

These questions were submitted on 8/29/2023 as part of the Landscape Architecture Foundation's webinar "AI + LA: Artificial Intelligence and the Future of Landscape Architecture." The webinar recording and more content can be accessed here: https://www.lafoundation.org/resources/2023/07/artificial-intelligence			
Question	Asker Name	Answer	Answerer Name
Could the panelists name the program they are using in their responses to this question?	Alyson Taylor	I've been primarily using: Chat gpt, claude, and experimenting with various others. Though I would recommend paying for the paid versions. They are typically much more powerful. ie gpt-3.5 is free and you have to pay for gpt-4 (\$20/month)	Jeff Cutler
I feel like it would be helpful to share a list with the names of software / applications that are helpful and relevant to landscape architecture. Not sure what's out there!	Anonymous Attendee	I've been primarily using: Chat gpt, claude, and experimenting with various others. Though I would recommend paying for the paid versions. They are typically much more powerful. ie gpt-3.5 is free and you have to pay for gpt-4	Jeff Cutler
Can you give a demonstration or specific examples of how you use AI in your daily practice?	Anonymous Attendee	https://youtu.be/djsgA8eMUq0?si=UCWcTjjXQto_NNsP I made a short video the other day about how to create custom hatch using midjourney. I plan to make more short videos in the future.	Zihao Zhang
Where do you see AI in not only landscape architecture but in the landscape industry as a whole in the next 5 or even 10 years?	Joey Davis	I have addressed this question in this article: https://medium.com/urban-ai/can-ai-mark-the-next-architectural-revolution-c738339a5f4	Karla Sandaña Ochoa
What are your thoughts on AI's potential to delute site and situational specific design due to the fact that alot of these algorithms are pulling from existing imagery and text? Could it cause a race to the bottom?	Anonymous Attendee	Answered live	
This is a question for the panelists: When architectural professions moved from hand drawn plans and drafting skills to CAD, we saw a noticeable loss in hand drawing skills and with that ways of thinking and exploring design and space. With the advent of AI, the implications of skills lost and an intimate understanding of land, soils, plants, etc is massive - relying more and more on the AI to do the thinking and relational intimacy around the design of landscapes. Can the panelists please comment on this possibility?	Christopher Szymberski	Answered live	
If stable diffusion, mid-journey, chatGPT are all based on mining existing information, are we losing design diversity by simply regurgitating hybrid precedents?	Joey Hays	Depends on if we can develop ways to use them differently beyond visual tactics. I tried using them as worldbuilding tools for K-12 students. They create graphic novels to tell stories about the site. But I do share the same concern here, especially when we start to think about climate change. midjourney and other tools are perpetuating some stereotypical understanding of nature and landscape as a static thing out there, a view that landscape architects try to break away from.	Zihao Zhang
in order for AI to successfully generate content, it's using work created by others, oftentimes without their consent or compensating them. how are we protecting those creators from having their works stolen for use in AI?	Anonymous Attendee	Copyright office has some interesting public hearings about AI generated work https://www.copyright.gov/ai/ this may give you some insights in thinking about this.	Zihao Zhang
Do you see a future where firm have their own internal AI programs isolated from the web for propriatory reasons?	Anonymous Attendee	That is something I think will happen. A firm can take a stable diffusion off line and train it to suit their needs easily. There are already paid online courses on AI Architecture design workflow, so one can easily learn to do it.. -Zihao	Zihao Zhang
We know that data sets are only as reliable as the data itself. Currently, the internet contains a mixture of peer-reviewed, high-confidence information and other content which is amateurish, unfounded personal opinions or even deliberately misleading ideas. What are your thoughts on ensuring that AI is most reliable and based on updated science?	Marcha Johnson	The only way to do this will be by compiling a curated data set and training an AI algorithm with these curated data. See an example of this here: https://www.intechopen.com/chapters/84337	Karla Sandaña Ochoa
Is there an AI application that any of the panelists have used for less exciting LA tasks such as Specification writing, Construction observation reports, construction submittal Review, ETC?	Anonymous Attendee	I have played around with ChatGPT (GPT-4) for spec writing (theoretical) and rote reports. It does surprisingly well (though you have to be vigilant about hallucination) and I think with some training on your firm's internal data/standards you could probably make some big time savings. I will be very curious to see how/if people use them for specs.	Phil Fernberg

