can be a barrier, and some people may not want to spend their time coding so AI tools provide opportunities to use tech in a new

way. The AI tools out there make it easier and presents in a natural language. AI provides greater number of people to participate in large scale projects and the ability to create with a group."

He cites the recent experimental, immersive production of [Xanadu](#), where audience members were invited to share the stage with the performers, use their smartphones to "draw" shapes that an algorithm translated in real time into objects that became part of the visual environment, one that changed for every performance.

**"The approach is to view these tools as building blocks in the creative process."**

– Jeff Burke

In another segment of the production, the lead actors exited the stage and performed several scenes in front of cameras that turned them into avatars on a series of larger-than-life screens, a process that required not only sophisticated machine models for their faces, but a delicate effort to re-create their real-world costumes into the virtual environment. This task was headed by a traditional costume designer and alum of the school who learned how to use technology like Unreal Engine, a powerful, real-time 3D creation tool and game engine.

Burke credits AI with evolving the interface of people interacting in a physical space and noted that while generative AI is the main focus of discourse, machine learning provides new ways to analyze how artists can approach video, camera work, mics and touchscreens. "It's a new form of collaboration," he said.

Speaking on the recent media criticism over the AI "actress" Tilly Norwood, Burke believes that using the term "actress" is incorrect.

"It is not an actress," he said. "I view this similar to an animated character except it's an AI generated character. It seemed to be more of a marketing plan to call her an 'actress.' Calling it an actress implies that this character will fill the role of human actors."

He is quick to admit that there is a real concern over the control of AI and how protections are needed to prevent actors' voices and likenesses from being exploited or used in ways they would never agree to. The balance between how students can work AI into the creative process and control is top of mind.

In the classroom, Burke tries to demystify new technology by educating students on how the industry is using it. Next, he helps the students understand the various technologies available so they can make critical choices.

"There are many apps available but none specifically that we use," he said. "The approach is to view these tools as building blocks in the creative process. For example, students are using Chat GPT for things like image and video generation and perhaps audio retouching. Google Genie creates world models. And there is Moonvalley that is a generative AI tool with content output that is fully licensed."

Regardless of how AI is used in the creative process, the most important aspect in bringing art to life is the relationship with the audience. That connection is what will draw people to artists and their work regardless of what technical enhancements are used.

"Students should continue to focus on the human connection and the audience and then ask themselves: 'how can tech enhance that?'" he said.

Finally, Burke believes AI will have a lasting impact.

"It's time for formats to evolve and it changes how people think and watch art," he said. "Stylistically between actor,

platform, and story, it's the beginning of a new art form and I think it's a similar time to the birth of digital media."

Last spring for *Xanadu*, there were the traditional curtain calls for cast and live musicians, but also resounding applause and recognition for the dozens of tech producers that were visible throughout the performance on the stage, celebrating the reality that traditional forms of performing arts can operate with the creativity-unlocking potential of emerging technology.

**"AI could stimulate new ideas but not if you approach it like a content creator."**

– Brian Kim Stefans

**BRIAN KIM STEFANS** is a professor in the department of English. He has published several books of poetry and created works of digital literature since the late 90s.

Recently, Stefans used AI to help design nearly 100 covers for his online anthology of Los Angeles poetry titled "Extremes and Moderations." He primarily used the platform Midjourney to create them.

"Midjourney is different because it's not owned by one of the big AI companies. As a result, there is slightly more freedom and the quality of the images is higher, if not stranger. Every time you send in a prompt, it gives you four images that you can then create variations of through largely indirect methods."

Explaining the process, Stefans provides a reality check on working with the platform.

"You just don't type in something and get a perfect image. It's not like Photoshop, where you make very specific changes based on precise decisions. You can also have the

Continued



Collaborative work with AI Images courtesy of Brian Kim Stefans [arras.net](#)

image be inspired by other artists, and you can erase parts of it and have the AI fill it in and so forth. A lot of these covers would take hours."

