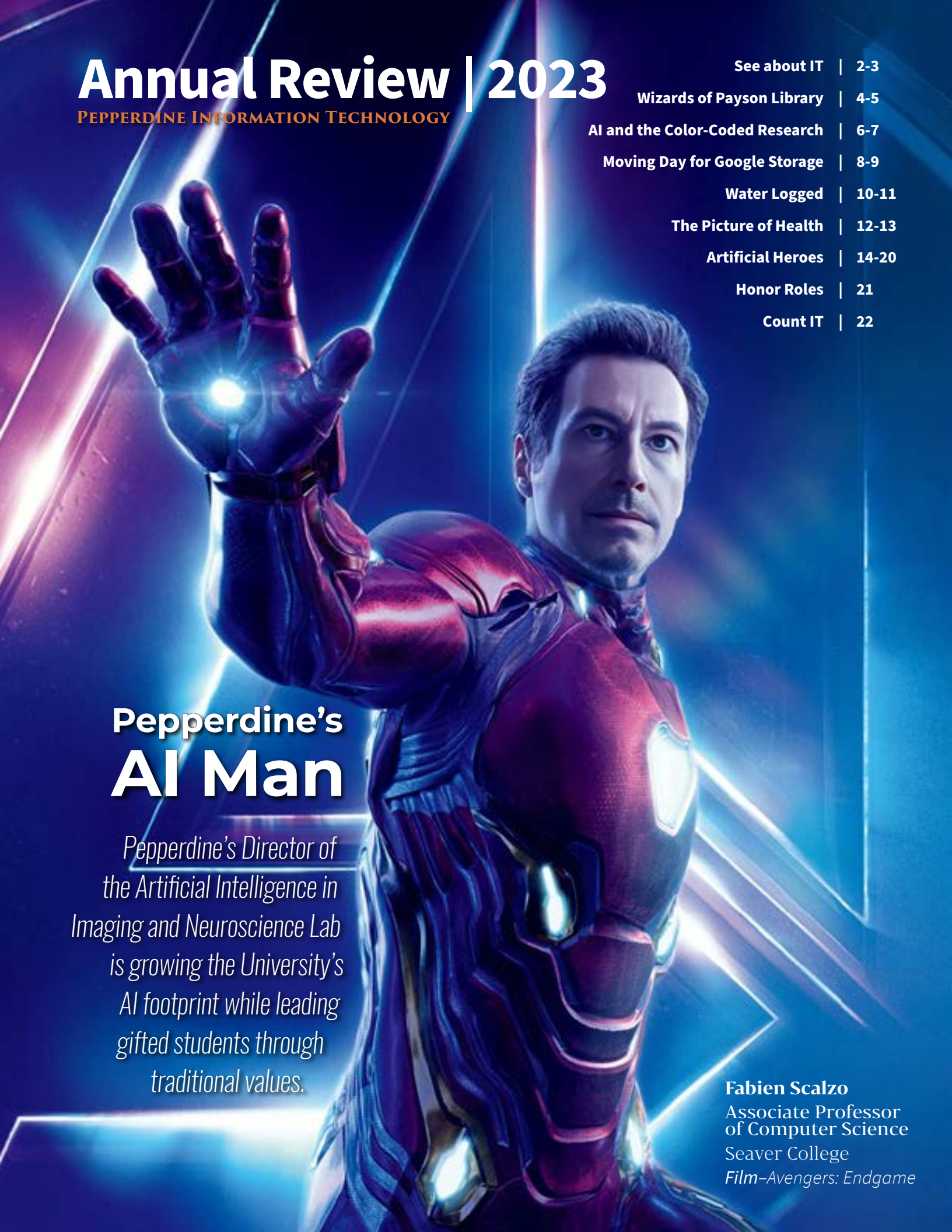
Annual Review | 2023

PEPPERDINE INFORMATION TECHNOLOGY



Pepperdine's AI Man

Pepperdine's Director of the Artificial Intelligence in Imaging and Neuroscience Lab is growing the University's AI footprint while leading gifted students through traditional values.

Fabien Scalzo
Associate Professor of Computer Science
Seaver College
***Film**–Avengers: Endgame*

See about IT

Navigating the AI Space

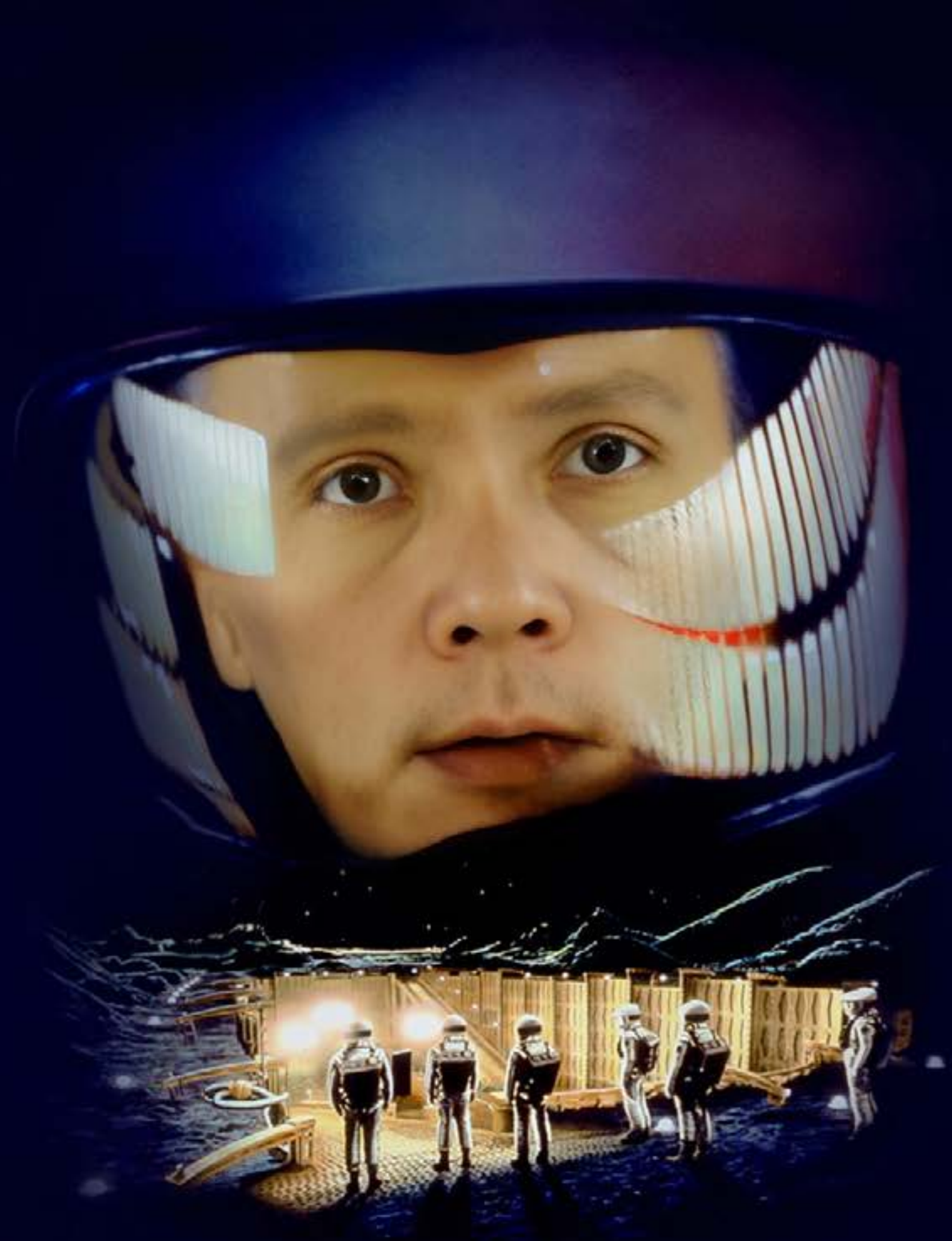
Welcome to the 2023 IT Annual Review (ITAR). Because this is the time of literacy in artificial intelligence (AI), the IT department is exploring innovative approaches to fulfill the University mission. That's why this year's Annual Review is focused on AI at Pepperdine. As you have likely noticed, we've chosen to look at AI through a cinematic lens, giving it some creative context from our Southern California roots and Hollywood's ubiquitous influence. This year's Annual Review is also an exercise in implementing artificial intelligence as a precise tool to demonstrate that it can contribute to a project without commandeering it. We've cited the films that inspired AI-generated or -assisted images in select layouts. And all the text and design–along with the photos of our two featured Pepperdine students–were created by IT Communications.

AI has already amazed us with its creative power and reach, and we have Pepperdine faculty, staff, and students who are using it for a range of achievements that extend well beyond the extraordinary eye candy we see online and in social media. The concept of working smarter, not harder, has never held more potential, as AI is on the threshold of expanding our capabilities from student coursework, to administrative functions, to faculty instruction, and so far beyond. We have faculty working to help students harness AI's power, and students using that power to create life-changing innovations reaching from the loftiest heights of medicine to the depths of the Pacific Ocean. And it's all happening at Pepperdine.

The IT department is reviewing the robust features of various AI applications such as Google Duet, Zoom, and others to ensure that the Pepperdine community remains safe and secure. Generative AI applications such as ChatGPT have the power to help create reports, papers, briefs, announcements, and just about any document, image, or video you can conjure. But we must also take each step into our partnership with artificial intelligence with the understanding that we are ultimately responsible for what it delivers. The prevailing advice from leaders at all levels at Pepperdine is a cautionary, "Use AI, but don't trust AI."