how can creativity and uniqueness stay viable in the landscape architecture field (or any other relevant field) when AI actually uses existing/available content?	Nathalie Estephan	We can use AI to point toward a direction, but you choose where to go. It can help you identify already explored fields so you don't repeat existing projects and challenge you to go in new and exciting directions.	Karla Sandaña Ochoa
Best platforms to use in the design world	Adrian Carter	Here are a few: https://www.linkedin.com/posts/jeffcutler_welcome-to-any-new-followers-that-found-me-activity-7102330124133429248-xKS3?utm_source=share&utm_medium=member_desktop https://layerapp.notion.site/layerapp/425539b6f36540c39eb58bd58383c12f?v=8a005e3bfa39419a8e60fcd9a35960bb	Phil Fernberg
Ethics is a big deal. It is not apparent now but in the next year or two the ability to design with AI will become available. What does that mean for designers? IP, design ideas? Behind the notion that it will be helpful and democratize design (that is a given), how does that impact design in general?	Daniel Tal	This is related with authorship, there must be a regulation that will showcase all the involved in the production of an AI aided outcome	Karla Sandaña Ochoa
Do you have any thoughts on how to emphasize the benefits of the different knowledges and abilities of AI and human designers to avoid the potential replacement of one with the other in an attempt to minimize cost/increase efficiency?	Anonymous Attendee	I see this as the difference between knowledge and creativity. And as discovery and creation. Human intelligence is about creativity and invention.	Karla Sandaña Ochoa
1. Where does the power/intelligence lie in using AI as part of the design process and professional work?	Erbil Bucaliu	see answer above	Karla Sandaña Ochoa
Beyond imagery and text, are there AI platforms that can assist with PS&E - like grading, construction details, horizontal control plans?	Anonymous Attendee	I know there are some in the works but none that are fully to market...yet.	Phil Fernberg
As we work with AI, it is also learning about how we as individuals design. Do you see a time where AI generated landscape design will supplant landscape architects within the workforce?	Anonymous Attendee	I see offices that use AI will start replacing offices that don't.	Karla Sandaña Ochoa
I'm seeing non LA firms, like UX design firms, using AI to do traditional LA projects like a parks framework plan. Do AI tools today or in the future allow nonprofessionals to be landscape architects and planners? Do we care? What does this mean for licensure and professional accreditation?	Anonymous Attendee	A fabulous question, and one that has really driven me in my own AI exploration. I don't know that we as a profession have come up with a good answer for this yet, and if we don't soon I think some will try to come up with the answer for us. In the short term I think licensure is certainly safe, but long term as AI systems improve we will have to have some conversations about how to define exactly what our unique skill set is as LAs so that we can properly accredit it.	Phil Fernberg
Are there current tools firms can use to feed an AI internal firm data sets or examples of drawings/plans?	Hany Hanafy	Yes there are quite a few SAAS companies popping up for precisely this purpose. I even saw a recent release from OpenAI expressing intent to provide secure ways of doing this with their applications. I have yet to see one wholly focused on landscape/AEC that is to market, but I am positive there will be one in the next few years. The main hurdle will be for firms to clearly define what they want to do with these data sets, a task easier said than done.	Phil Fernberg
What about ownership of proprietary concepts/ideas? Who "owns" the output?	David Whittaker	I think it should be a shared authorship among all involved in the content creation	
How can smaller firms be utilizing AI in order to increase output / productivity to be more competitive with larger firms?	Anonymous Attendee	we are a smaller firm (11 people). I think that being a smaller firm is potentially an advantage. Most of the larger organizations are slow to adapt new technologies, apart from maybe a research lab internally. Small firms are more nimble and AI can amplify the skills of the staff in the firm to compete on a higher level.	Jeff Cutler
Do you lose rights to your personal work or intellectual property once you upload a sketch or other content into AI softwares? How do we keep our work protected while integrating AI into the workplace?	Taft Marsh	Every data point has metadata, which describes where it comes from and the author; this needs to be enforced by regulations that make sure your work is referenced accordingly.	Karla Sandaña Ochoa