Beauty Face: A Poem is his first truly collaborative work with AI. He provided unused stanzas from a recent poem and prompted ChatGPT to write 100 stanzas in a similar style. Stefans kept revising the prompts to get it to where he was satisfied with the results and swapped out stanzas here and there from different results.

But it wasn't just the text that was generated. He also directed ChatGPT (or Dall-e, its image generator) to create images to go with each stanza as well as design a book cover. All of this took quite a long time. The result?

"I don't think it's a good poem that it came up with but it's a funny digital artifact. When I say it's not a good poem, I mean that it's not something I would write but something I egged on AI to create."

From all the types of AI creation Stefans has tried out, he views the artistic quality as "pretty shallow" if the creator is not actively engaged in quality control. Right now, he sees a lot of mediocrity and brings up the phrase "AI slop," a general term that's been circulating to indicate low-quality, low-effort, digital clutter made by generative AI.

"My hope is that there'll be a leveling mediocrity to which most people will become inured, basically to AI image, video and music generation that has been produced without genuine creative effort or insight. With greater understanding in the general public of what AI slop looks like, the good stuff will rise to the top."

Stefans is unsure if AI would be useful to artists as opposed to "creatives."

"The word 'creative' is interesting. You never used to hear someone say 'I'm a creative'. As an adjective, it usually means that you have an imagination and like to produce art, but the noun 'creative' basically means 'content creator,' not an artist per se."

There are also complex ethical issues and concerns with using other people's art with generative AI. It seems to Stefans that huge companies are trying to "soak the entire culture with AI" which, in turn, may cause a cultural reaction, one which moves people away from purely digital lifestyles and toward an appreciation of human contact that could reverse the social isolation and the "epidemic of loneliness" that has become a buzzword.

"My students generally do not like AI. They would rather be in a classroom and interact with each other."

Will there be AI for Good for artists like Stefans?

"AI could stimulate new ideas but not if you approach it like a content creator. Whether these tools can be useful to an artist — we just have to wait, perhaps years, to answer this question."

## ENGINEERING AND COMPUTER SCIENCE

**ACHUTA KADAMBI** is an associate professor of electrical engineering and computer science at the UCLA Samueli School of Engineering. He explores the frontier where artificial intelligence meets spatial intelligence. Humans rely heavily on visual information—up to 70 percent of what our brains process comes from what we see. Yet AI systems still operate primarily on linear, text-based data, making even simple spatial judgments challenging.

For example, determining whether an object is moving across a field of view is far from intuitive for today's models. Kadambi's work seeks to give AI a richer sense of space, enabling it to interpret the physical world with far greater nuance.

Vast amounts of visual data are captured every day through cameras and satellite imagery, but the sheer bandwidth makes it necessary to compress this information into manageable units such as pixels, voxels, and other structured forms.

Beyond simply vectorizing these pixels, Kadambi's work delves into understanding how each pixel is formed—how light interacts with a scene, how colors are distributed, and why illumination behaves the way it does. By uncovering these principles, his research brings AI closer to one of its most ambitious goals: teaching machines how to see.

"If we can solve this problem, we can make vast improvements in things like surgery."