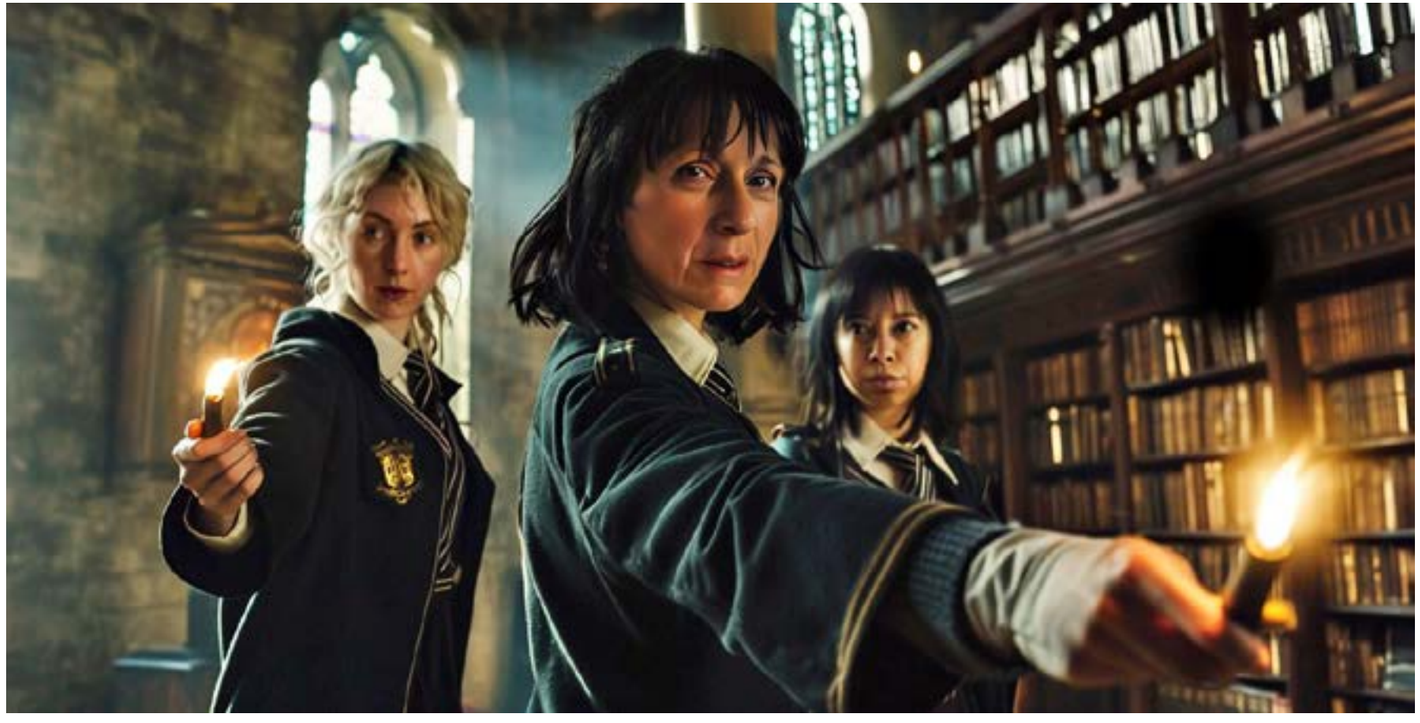
What does that mean? It means we will work forward using AI to enhance the learning process while steadfastly adhering to our principles and ethics. We will work to maximize AI's potential for education, productivity, and efficiency, while ensuring that the human element continues to guide these processes for the strategic advancement of the University.

Jonathan See
Chief Information Officer
***Film**–2001: A Space Odyssey*



The Wizards of Payson Library

With Google's end to free digital storage for educational institutions looming in 2024, the IT department formed a strategic partnership with Pepperdine Libraries to create a little magic in finding the best options for future storage solutions



Bailey Berry
Librarian for Digital Publishing, Curation, and Conversion

Rita Schnepp
Senior Director Project Management

Brenda Peña
Senior Manager of Special Projects and Executive Assistant to the CIO

Film–Harry Potter and the Half-Blood Prince

Google's announcement that the technology giant was changing its Google Workspace for Education product to eliminate free digital storage for educational institutions created aftershocks that reached around the world. Although the change affected every institution differently depending on their contracts, the bottom line was that faculty, staff, and students who had relied heavily on Google's promise of free, unlimited digital storage had some decisions to make about their digital files. But the effects of Google's announcement on digital storage ran even deeper.

"Pepperdine's Chief Information Officer Jonathan See approached Senior Manager of Special Projects Brenda Peña and me about how the Google change would affect the University libraries," said Senior Director, IT Project Management Office, Rita Schnepp. "And the library staff really preferred to have that data in a more functional place to better serve our library community."

"When Brenda and Rita reached out to me," said Librarian for Digital Publishing, Curation, and Conversion, Bailey Berry, "I was really excited to talk about what storage looks like now and some potential solutions. I needed to help them understand exactly what our issue is, and how it goes beyond finding digital storage to finding solutions that cover all our issues."

"There are a lot of systems involved," said Peña. "The first part of the project was Rita and I trying to really learn exactly what she does, how she does it, and in forecasting for the future to get an idea of everything that was critical for this project."

As the project launched, the team immediately recognized that each member brought something special to the group. From the IT side, Schnepp and Peña learned that there's more to library storage and curation than they had realized.

"As we listened to each other, we kind of found that the best way to approach this was just to find the intersection of the library needs with IT requirements," said Schnepp. "So, we simplified our scope. Brenda and I were getting together and thinking 'This is really hard. Bailey's using language that we've never heard of, and what she does is very expansive.'"

The team decided to meet with counterparts at other universities to consider their challenges, processes, and solutions, and quickly found common ground.

"We saw that this is the way that museums and libraries do business," Schnepp noted. "So, let's not kill ourselves. Let's find that point of intersection. And Bailey got that, and Brenda and I got that, and that's when we started to pick up traction, get a better direction, and we got progressive clarity after that."

Of special interest, none of the other universities were using Google the way Pepperdine was.

"I think it helped to hear what systems they have and what they use those systems for," said Berry. "Preservica ended up being a system that we learned a lot about together: some of the features that are really useful in preserving files, allowing better control for different users in the university to use files in different ways and external users as well.

"There are different levels of complexity," Berry continued. "We talked to librarians at similarly-sized universities who were the only ones managing these files, just like me. They had one system they needed to do all the same things. And then we talked to Yale where they have endless funding and plenty of staff along with a preservation system and a digital asset management system.

"Universities sometimes put together a digital asset management needs assessment," Berry added, "which outlines who we are as an institution, how we look, what our workflows are, and what we need a system to do. So, I sent this to Rita and Brenda, and we simplified it into a basic diagram that was easy for everyone in IT to understand. It was a learning opportunity for me to think about how to communicate in a way that was simple and easy to understand. That was at the center of our work, and we built everything around that diagram."

"The diagram was funny because when I asked for it, Bailey looked at us like, 'Really?'" said Schnepp. "But that's an IT thing, because that's what helps busy people get clarity really fast. It's visual, and it really helped us a lot. I said, 'Bailey, I don't care if you draw it on a napkin or draw it by hand; take a picture of it, and send it to me.' And it worked.

"I think what was more important than the diagram," Schnepp continued, "was staying focused on the Google issue and the immediate needs of the library. We're so very thankful that we had Bailey's assistance and patience all along the way."

Next, the team conducted peer reviews, reaching out to colleagues at Loyola Marymount, UC Davis, and the University of Mary Washington to learn what tools they were using. Then they came back to the IT department to ensure they had a solution that aligned with Server Engineering and the Information Security Office. After narrowing their choices down to two services, the team agreed on a cloud vendor that serves universities, museums, and the Library of Congress.

"It was a combination of Bailey's persistence and knowledge of what she needed, and IT really leaning in and saying, what is best for the University and how can we make this work?" Schnepp noted. "And we'll be able to implement the solution by working together after Pepperdine Libraries makes the final selection."

"Regardless of where this project goes, building those relationships with IT is really helpful," said Berry. "I know some of the staff, their priorities, and what they'll look for if I'm ever investigating a new tool. And I have people who I can reach out to in IT that I have these relationships with."

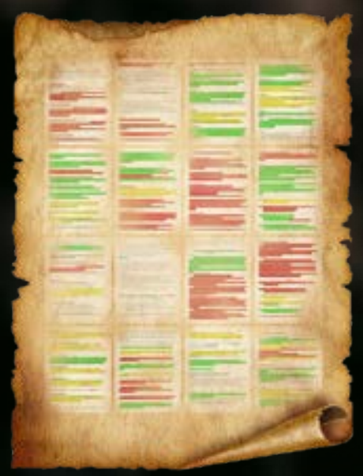
"I think that is called a strategic partnership," Peña noted with a smile.

AI and the Color-Coded Research

Artificial intelligence could be the Holy Grail in teaching and learning, but users must know how to distinguish trash from treasure and always choose their resources wisely

Every adventure in life, as in higher education, is only as good as its heroine. Fortunately, this story features a Pepperdine University professor who is also a circus performer and a professional stunt woman in Hollywood. Need bigger? She's also wrestling with one of the biggest issues in higher education: advocating for the use of artificial intelligence (AI) in the classroom, as she prepares to release her initial findings from a recent study on AI accuracy in research.

"It started with, 'How do I work in AI?' when (Seaver College) told us that we all had to have a statement in our syllabus," said Visiting Assistant Professor of Psychology, Social Science Division, Jessica Cail. "And I wondered if I should come down as a complete Luddite and say, 'You may not use AI for anything!' But, that sounded like somebody who would try to teach building but only allow their students to use Colonial tools," Cail noted.