Have you thought about the negative effect of AI - ie. invitation of malicious data mining tech to infiltrate your company's systems?	H.T. Lam	Yes, absolutely. Regardless of whether it is AI-driven, AEC needs better, more comprehensive cybersecurity protocols. One report from a cloud security provider states AEC firms are 30% more likely to be victims of cyber-attacks and be repeat victims. That should give us pause	Phil Fernberg
can you talk about the sources for image generators or LMIs? & the big one : what about copy-right ? & the bigger one : what about implicit biases?	Veronika Schunk	There is not complete certainty of sourcing except from a few (Adobe uses only stock imagery for example), but they all claim to be using images that are "openly accessible" around cyberspace. Some artists dispute that claim. There was an interesting hearing on this recently in the US	Phil Fernberg
Many of these AI methods/tools are utilized for qualitative/imagery outcomes. What do you see as the potential of using it to generate iterations of quantified information to evaluate and measure design strategies in alignment with climate action and landscape performance initiatives? Essentially merging the qualitative spatial elements with the quantitative metrics of design.	Phillip Zawarus	I see huge potential in this area, Phil! For example, if one could get pathfinder, carbon conscience, and a generative app that is somehow able to spatialize to talk to each other, you would have a more efficient, data-rich, environmentally conscious, and interesting design workflow	Phil Fernberg
For Zihao and Karla, but also for all: what is the line between plagiarism and independent ownership / output / visibility of a student's creative voice for the use of AI in design education? How do we define this / develop guidelines for use of AI without losing the development of critical and creative thinking?	Catherine De Almeida	Copyright office has some interesting public hearings about AI generated work https://www.copyright.gov/ai/ this may give you some insights in thinking about this. We are here at CCNY are also trying to figure out if a guideline or policy is needed regarding generative AI.	Zihao Zhang
How can AI be used as a design tool related to designing low carbon landscapes? And/or measuring carbon impacts?	Alyson Taylor	In the short term, I could see ML models being applied to optimize forthcoming carbon impact tools and eventually via unsupervised learning start to teach us new things about what it means to design with low carbon impact.	
how is AI going to "teach" the new generation of designers when they're just typing prompts into a program? what design are they actually learning?	Anonymous Attendee	I think that is where educators come in! We need to find better ways of partnering with AI in the critical thinking process rather than rely on it. An example of this is Khan Academy's new venture Khanmigo . There could be a whole new more effective way to do design crits and help students deconstruct the design process	
Should landscape architect firms allow or restrict the use of their work in seeding AI knowledge? Similar to how some artists and writers are questioning whether they want their intellectual property to be part of the AI web or not.	Dylan Anslow	It's difficult to know the answer to this. I would assume that anything that is publicly available on the internet has likely been used to train AI models. I do think that the technology will evolve to the point where organizations and/or individuals will have their own private models. These may be built on top of large models, but not used to train the large model. There are also open source models emerging that you can host on your own servers. These don't even need to be connected to the internet.	Jeff Cutler
there's been talk about AI early on in a project timeline. how do you see it being implemented during CD or CA phases?	Nick Wittkofski	A lot of the hype in our current AI atmosphere has centered around generative tools. Those certainly could have effect on CD in things like spec writing or reports. But I think the more powerful development for CA will be spatial computing. I see a not so distant future where LAs can walk the site with a real-time spatialized site analyzer embedded in a mobile device or headset and essentially do punch walks or make other change order adjustments on the spot	
Will these tools create more data gatekeeping as people try and monetize the source images, etc. that they need?	Aaron Odland	They could. They could also democratize if those creating the source data will be more open in their sharing. In the case of landscape architecture, we have some soul searching to do in this regard.	