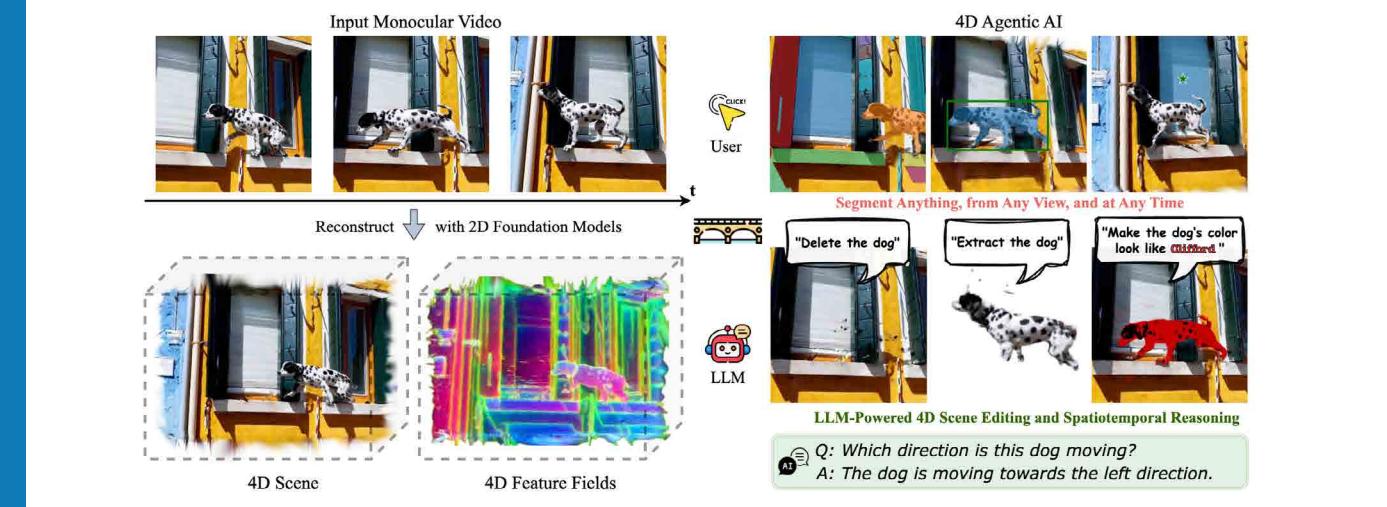
Kadambi believes that for the next generation of AI models to achieve true accuracy, they must begin with a spatial understanding rather than a text-first approach. To him, this shift represents a fundamental transformation in how we conceptualize and build AI.

"We want the Power of AI to be able to reason about more complex, high level, human cognition, but have the guarantees or robustness to that of something like an airplane's autopilot."

Kadambi shares his view on the good of AI.

"AI is playing a role and is expanding the frontier of what you can do. AI is innovating but it's using a lot of innovations that we as humans have made in from the past. A good use case of AI is that it could remove the drudgery that slows down our progress and lets us focus on creative work and connect us as humans."

The Kadambi lab is currently seeking partners and would like to collaborate with innovators across Los Angeles—those working with pixel-level aerospace imaging, designing advanced propellers with specialized CAD tools, or developing technologies for monitoring our oceans through satellite systems.



LLM-Powered 4D Scene Image courtesy of Kadambi lab

**ALEX BUI** is the director of medical & imaging informatics at UCLA David Geffen School of Medicine. His research focuses on applying informatics and data science to advance biomedical research and healthcare.

Health data holds significant potential to improve patient outcomes and inform clinical decision-making for doctors. Bui and his team are developing and testing AI algorithms to realize this potential. One application involves identifying high risk patients more accurately, enabling providers to address their needs proactively.

However, significant challenges remain, such as biased data, privacy and patients who may be reluctant to have predictive AI be part of their care.

"We will need to educate people. We don't know what the best practices will be, but we are in the process of testing and they will emerge."

**"It's the wild west right now in the use of AI but at the same time we have an opportunity to make sure we are using this technology correctly and fairly."** – Alex Bui

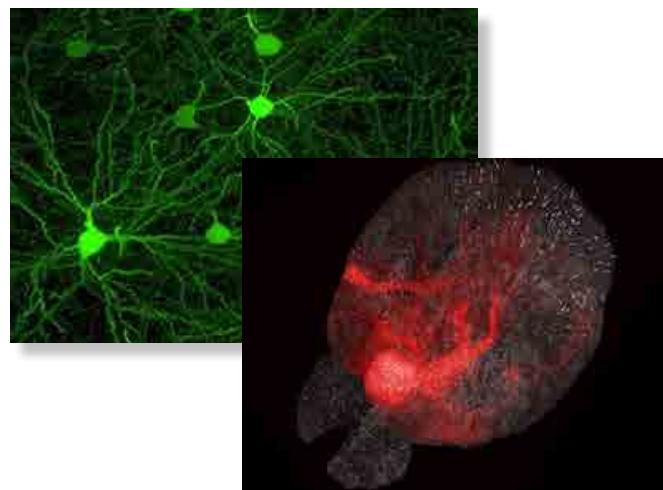
Bui also envisions using AI to analyze data in ways that could provide new insights and scientific discoveries.