Above, *A sample of the color-coded literature reviews from Cail's classes.*

Knowing that she did want her students to use AI while also learning its limitations, Cail put her students to work. She created an AI literature review assignment for students in her PSYC 310 (Research Methods) and PSYC 210 (Intro to Psychology) classes, so that they could do the work necessary to help them evaluate the quality of work that AI was providing. The assignment required students to ask one of three generative AI programs–ChatGPT, Google Bard, or Microsoft Bing–to write a three-page, APA-style literature review on the students' chosen research topics, including cited references. They were allowed to tweak their prompts until they felt they had the best version of a literature review for their respective topics.

Next, they had to check the content and sources:

- **Text concepts**: Are definitions of key ideas right? Did it explain the theories correctly?
- **Sources**: They had to verify that the cited sources in each paper's text and references actually existed, that each abstract matched AI's citation, and that the findings were accurate.

As they checked this information, they were tasked with highlighting it as follows:

- **GREEN**: This information is accurate, the source exists, and its findings match what AI says. I will incorporate this info in my draft.
- **YELLOW**: This information is accurate, the source exists, and its findings match what the AI says, but it is not relevant enough to my paper to include in my draft.
- **RED**: This information is inaccurate or this source doesn't exist.

Cail released the preliminary data in December 2023 with some interesting results.

Overall, students highlighted 48% of their content in green and 33% in red. Lower-division students highlighted 60% in green and 22% in red, while upper-division students highlighted 22% in green and 57% in red. These findings may suggest that students with more training are more discerning about the data. It may also suggest that the upper-division students took the assignment more seriously.

Lower-division students expected more inaccuracies and were more surprised by the (perceived) lack of inaccuracies, while more advanced students essentially expected the exact amount of inaccuracy that they felt they found.

"I'm getting emails from the Philippines with people saying they're going to use this in an engineering program they teach."

"I just decided they're using it, and the whole point of my courses is to teach critical thinking," said Cail. "It's really independent of whatever source is out there. I teach them to be critical and to determine whether that source is accurate. AI is no different than anything else. It's no different from a website. We're just used to the idea that anything that comes out of a computer must be accurate.

"My students knew that certain facts were wrong," Cail noted. "Or they would find an inaccurate definition of a term: 'That sounds right-ish.' But you see the problem with people who use AI as a crutch to not know something. You have to know something about the field before you can recognize that it's got things wrong.

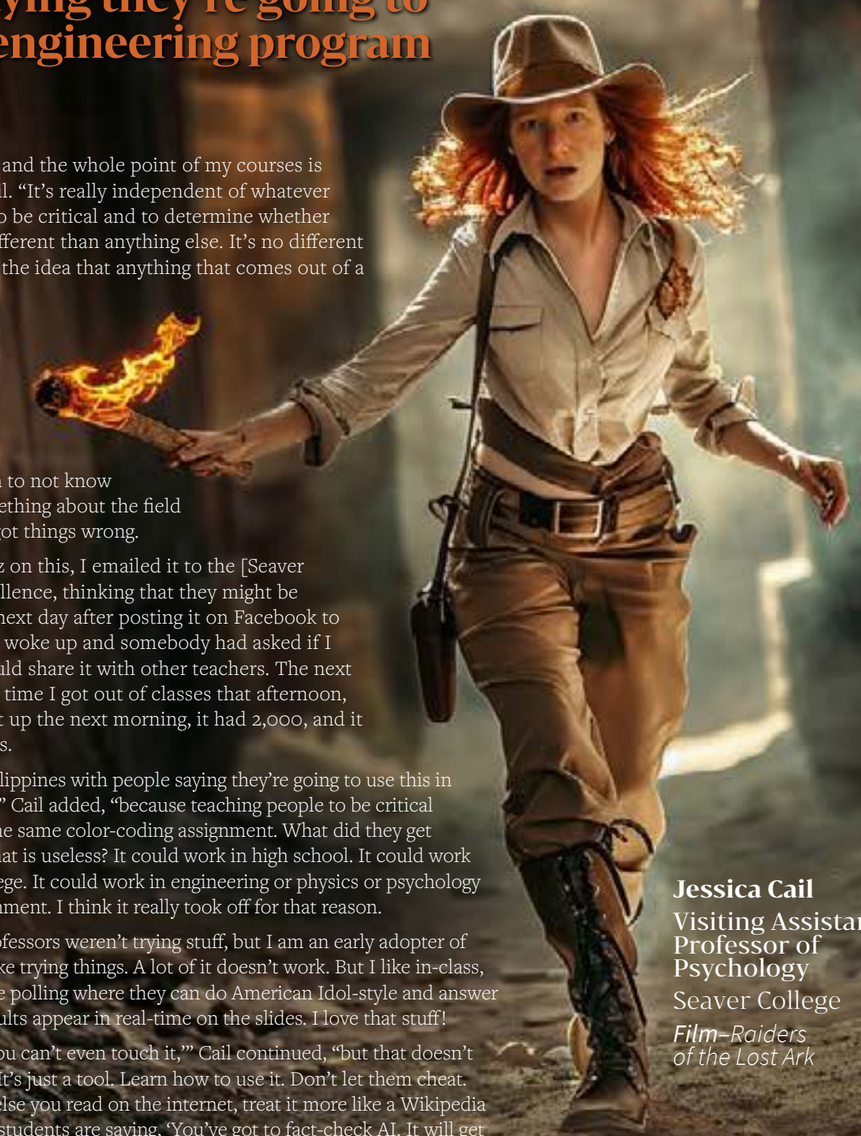
"Because there was such a buzz on this, I emailed it to the [Seaver College] Center for Teaching Excellence, thinking that they might be interested," Cail continued. "The next day after posting it on Facebook to some friends who were teachers, I woke up and somebody had asked if I could make this public so they could share it with other teachers. The next morning, it had 400 shares. By the time I got out of classes that afternoon, it had over 1,000. By the time I got up the next morning, it had 2,000, and it ended up with almost 4,000 shares.

"I'm getting emails from the Philippines with people saying they're going to use this in an engineering program they teach," Cail added, "because teaching people to be critical thinkers is field-independent. It's the same color-coding assignment. What did they get right? What did they get wrong? What is useless? It could work in high school. It could work in junior high. It could work in college. It could work in engineering or physics or psychology or anything. It's such a global assignment. I think it really took off for that reason.

"I was shocked that other professors weren't trying stuff, but I am an early adopter of technology," Cail said. "I like trying things. A lot of it doesn't work. But I like in-class, live clickers, and live phone polling where they can do American Idol-style and answer the questions, and I can see the results appear in real-time on the slides. I love that stuff!

"Now, I'm seeing a lot of, 'No, you can't even touch it,'" Cail continued, "but that doesn't seem really fair. AI is a technology. It's just a tool. Learn how to use it. Don't let them cheat. Use it, don't trust it. Like anything else you read on the internet, treat it more like a Wikipedia site than a journal article. Even my students are saying, 'You've got to fact-check AI. It will get some things right, but you've got to fact-check everything that comes out of AI!'"

Cail's response? In true performer fashion, "Good! Yes! Tell your friends!"



Jessica Cail
Visiting Assistant Professor of Psychology
Seaver College
Film–Raiders of the Lost Ark

Moving Day for your Google Storage

For Pepperdine's heaviest users of the University's digital storage through Google Workspace for Education, moving day on February 28, 2024 is almost here!

It's been a long road since Google subtly but swiftly ended free, unlimited storage for educational institutions via a blog post on February 17, 2021.

"Google has traditionally offered unlimited storage to qualifying schools and universities for free," the post on Google's Education page read. "However, as we've grown to serve more schools and universities each year, storage consumption has also rapidly accelerated. Storage is not being consumed equitably across–nor within–institutions, and school leaders often don't have the tools they need to manage this. To support schools into the future and ensure fair distribution of this valuable resource, we will be implementing a new pooled storage model and helping admins and school leaders manage their storage."

The tech giant went on to reveal the new limits and a deadline: 100 TB of pooled storage and July 2022, respectively.

With that announcement, Google changed the landscape of digital storage for education. Pepperdine IT knew right away that the University needed to act.

"We signed a special program agreement in 2021," said Pepperdine University's Director of Systems and Networking Dave Holden. "By signing this agreement, we were able to push the Google deadline from 2022 to July 2024.

"Google still provides some free storage," Holden continued. "Instead of unlimited, they now offer 100 TB of pooled storage for free. Everything beyond that, we pay for."

Because the University consumes more than this base amount, Pepperdine IT purchased additional storage licenses to boost the institution from 100 TB to 350 TB.

"Pooled storage means that Google gives an entire college or university a single sum of storage capacity, and if we collectively exceed the pooled limit, then everyone may suffer," said Senior Director of Client Services Alan Regan. "For example, if we exceed the institutional pooled limit, then no one can edit Google Docs until we delete content or buy more space to expand the pool. That's why IT invested in more storage already and why it's so critical to establish user account and Shared Drive limits."

"We now have to manage our storage resources, and we understand that this is a disruptive change," said Holden. "We've been rolling the new storage parameters out in a way that really tries to minimize the impact on the community."

Colleges and universities across the country and around the world have had to set storage limits, balancing student, faculty, and staff usage against Google's new storage structure. Pepperdine has done the same, opting for more generous limits than most other organizations.