Aren't there problems with misinformation? A judge cited an example of case law that was pure fiction, generated by AI.	Terry Ryan	Oh yes, absolutely. This is why I think information and media literacy is all the more relevant, along with the responsibility to come up with constitutional frameworks for combatting misinformation	
Our work as landscape architects, in the end, is typically intended to be constructed.... AND, as a licensed profession responsible for the HSW of the public, can/will AI detect critical HSW flaws in design solutions, and/or generate solutions free of HSW flaws? Would you trust it to?	William Winslow	This may be a little controversial of an answer, I think I would but only after I can trust the HSW framework. In the US, HSW has a very specific and very narrow definition that I think needs revisiting in order to better capture what is truly important about our charge. Once we can figure that out, and find a way to embed that solution into computation, I will absolutely trust it, granted we will always need QC just as humans do.	
how can we include this in our local schools so high schools can implement?	Margarita Padilla	I tried an AI Imaging for Climate Action workshop with K-12 students. Worldbuilding workshop.	Zihao Zhang
Do you think eventually the larger firms will have their own internal, proprietary AI?	Kari Spiegelhalter	I think all firms and people will ultimately have their own ai assistants.	Jeff Cutler
Do you think eventually the larger firms will have their own internal, proprietary AI?	Kari Spiegelhalter	This is a trend based on my observation. There are already paid-online courses on AI architectural workflow.	Zihao Zhang

What AI programs do mainly use in your practice? How do you safeguard against copyrights and avoid potential lawsuits? How can we mitigate risks of cybersecurity in using AI programs?	Anonymous Attendee	https://www.copyright.gov/ai/ copyright office has some interesting information and public hearing.	Zihao Zhang
What are the legal, copyright and also social implications for using the ChatGBT for technical reports.	Tenille Thompson	For technical reports I don't know if I see many copyright issues. For legal and liability issues, there could certainly be things that come up, it seems that it will largely depend on the agency or organization for which you are doing the report, as they are all trying to come up with policy regarding LLMs. In the social realm, I think the biggest thing we will probably see is renegotiating what "labor" on these kinds of tasks comprises.	Phil Fernberg
What are some of the AI programs for the rendering process can you guys give us a example of a project using AI?	Paul Kissinger	There are many! Midjourney, Dall-E/Bing Image Creator, Stable Diffusion, Adobe Firefly, Ideogram, NVIDIA Canvas just to name a few	
How can AI tools be used currently as an alternative to attending sites in person (i.e. where distance/access are issues)?	Claudia Harari	Please see: https://www.ai-share-lab.com	Karla Sandaña Ochoa
How can AI tools be used currently as an alternative to attending sites in person (i.e. where distance/access are issues)?	Jamie Bronsema	I presented some examples here: https://medium.com/urban-ai/can-ai-mark-the-next-architectural-revolution-c738339a5f4	
Are there biases or have you encountered biases involved in using AI in our profession? For example, when the biases of the people who wrote the programs influences how the technology "understands" the world? Ex. racism, sexism, ageism in image generation .	Alison Grover	Biases are not always negative. In design practices, we are all biased toward our design instincts and preferences, which I consider positive biases.	Karla Sandaña Ochoa
Do you agree that designers should be fully transparent when they are using AI with their clients, colleagues, and public? AI can be misleading and used maliciously to portray fake portfolios or unrealistic expectations for a designer real work.	Anonymous Attendee	Yes. And it is a co-evolving situation too. Today when you look at the AI art generated 1 year ago that won an art award, you can tell clearly it is an AI generated art. The point here is that we also evolving with AI systems, and the client will know	
Just prompting thought- where do the "humanites" fit in al lthis? As the base level this is comp sci base and stem based...	Marc Miller	Great question Marc! I personally think the humanities actually have the potential to come out on top in the AI revolution because they have always been interested in the questions that transcend any technology. I am also of the camp that a good bit of the stuff under the "STEM" umbrella is actually just as humanist as empirical or "hard science". Pure math is the originator for a lot of the thinking that later drove AI algorithms, for example, and still inspires applied STEM researchers. Also, any tech explosion needs humanists to bring perspective and temper our hubris.	Phil Fernberg
		Its possible that AI represents a shift away from computer science and place more emphasis on the humanities. The methods of interacting with these tools is shifting away from coding to natural language. The humanities play a crucial role in prompting and image creation by providing essential context, critical thinking, and ethical considerations. While AI can generate and manipulate images, the humanities provide the necessary human perspective, interpretation, and understanding.	Jeff Cutler