"Looking at data in new ways is something that we could have done manually, but it would have taken us a long time and the rate at which new insights can be generated is much faster and this makes AI truly transformative."

What is Bui's vision for AI's potential for good?

"A hope particularly in the healthcare space, is that AI will help to democratize access to healthcare within in the US or even globally. The challenge is there are not enough physicians or specialists. If we do our job right, it will be easier to get better healthcare and better access. It has that potential and can create more equity in healthcare. It's all possible."

## MEDICAL



CONNECTOME *Images courtesy of [Dong lab](#)*

**HONG WEI DONG** is a professor of neurobiology at UCLA David Geffen School of Medicine. His research centers on brain mapping.

"We know very little about our brain and in the whole universe, the brain is the most complex organ."

A normal brain has nearly 100 billion neurons that can be broken down into three categories: sensory, motor and interneurons. Dong's goal is to create a comprehensive connectome map that represents the connections in a common neuroanatomic frame, and to understand how the different brain regions assemble into functional networks based on their connections to affect behavioral output.

Dong was part of the NIH Brain Initiative that was launched in 2013, where researchers used advance tools to map the brain in 3D. Since then, enormous amounts of data have been collected. Several petabytes of data exist — too much for humans to process on their own. With AI, analysis becomes quicker and more efficient.

In Dong's lab, the team are creating specific algorithms for AI to map the brain in 3D.

"AI helps us augment our scientific research AI is not replacing scientists. It helps scientists to do much better. Looking at history, every time a new technology comes out, eventually it brings tremendous benefit to the whole community."

Understanding the connectivity of the brain's neurons and all its regions will help with neurological diseases such as Alzheimer's – a progressive disorder that damages nerve cells and causes dementia.

**"AI helps us augment our scientific research AI is not replacing scientists. It helps scientists to do much better."**  
– Hong Wei Dong

Dong's lab focuses on Alzheimer's by analyzing plaques and tangles - abnormal proteins that form between nerve cells and inside nerve cells respectively. Right now, there are drugs that address the symptoms but not the cause of the disease. With more research and the help of AI to process data and information faster, the hope is to find a cure that will restore the nerve cell function to a normal and healthy state.

"In our field, if we use AI in a good way, it will help us develop a drug and will drastically decrease the suffering for all of humanity. It will help us identify much quicker and better drug candidates - that's the whole purpose of AI for Good."

## LEADERSHIP

**PAUL LUKAC** is the chief AI officer for UCLA Health. His goal is to provide safe, effective, and equitable AI that can transform care delivery, reduce clinician burdens, and improve patient outcomes. Lukac is approaching this with three key strategies:

- Understanding what type of AI solutions are available within the health system that will support its mission and vision
- Establishing governance frameworks to ensure the technology is used safely and responsibly, with risks properly vetted
- Building literacy and education for the workforce

"AI literacy and education are brand new for society. In general, we're all getting up to speed in how AI changes our daily lives and our jobs as well. We want to make sure our workforce has access to tools, knows how to use them and interpret the results, and feels supported by the health system."

Lukac believes that AI will make many tasks much more efficient and streamlined, such as scheduling appointments and answering patients' questions.

"I see a lot of promise from the use of generative AI, creating new text from what it knows from patterns. For example, capturing and summarizing the transcript of a conversation between patient and provider into clinical notes for doctors and nurses."

Another example of AI assisting care teams would be computational models that can predict a patient's likelihood of clinic or emergency room visits. When high risk patients are identified in advance, care teams can reach out proactively, resulting in a 23% reduction in ER and 13% reduction hospital visits.