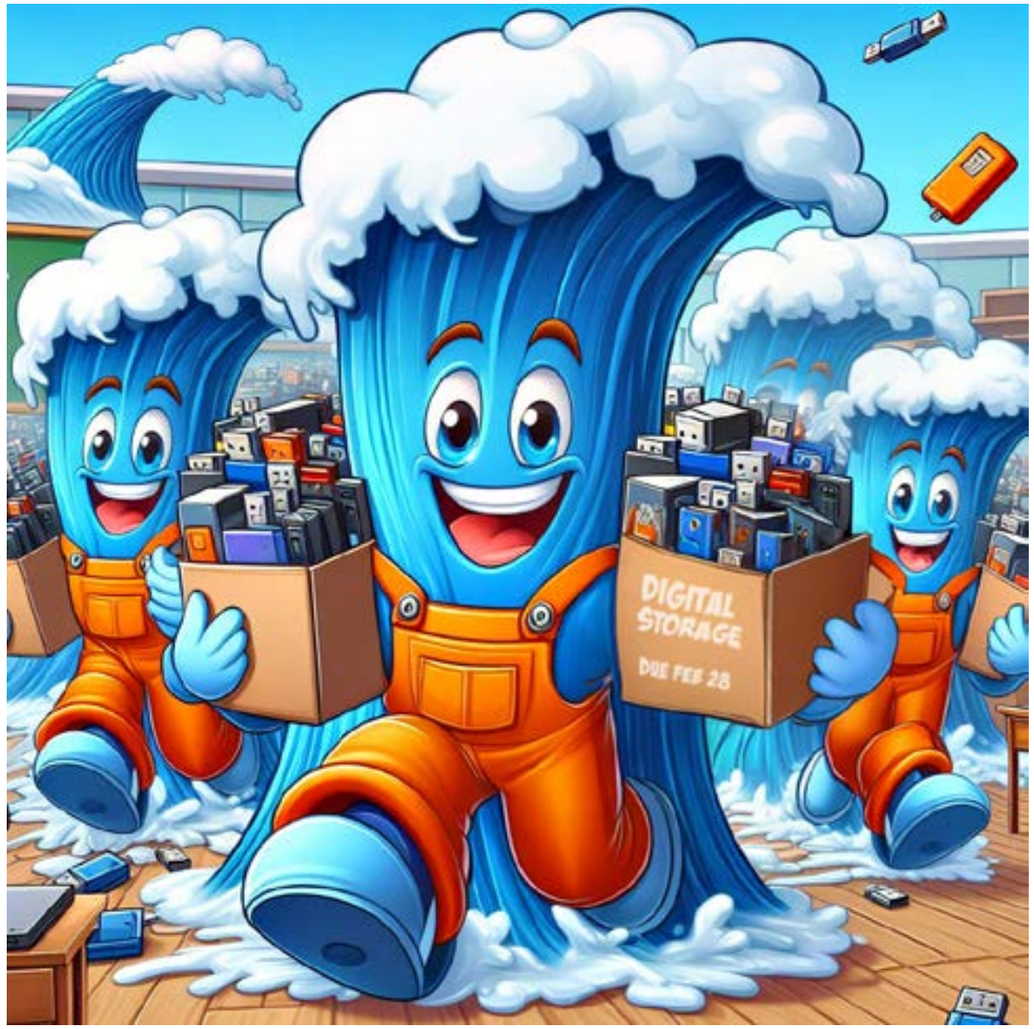
"We took a hard look at what we were currently using," said Holden. "After careful consideration and review, we set limits which were very high, providing ample storage for the majority of our community members."

Because Pepperdine set the new storage limits so high, only about 3-4 percent of all students, faculty, and staff exceeded them. Over the last six months, community members have been working to lower their storage usage.

"Pepperdine calls us all to be good stewards, and Google Storage has become a new aspect of stewardship," said Regan. "Before, when storage was unlimited and free, it felt like we had an attic with endless space, so we could just keep piling up the over-loaded folders and countless old photos. But we've hit our ceiling, so we need to clear out the clutter. Yes, it's a change, but it's a good practice to keep what's needed and discard the rest."

"If we don't manage our storage space, then annual charges will just keep going up and up and up," said Holden. "Sadly, there's no free lunch anymore."

"We enjoyed over a decade of free, unlimited storage with Google for Education," said Regan. "However, the entire industry has shifted to paid models, and cloud storage is a cost of modern-day business. The new storage limits–along with good digital housekeeping–will help us achieve our communication and collaboration goals while reducing University costs. Of course, if schools or departments need more space, they can always buy more space."



AI Waves!
The Google Storage Crew
Film–In the style of Disney Pixar

"We've been rolling the new storage parameters out in a way that really tries to minimize the impact on the community."

Dave Holden
Director of Systems and Networking Management
Information Technology

Water Logged

Pepp student uses AI to chart the surf

“Sauce packets. I taped fast-food sauce packets to the other stem of the frames for balance.”

Zak Mossing
Pepperdine Computer Science Student
Seaver College

There’s nothing quite like the allure of a great summer job. Almost everyone can look back fondly on their favorite summers and tie specific memories to mowing lawns, working a cash register, flipping burgers, or maybe something slightly more interesting. Chances are, Seaver student Zak Mossing’s got you beat.

“Zak is a natural,” said Keck Visiting Assistant Professor Jessie Cha, who worked with Mossing. “He’s a hobbyist surfer and he likes surfing with hydrofoil surfboards.”

Cha and Associate Professor of Computer Science and Director of the Artificial Intelligence in Imaging and Neuroscience Lab, Fabien Scalzo got together and came up with a dream job for Zak.

“We thought, he likes surfing, he’s a computer science major,” said Cha, “so, we tried to see if we could find a niche project within hydrofoil surfing, which could both utilize his expertise in surfing as well as his expertise in computer science and machine learning.”

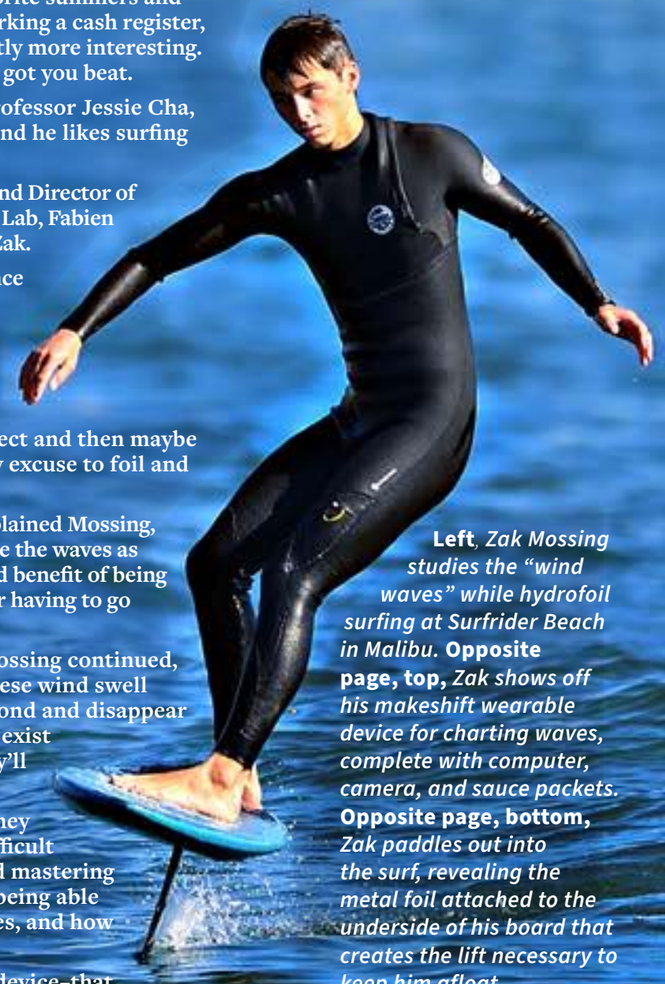
“The Keck Data Science Institute gives kids opportunities to pursue their own data science project and then maybe get it published,” said Mossing. “It gave me a cheeky excuse to foil and get paid over the summer.

“You start prone on your 4-foot foil board,” explained Mossing, who makes his own boards. “And you just ride the waves as you would a normal surfboard with the added benefit of being able to hop off and go catch another wave without ever having to go prone again. You just sort of glide into your next wave.

“Downwind foiling takes that to the extreme,” Mossing continued, “because when the wind is super strong, it makes these wind swell bumps that are very fickle. They will appear one second and disappear the next, because these aren’t breaking waves. They exist in really deep water, so they will break and then they’ll shoal and then pretty much disappear.”

Foil surfers ride unbroken wind swells as far as they can whichever way the wind’s blowing. The most difficult aspect of doing it–other than just being in shape and mastering the technique for pumping your legs and gliding–is being able to identify where you need to be relative to the waves, and how the quality of each wave evolves in real-time.

Mossing’s goal was to develop a tool–a wearable device–that would allow foil surfers to identify the quality of the waves as they were foiling. It would determine which direction foil surfers would need to take in order to catch the best waves and maintain lift and glide to keep moving.



***Left**, Zak Mossing studies the “wind waves” while hydrofoil surfing at Surfrider Beach in Malibu.* **Opposite page, top,** *Zak shows off his makeshift wearable device for charting waves, complete with computer, camera, and sauce packets.* **Opposite page, bottom,** *Zak paddles out into the surf, revealing the metal foil attached to the underside of his board that creates the lift necessary to keep him afloat.*

But for someone with no experience in data science, that was a pretty ambitious goal. So, he developed what he called “a pretty bare-bones basic classifier” for determining the quality of waves.

“I went foiling a bunch and I recorded videos,” Mossing said. “Next, I would chop my videos up, take each image of the wave, and then give it a quality rating on a scale from one to five. Then I just used artificial intelligence to train a convolutional neural network (CNN) of those labeled images to label them for me.

“I’m simply using AI to classify waves, so that the surfers who might use a tool like this don’t necessarily need to have that prerequisite knowledge,” said Mossing. “Someone who’s trying to get into downwind foiling could use a tool like this and not need as much experience in order to be better at it and flatten the learning curve.”

And that wearable device?

“You need a camera to process the visual data, and the computer to run the algorithm and do all those computations,” Mossing noted. “And then you would have a little heads-up display screen that you could put in front of your eye, and that would project whatever information you needed.

“The hardest part about making the first iteration of the device work was making it waterproof,” said Mossing. “We had the camera and the Raspberry Pi (computer), and we put them in a small juice container. I bought a cheap pair of sunglasses from a grocery store nearby, and we took out the lenses. We had the camera and the computer on one side of the glasses, but we needed a counterweight on the other.”

And Zak found one.

“Sauce packets,” Mossing laughed. “I taped fast-food sauce packets to the other stem of the frames for balance.”

That sauce was the final ingredient in a recipe for success, as Zak wrote a paper titled “Foil-Net: Deep Wave Classification for Hydrofoil Surfing.” His work in artificial intelligence was accepted at The International Symposium on Visual Computing in Lake Tahoe, Nevada in October 2023.

“For the most part, I worked with Professor Cha, but Dr. Scalzo gave me a little bit of direction, suggesting that I use an autoencoder with the CNN. That ended up working really well,” said Mossing.

“Using AI for foil surfing isn’t something that anyone’s ever tried,” Mossing noted. “People at the conference showed interest in the fact that I was using AI for stuff that no one had considered.”

“I remember chatting over lunch with Zak about his passion for surfing and recall him sharing how fortunate he felt to get data and apply his research while in the beautiful Pacific Ocean,” Scalzo recalled. “This is a perfect example of finding a job you love that doesn’t feel like a job.”

the Picture of Health

Pepperdine's Sean Wu is making strides in medical imaging using computer vision and artificial intelligence to help reduce patient risk and improve care quality

AI's power and potential may well be technology's most and least leveraged tools at the same time. Virtually everyone has seen the fantasy imagery that comes out of its various applications, but how many of us have ever considered what that power could do if harnessed and put to work advancing medical imaging? Imagine pointing that massive resource at health care challenges involving the brain, kidneys, or eyes. Better still, why not consider using AI to bring medical care to those who can't afford it or simply don't have regular access to it? Can you imagine?

Pepperdine student Sean Wu has, and he's helping to bring those incredible advancements to life.

Wu is a junior computer science major in mathematics at Pepperdine, working in computer vision and artificial intelligence. He's been very successful in machine learning in medical imaging, working with Fabien Scalzo, Director of the Artificial Intelligence in Imaging and Neuroscience Lab at the Keck Institute for Data Science.

"I've had the opportunity to work with Sean as part of a few courses I taught in Computer Science and in the Keck Scholars Fellowships program," said Scalzo. "Sean has been a pleasure to work with and learn with. While Seaver College has many brilliant students, his exemplary work ethic reminds me that high achievements are always the result of hard work."

"All my projects with Fabien are in deep learning and computer vision applied in medicine," said Wu. "We have published around 10 peer-reviewed papers together from three tracks, starting with AI in Ophthalmology, which is detecting glaucoma, diagnosing glaucoma progression, and more. We would basically design neural networks to predict all sorts of tasks from glaucoma using optical disk images that we got from the health center at UCLA."

"In his latest research, Sean collaborated with UCLA ophthalmologists to build an AI system capable of predicting which patients are at risk of fast glaucoma progression," said Scalzo. "The AI model was evaluated retrospectively on 2,259 glaucoma patients and achieved an accuracy of 92% in identifying the patients at risk of fast progression: a significant result well above the state-of-the-art that could allow patients to receive preventative therapies."

Wu is also published on his neurovascular work.

"There are many reasons we wanted to do a project involving blood vessels in the brain," Wu said. "The way doctors do it right now, they take hundreds of X-ray images around the brain, and then they use computer tomography to reconstruct the brain in 3D.

"It does a really good job," Wu continued, "but it requires hundreds of images, and each image is like an X-ray, giving the patient lots of X-ray exposure. All those X-rays are invasive, and the ionizing radiation can cause cancer. So, we're using deep learning to do that same reconstruction using only two or three images.

"We did a paper on interventional neurology that was just published on reconstructing the 3D geometry given sparse 2D images," Wu continued. "And that was published at the International Symposium on Visual Computing in Lake Tahoe. It's also a chapter in Springer," Wu noted, referring to the renowned publisher of medical journals and books.

"We were still working on ophthalmology," Wu noted, interrupting the discussion on interventional neurology . "I just submitted a paper called 'Self-Supervised Denoising of Visual Field Data Improves Glaucoma Progression Detection.' That's just another one that we're working on in parallel. These are all computer vision in medicine."

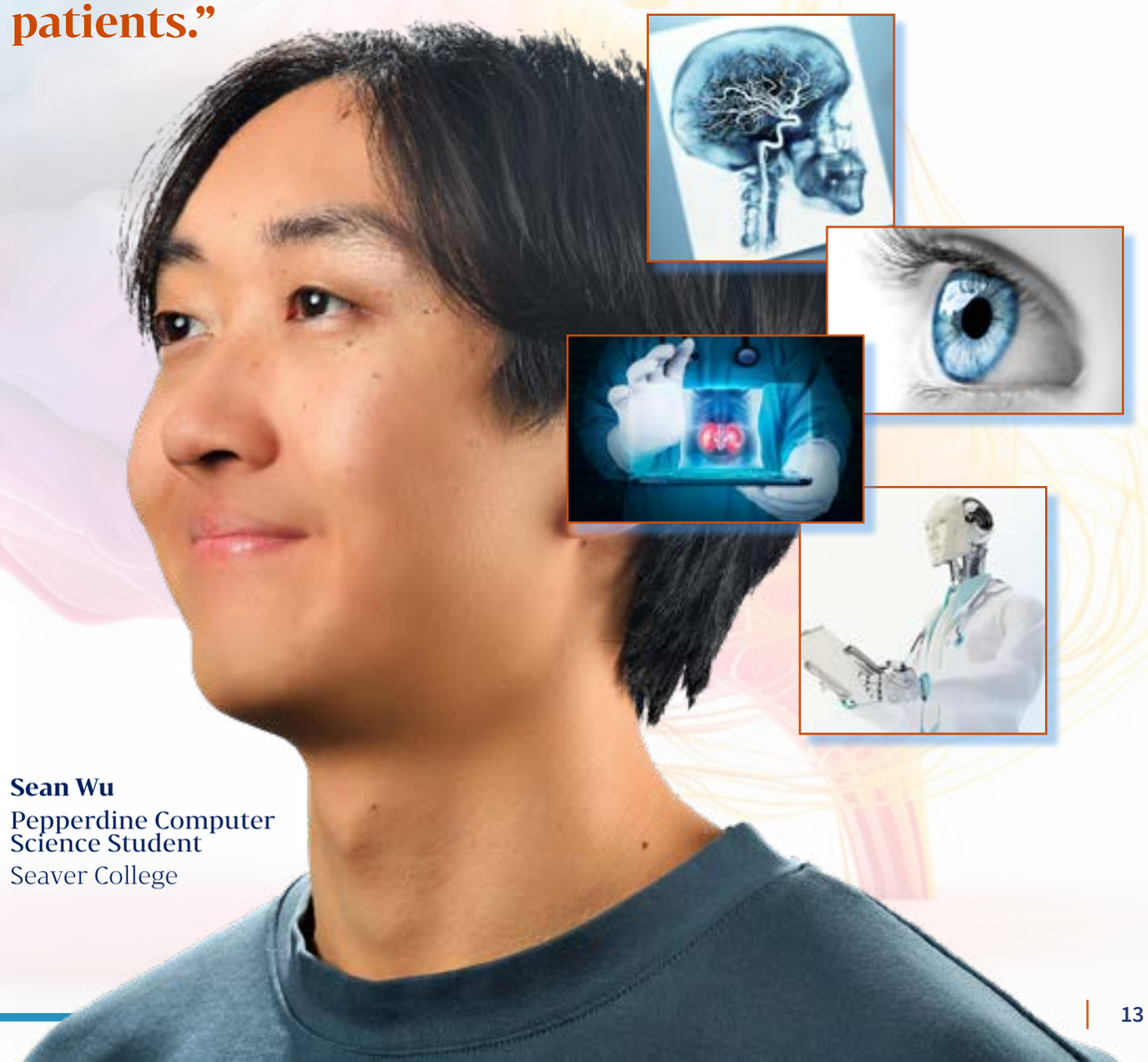
But perhaps the most compelling project that Sean is working on deals with natural language processing in medicine: creating an AI physician for underprivileged patients.

"But perhaps the most compelling project that Sean is working on deals with natural language processing in medicine: creating an AI physician for underprivileged patients."

"We're trying to create large language models (LLM) that can be extremely specialized in internal medicine," said Wu. "In internal medicine, we want to create these large language models like ChatGPT. And we want to specialize in these medical tasks, with the end goal eventually being an AI doctor, because many people can't afford the simplest consultation from a doctor. We just want to ask simple medical questions sometimes, and it would be nice to have that interaction.