Looking ahead, one of the exciting possibilities for Lukac is using AI to make new discoveries about diseases and how to treat them.

"AI for drug discovery, now capable of modeling protein structure and millions of these models, has the ability to search large data sets to see for example, if there may be an existing drug that matches a mutation that can lead to the concept of a future drug. We're not there yet but we'll get there."

## "Everyone needs to have a general understanding of AI." – Chris Mattmann

**CHRIS MATTMANN** is the inaugural chief data and artificial intelligence officer at UCLA. He is responsible for developing the strategy and roadmap for data and AI innovations.

"Everyone needs to have a general understanding of AI. Right now, there are a lot of AI platforms and programs with more generating every day."

Mattmann has created a three-point plan that will help put structure to the understanding and use of AI at the university.

1. **Conduct an AI tools inventory**
2. **Develop a university wide community practice guide for AI**
3. **Build learning tools for AI literacy for UCLA staff and faculty.**

Mattmann says the AI tools inventory is critical because it's important to understand the demand flow in the different verticals. He is personally curating a series of learning modules from 100 – 400 with 100 being the core foundational lessons for AI. The modules are categorized by job discipline and family with plans to roll this out over the next year.

"The level of recommendation that we're making right now is for the general workplace productivity tools."

Since this is a new department with limited resources, it will take time to build. But Mattmann noted that the AI community of practice could ultimately formulate AI piloting, prototyping and vetting but it's important that the university establish its own framework to move AI forward in an ethical and responsible manner.

"We need to make the case that this is important. Otherwise, people are going to go and find their own tools and do what they want and the biggest challenge with that is navigating the technical debt and risk that comes with doing so."

## CONCLUSION

From the interviews that were conducted, the majority of respondents know that AI can be used for good and understand that we are in the nascent stages of the technology. Most believe the good of AI will be developed at universities like UCLA as well as organizations that are driven by mission, creativity and ingenuity. But it is important to strategically partner with corporations so AI continues to develop into something that is mutually beneficial.

*If you are interested in learning more about AI developments and available AI technology at UCLA, please contact UCLA TDG at [info@tdg.ucla.edu](mailto:info@tdg.ucla.edu)*

## FEATURED UCLA AI TECHNOLOGIES

### [AI-Powered System for Objective Surgical Skill Assessment in Open Procedures \(Case No. 2025-207\)](#)

**Inventors:** Peyman Benharash, Armin Alipour

AI-powered system that brings objective, data-driven evaluation to open surgical training — a domain long limited by subjective observation and inconsistent assessment standards. This novel two-phase deep learning architecture analyzes both fine-grained technical movements and overall procedural flow, mimicking how expert surgeons evaluate performance while overcoming the challenges of variable perspectives inherent to open surgery.

### [Methods and Systems for Low-Cost Medical Image Annotation Using Non-experts \(Case No. 2025-108\)](#)

**Inventors:** Xiang 'Anthony' Chen, Youngseung Jeon, Christopher Hwang  
DANNY (Data ANnotation for Non-Experts made easY) is an AI-driven interface that empowers individuals without medical training to accurately identify arthritis in imaging studies such as X-rays, MRI, CT, and ultrasound.

### [Prototype Software for Neuron-Centric Memory Architecture in AI \(Case Nos. 2025-327 and 2025-328\)](#)

**Inventors:** Alain Glanzman, David Glanzman

The first prototype of a neuron-centric AI architecture that introduces true intracellular memory to artificial neural networks, marking a significant departure from traditional synapse-based learning systems. Built on emerging biological evidence that long-term memory resides within the neuron's nucleus, the new Neural Unit with Retentive Self-Adaptive Architecture (NURESA) enables each artificial neuron to store, contextualize, and adapt information locally—eliminating reliance on backpropagation and reducing catastrophic forgetting.