"This is just a new kind of doctor," Wu said. "It's hard to say where it will be implemented, but I don't see every doctor being replaced in the near future. They're too good, particularly in specialized medicine. But imaging and those computer vision algorithms in medicine will definitely be more ingrained in the doctors' tasks because some of these models are reaching accuracy way above 95%.

"So, it would be nice to have a specialized AI to do this," Wu explained. "We published the first paper, and I would say it's our biggest paper so far in this natural language processing. It was published in the New England Journal of Medicine Artificial Intelligence (NEJM AI). So, for medicine, this is really the gold standard," Wu smiled before returning to work.



Sean Wu
Pepperdine Computer Science Student
Seaver College

Artificial Heroes

Bringing the reality of AI to Pepperdine requires support, and IT is teaming up with our faculty and staff to bring it through this transformational era

Artificial Intelligence (AI) is here and, in keeping with our theme, it feels like it is "Everything, Everywhere, All at Once." It's moving across our cultural, educational, and enterprise landscapes like water on pavement, seeping into every crack and crevice of our lives. And Pepperdine University is certainly not immune. This is a time when faculty, staff, and students are wrestling with every aspect of AI, from the high-minded debate on its ethical applications in society to the nuts-and-bolts approaches necessary to build the knowledge and skill sets to unlock all the magic that this moment in the evolution of technology can provide.

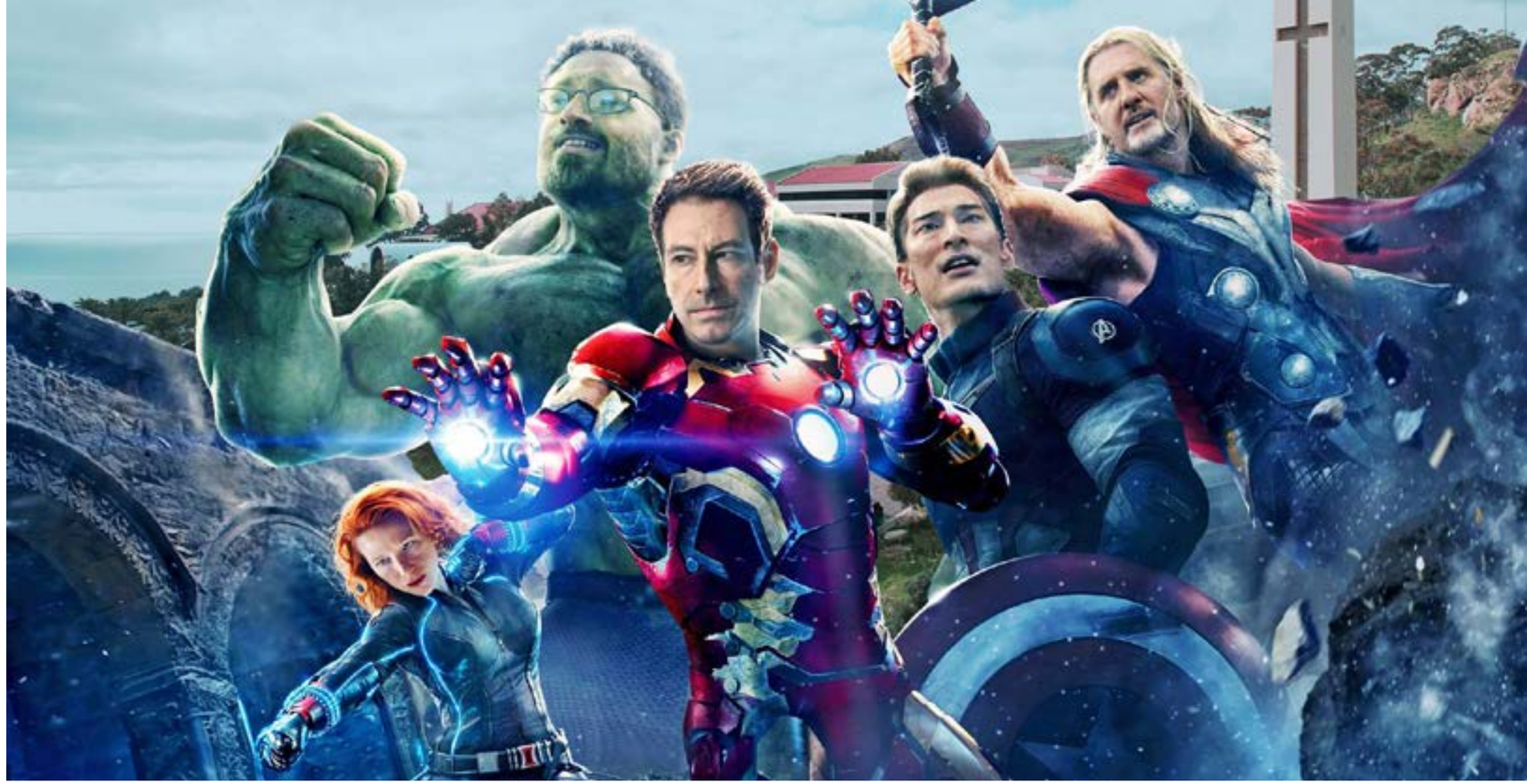
From the University's perspective, the fundamental question about AI usage may initially seem binary–will we or won't we?–but some of the opinions leading up to that answer lend themselves to serious consideration in determining AI's place at Pepperdine.

On July 24, 2023, Provost Jay Brewster issued a statement to the University's deans, essentially setting the table for faculty to include a statement in their course syllabi outlining what each would consider acceptable use of artificial intelligence in their courses. The statement was the product of the University's AI Advisory Committee and was conceived to give faculty options for setting AI standards for each course and to offer clear guidelines for student use of AI in a given class.

The challenge? With Artificial intelligence still looming as the 400-pound gorilla in higher education, a relatively low percentage of faculty included an AI statement on their syllabi for the fall term. That may be more about a lack of familiarity than anything else, but it leaves the question hanging for many students.

"I heard only 40% of (Pepperdine) professors incorporated AI into their syllabi," said Visiting Assistant Professor of Psychology, Social Science Division, Jessica Cail. "I thought I was behind the curve, only putting it in this last spring, but some people still don't have it in there. I'm seeing a lot of, 'No, you can't even touch it,' but that doesn't really seem fair. It's a technology. It's just a tool. Learn how to use it. Don't let them cheat."

"In terms of education, AI is something that you cannot avoid anymore," said Associate Professor of Computer Science Fabien Scalzo, who is also the director of the Artificial Intelligence in Imaging and Neuroscience Lab. "It is going to be central to everything you learn. And so, participating in building the AI curriculum at Pepperdine is really cool. I think it's exciting."



Above, *l-r, Jessica Cail, Jordan Lott, Fabien Scalzo, Jared Mukai, and Jerry Harris. (**Film**–Avengers: Endgame)*

"And so, I feel strongly about teaching AI with the values that we believe in, and emphasizing the importance of those values."

Fabien Scalzo
Director, Artificial Intelligence in Imaging and Neuroscience Computer Lab
Seaver College

Scalzo has a doctorate in computer science and machine learning, and he did his postdoctoral work at UCLA in neurosurgery and applied AI for supporting neurosurgeons. He was a UCLA professor for eight years, teaching the combination of AI and medical imaging, before receiving a grant from the Keck Foundation to create the AI lab at the Keck Science Center at Pepperdine.

"There is something about Pepperdine that makes it really special," said Scalzo. "You can learn about AI anywhere. Everyone is offering it, but there was that unique seed of values that is at the core of everything we do at Pepperdine. And the Christian values actually matter more–especially in AI–because it's becoming so powerful that it's hard to imagine it in the hands of people who don't have any of those values. It becomes very dangerous. And so, I feel strongly about teaching AI with the values that we believe in, and emphasizing the importance of those values."

And make no mistake, values are central to many perspectives surrounding AI and its applications in a university environment. If students use it to complete their coursework, is it cheating? If faculty use it to prepare their materials, does it devalue their instruction? If staff use it to do their work, does it make them lazy or expendable?

Clearly, this is a seminal moment in Pepperdine's approach to artificial intelligence and how the community applies it in acceptable daily practice. That's why the Information Technology department has been diligently testing and assessing AI applications to ensure their safe use with sensitive data in alignment with University values.

In relying on those values, we're essentially seeking common ground: a perspective that we all agree to live by as we decide if and how to let artificial intelligence into our lives at Pepperdine. Let's start by letting some of the air out of the great mystery that is artificial intelligence and breaking down what AI really is.

"The way I think about the current technologies that we refer to as AI," said Associate Professor of Information Systems Technology Management, Pepperdine Graziadio Business School, Michael Williams, "is that they are kind of like a blender in that they have dumped a whole lot of free text and free images from around the internet into this hopper and they just blended it all up.

"And they have bashed it in such a way that it really doesn't understand anything that it's doing," Williams continued. "But, if you prompt accordingly, it can give you back some response,

whether that's an image, or a video, or PowerPoint, or just plain text, that, based on its analysis of billions and billions of inputs from the open internet, can give you back some response that seems appropriate. Sometimes, they really are amazingly appropriate, and sometimes they're grossly inappropriate. But if you don't read it carefully, you may not realize that."

"We need to really engage the faculty to become aware of how powerful AI is for their particular area of study," Scalzo added. "I think no matter what you study, there are some components in which AI can contribute. I think that if it includes writing, critical thinking, or even art, there may be some ways that AI can be used. And being aware of it is important for the faculty.

"The first step is awareness: they need to know that it exists," Scalzo continued. "Perhaps having workshops and demonstrations would provide useful hands-on experiences and could show them what they could do and make them aware of it."

Seaver College Director of the Center for Teaching Excellence Ben Postlethwaite couldn't agree more, as his office hosted a three-day workshop on AI over the summer, and it was the best-attended event he could recall.

"What we've done this semester is a series of training workshops for faculty, kind of a mini version of what we did during this summer," said Postlethwaite. "So, those who couldn't attend during the summer were invited to come to a three-part series during the fall. The series began with an introduction to AI.

"Some faculty have played with it; some faculty abused it pretty heavily; and a number of people had never opened ChatGPT, Google Bard, or anything like that," Postlethwaite noted. "So, this was their first foray into understanding what it is, and what it's capable of in its current form."

Although the fall workshop series focused mostly on text-based applications in generative AI, such as ChatGPT and Google Bard, the summer sessions covered additional forms of AI including graphics and video.

"I think a lot of the talk has been that it's inaccurate sometimes," Postlethwaite said. "And AI even uses hallucination, which some people are opposed to. So, it will make things up, because it wants to be helpful, and there isn't a feedback loop built into most versions yet for it to realize it was wrong. So, it can very confidently give you misinformation, making up books, and making up sources. From an academic standpoint, that's highly problematic."

The second session covered teaching with AI, demonstrating how faculty might incorporate it into their classrooms for lectures or assignments. Postlethwaite has his students conduct one-on-one interviews with various subjects about their jobs. They take detailed notes, analyze the interview, and then supplement it with an equivalent interview with ChatGPT or Google Bard, and then compare the two experiences. The final session reviewed academic integrity concerns with AI and how faculty might handle them.

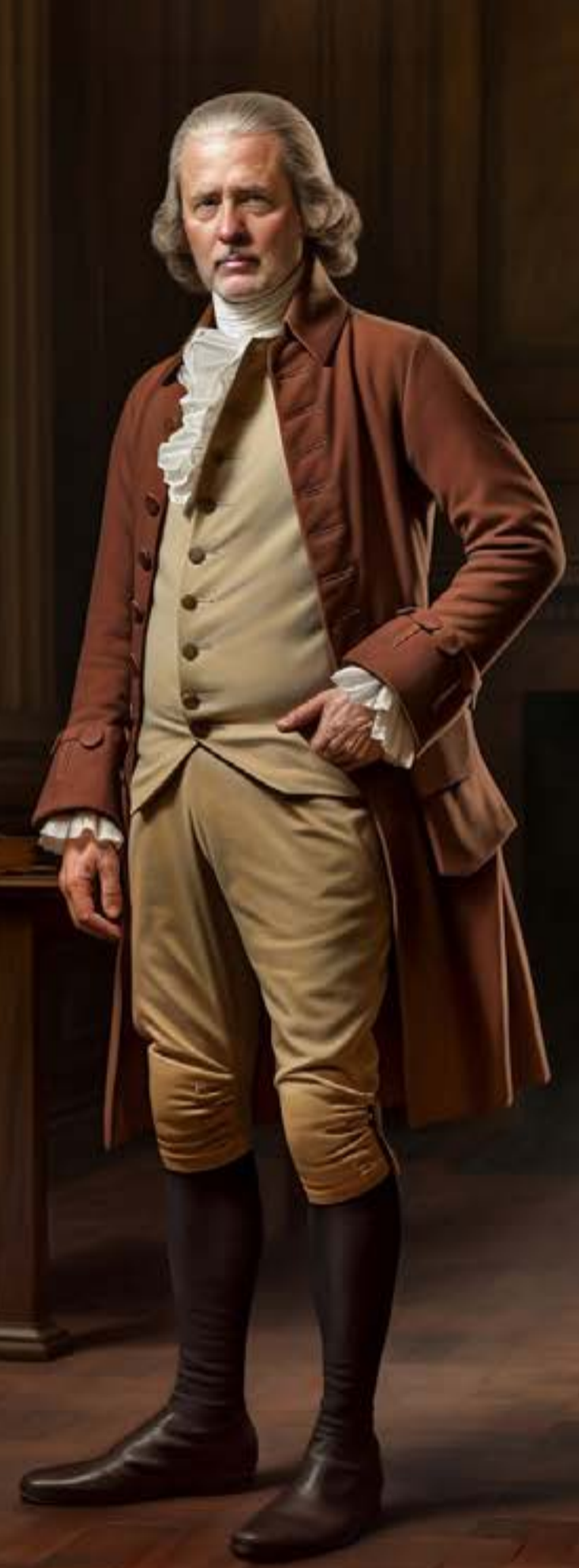
"For example, either Google or Grammarly is an AI-powered grammar editor, and for the most part, that's not problematic," said Postlethwaite. "But they have new features where Grammarly will rewrite your paper for you, and that can run into some academic integrity issues because the writing is no longer your own.

"So, it (AI) will make things up, because it wants to be helpful, and there isn't a feedback loop built into most versions yet for it to realize it was wrong."

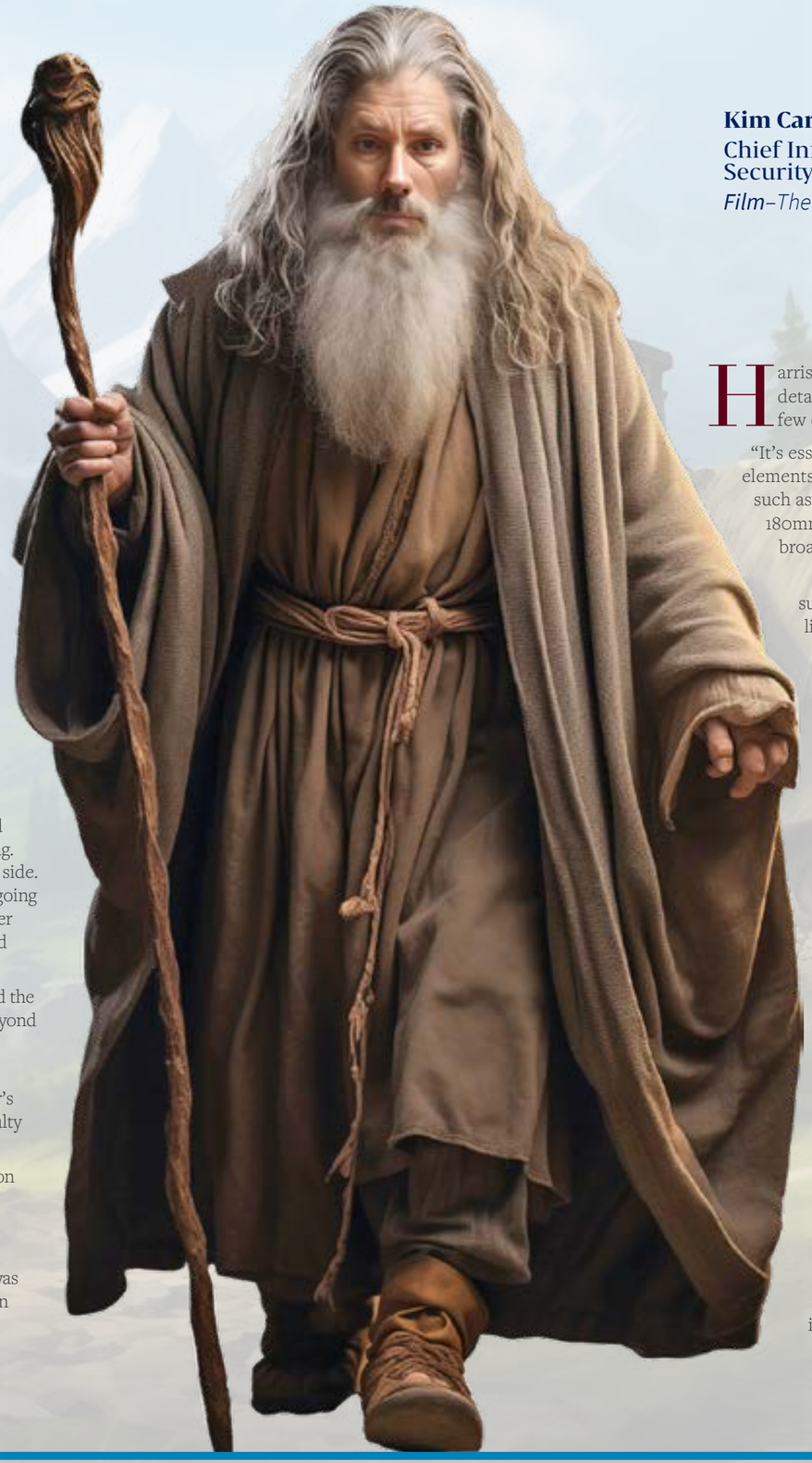
Ben Postlethwaite
Director, Center for Teaching Excellence
Seaver College

As we prepare for the coming academic year, it is clear that AI technologies will be increasingly influential in education and the assessment of student competencies. Though initial discussions have focused upon academic integrity and policy, it is clear that there is also opportunity with AI in the classroom and in professional settings. We have developed an AI session in the faculty conference this fall which should bring forward some of this content.

Jay Brewster
Provost
Pepperdine University
Film–1776



It is wisdom to recognize necessity, when all other courses have been weighed...



Kim Cary
Chief Information Security Officer
Film–The Lord of the Rings

"At Pepperdine, we use Turnitin as a University-wide plagiarism detection solution," Postlethwaite continued. "It has a new AI feature that gives you what percentage of the paper it thinks is AI-generated, and it will highlight the sentences and paragraphs.