### [Interactive Systems and Methods for Identifying Target Proteins in Drug Discovery \(Case No. 2025-098\)](#)

**Inventors:** Xiang 'Anthony' Chen, Youngseung Jeon, Christopher Hwang, Ziwen Li, Jesus Campagna, Varghese John, Whitaker Cohn, Eunice Jun

UCLA researchers have developed HAPPIER (Human-AI Protein-Protein Interaction Discovery), an innovative computational platform that streamlines target protein identification for drug discovery. By unifying semantic similarity modeling, retrieval-augmented generation, and docking simulations into a single interactive system, HAPPIER eliminates the fragmentation and manual data integration required by current methods.

### [Monitoring Structural Health Using Diffractive Optical Processors \(Case No. 2025-201\)](#)

**Inventors:** Aydogan Ozcan, Ertugrul Taciroglu, Yuntian Wang, Yuhang Li  
A highly accurate, low-cost structural health monitoring system that leverages diffractive optical processors to address growing safety concerns across aging and disaster-prone infrastructure. By integrating specially engineered diffractive optical layers with embedded damage-detection algorithms, the system performs sophisticated statistical inference directly from light propagation patterns, reducing reliance on expensive sensors and complex data acquisition hardware.

# WE USED AI TO BUILD THIS APPENDIX

**PROMPT:** Provide a simple chart that categorizes AI by its capability, function, learning, technology and application.

**ANSWER:** Below are the results of the prompt generated by ChatGPT

## 1. By Capability (How advanced the intelligence is)

Category	Description	Examples
ANI (Artificial Narrow Intelligence)	Specialized in a single task; cannot generalize.	ChatGPT, image classifiers, recommender systems
AGI (Artificial General Intelligence)	Human-level reasoning across diverse tasks; hypothetical.	Not yet achieved
ASI (Artificial Superintelligence)	Surpasses human intelligence in all domains; theoretical.	Not yet achieved

## 2. By Functionality (How AI learns/behave in the environment)

Category	Description	Examples
Reactive Machines	No memory, reacts only to current input.	IBM Deep Blue, simple neural nets
Limited Memory	Learns from historical data.	Modern machine-learning models, self-driving cars
Theory of Mind	Understands emotions, beliefs; still conceptual.	Early research prototypes
Self-Aware AI	Has consciousness or self-awareness; theoretical.	None

## 3. By Learning Paradigm (How the AI learns)

Category	Description	Examples
Supervised Learning	Trained on labeled data.	Image recognition, spam filters
Unsupervised Learning	Discovers patterns in unlabeled data.	Clustering, dimensionality reduction
Semi-Supervised Learning	Mix of labeled and unlabeled data.	Speech recognition models
Reinforcement Learning	Learns via rewards and penalties.	AlphaGo, robotics navigation
Self-Supervised Learning	Learns structure from unlabeled data by predicting parts of input.	Modern LLMs, vision transformers
Transfer Learning	Adapts knowledge from one domain to another.	Fine-tuned models

## 4. By Technology/Architecture

Category	Description	Examples
Symbolic AI (GOFAI)	Rule-based logic, expert systems.	Early medical expert systems
Machine Learning	Algorithms that learn from data.	Decision trees, SVMs
Deep Learning	Neural networks with many layers.	Transformers, ResNets
Neuro-Symbolic AI	Hybrid of rules and neural networks.	Reasoning-enhanced LLMs
Evolutionary Algorithms	Optimization via simulated evolution.	Genetic algorithms
Generative AI	Produces text, images, audio, code.	ChatGPT, DALL·E, diffusion models

## 5. By Application Domain

Category	Description	Examples
NLP (Natural Language Processing)	Understanding and generating language.	Chatbots, translation
Robotics AI	Controls physical machines.	Factory robots, drones
Expert Systems	Encoded domain knowledge.	Diagnostic systems
Planning & Optimization	Decision-making, scheduling.	Route optimization, logistics
Recommender Systems	Personalized suggestions.	Netflix, Amazon recommendations