"And then on the same side, there are counter tools that have been developed to help people cheat," Postlethwaite noted. "For example, there are rewriting apps where you pop something in that could be AI-generated or it could be a source you copied from elsewhere. This rewriting tool substitutes words and rewrites [the paper] with the intent of evading AI-detection software. So, it's a kind of cat-and-mouse game, which is why we are really focusing on the proactive side first rather than the detection side later."

Each faculty member's approach may have something to do with their level of familiarity, or at least comfort, with artificial intelligence.

"I think there are three approaches to AI from my colleagues," Williams said. "There are those who think somehow they can tell students not to use it and they won't, and those colleagues are getting really frustrated because it's just really hard to police that. And I would say it's impossible to police that, and so you find the instructors and the students in that mindset are just constantly at war. They're constantly blaming: 'You used AI!' 'I didn't use AI!' Whatever. So, that's a very frustrating path to go. But we do have some faculty who are trying to go that path.

"We also have some who are at the other end of the extreme who say AI is required," Williams continued. "'You've got to use it. You've got to show me how you used it, and include your prompt, include the response, include how you fixed it.' That kind of thing. And so, those are the two extremes. I see more on the try-to-prohibit-it side than I do on the require-it side. I think the largest group though is somewhere in the middle. For example, in my syllabus, I say you're going to be using this. Get used to using it, but just don't plagiarize with it. Cite it just like you would any other source, and add value to it. Don't just copy and paste. I think most are trying to find that middle ground somewhere, but it is difficult for students and for faculty here."

And what about staff applications of artificial intelligence? People working on college campuses around the world have heard about AI's productivity tools and the possibilities for efficiency gains. But what about beyond the enterprise and academics? What about AI's creative contributions?

"My functional introduction to artificial intelligence was working on this project: the IT Annual Review," said IT Communications Manager Jerry Harris. "When we decided to focus on AI for this year's book, I had to delve into the creative side to build most of the art. I had the same challenges many faculty and staff likely fear or experience with AI, in that I had no idea where or how to begin.

"It felt like someone was trying to monetize every Q&A or piece of information around AI image creation online," Harris noted. "It was very frustrating. Then, Senior Manager of IT Training and Technology & Learning, Jordan Lott told me that Midjourney had emerged as an industry favorite for image creation.

"We didn't want to create this year's report by simply unleashing AI to show off its capabilities," said Harris. "Everybody's seen those colorful fantasy images with an odd elemental juxtaposition in which AI was 'free to roam.' We wanted to demonstrate that AI can function as productively on the creative side as it can for business. So, we decided to use a cinematic theme for much of the art, referencing popular movies."

Harris worked on the basics in Midjourney, beginning with "prompting," which is the detailed description of the output you want AI to create for you. He then added a few other applications to the mix, picking up informational tips online.

"It's essentially a language," Harris explained. "A good prompt includes several targeted elements. I usually begin with the overall look by framing the image in cinematic terms such as 'crane shot' or 'close-up.' You can get as detailed as, 'Shot with a Nikon F3, 180mm lens, on Kodachrome film,'" Harris noted. "Then you can be as specific or broad as you want to be in describing your subject.

"Descriptive language is key from your characters' look and their emotions to the surroundings, lighting, mood, and actions," Harris added. "You can also add a style like 'impressionism' or an emphasis like 'photo realistic' to get maximum detail. Even with the most precise direction, AI is notorious for struggling with hands, feet, eyes, and text. But, the apps are improving every day.

"Midjourney V6 alpha released on Decemeber 21, and I saw such a significant improvement in the image quality from V5.2, that I replaced some of the work in this project," Harris noted. "And Midjourney is slowly moving from Discord–an instant-messaging platform–to a website with a more user-friendly interface. Getting started will be much easier in working from a webpage, and the learning curve should be considerably shorter as well.

"AI can generate some of its most incredible art off of a six-word prompt," Harris said. "but if there are details you really want to see in your image, you need to find that path in your prompt. I was struggling to get the results I wanted for the cartoon illustration on pages 8-9, so I tried Bing Image Creator as an alternative to Midjourney. It gave me great options in just three prompts, but the images had to be square, and the file size is relatively small. That's AI for image creation at this point in its evolution: you make your choices in prompting and cross your fingers."

Although different AI tools provide varying degrees of quality and accuracy in their creative outputs, the AI enterprise applications can be much more user-friendly and direct. That's good news for the Pepperdine community as these applications are poised to leave a significant mark on how the world is doing business, including higher education. The immediate challenge at Pepperdine is less a question of "if" but "when" these tools will become available within University systems.

"Google Bard has been around for quite a while, and I use it on my personal account," said Lott of Google's conversational AI tool. "I can ask it, 'Please help me create a response to this email thread.' Or, 'I would like you to help me write an email to a friend who's not feeling well,' and it will generate that for me, and I click insert, and now I've got this whole message that's generated.

I can only show you the door: You're the one that has to walk through it.

Michael Williams
Associate Professor of Information Systems Technology Management
Pepperdine Graziadio Business School
Film–The Matrix

"When I first got Bard, I wanted it in my work account pretty quickly," Lott said. "I wanted that benefit, and I also started to realize the possible ramifications if we were to make it available to the University. Google Bard was kind of the personal sliver of their AI. Google Duet takes that little sliver and exponentially expands it to everything in Google Workspace."

"Duet is the generative AI suite that lives inside of Google Workspace," said Senior Manager of Client Services Jared Mukai. "In Workspace, if you send a confidential email to a colleague, that email isn't leaving Workspace. So, if you want to run whatever generative AI functionality inside of your Workspace applications using Duet, it will stay inside of Workspace just like everything else."

"So, that's going to be Gmail, Google Docs, Sheets, assistance with Google Slides, meeting summary and interaction in Google Meet, and on down the list," Lott added. "That's going to be everything inside of Drive you can interact with. That whole equation will eventually change if the IT department obtains approval and makes AI tools available through the University-provided email and document creation service.

"We already considered the potential risk, and we decided the risk was worth the reward for that collaborative opportunity," Lott noted. "Because the information is already inside of Google Workspace, there is a reduced concern because we already trust Google with that data. And so we're having this incredible AI tool dropped right in the middle of the tool that we've been using for our primary business processes."

Before that tool drops anywhere at Pepperdine, the University's Chief Information Security Officer, Kim Cary, and his team have the formidable task of keeping every campus, building, student, professor, and staff member secure when making decisions about the access the University should grant to artificial intelligence.

"Our students, staff, and faculty are quite rightly exploring the myriad of these new tools," said Cary. "As with any tool, generative AI requires some skill to use safely and effectively. Of specific importance from an information security perspective, is to ensure that no one is submitting confidential business or educational data to AI tools without thorough testing and examination to ensure they will not disclose that data to unauthorized parties.

"Our community must take responsibility for the end product or any unintended consequences of any chosen tool," Cary continued. "IT will not be able to provide assurance for the vast array of tools coming online nor be able to vet all the tools our researchers and administrators may want to create or try. We will each need to do our own research and testing in order to use these tools safely."

"This is the new skill," said Lott. "This is going to be the standard. Your ability to interact with AI tools will become as important as typing, because they are going to be the same process. You will not be able to type without an AI trying to help you. That's where this is going."

"The fact is, the teaching and learning process is going to take some time," said Mukai. "I think we're going to see much more acceptance on the staff side. It's easier to train, easier to learn, and easier to apply. And for IT, it will be easier to build the roadmap for business practices. When you have these transformative technologies emerge throughout human history, it's less about people becoming obsolete and more about people just doing different things."

"The practical view is change, and as faculty, we tend to resist change because it makes more work for us," said Scalzo. "But the truth is that even without AI, our society is changing, and we need to adapt to the new needs of the students. We need to adapt to be in touch with them, to relate to what their life is going to be like, and what they need to know.

"Pepperdine can align AI with everything that the University values," Scalzo added. "And eventually, by doing it in that way, we actually make Pepperdine a unique place. So, if we do it well, we are going to be in a position where we are offering something that is not offered anywhere else. We have these beautiful core values at Pepperdine, and if we build on that, I think we can achieve things that are not possible elsewhere."

Honor Roles

Information Technology staff who have brought distinction to Pepperdine University

See Recognized for Vision as CIO

Pepperdine University Chief Information Officer (CIO) Jonathan See was one of five finalists for CIO of the Year from the SoCal ORBIE Awards held in Huntington Beach on October 4. Chapman University's CIO Helen Norris won the 2023 award in the Large Corporate category.

See has been Pepperdine's CIO since 2012, bringing 34 years of experience in higher education. Previous roles include Senior Director for IT Administration and Client Services and Deputy CIO at Pepperdine. He also served as head of administration at the Getty Research Institute for three and a half years and spent 14 years at CSU LA as Deputy Executive Director for Commercial Operations.

See's standout accomplishment is the Application Development Internship Program, launched seven years ago in collaboration with the undergraduate computer science faculty. It provides year-long paid internships where students apply their knowledge to real business problems at the University. Participants receive compensation, course credits, and present their projects before University executives. The program's success lies in offering real professional experiences, improving problem solving skills, and enhancing job prospects, with many students receiving job offers before graduation, filling the goal of both education and gainful employment support.

The Switzerland Job

Pictured L-R, *Paul Yoo, Kevin Phan, and Dave Holden (not pictured: Vic Suphasiri and Elias Armenta).*

When Pepperdine added a château to its International Program roster, IT was called upon to design and implement the network for the state-of-the-art facility in Hauteville, Switzerland. The team successfully brought the stunning property online with the rest of the University community.

This project presented a number of unique challenges, including geographical distance, time zone differences, language barriers, cultural differences, and the inherent constraints of installing modern technology in a historic 300-year-old building. IT is currently collaborating with the project team to expand outdoor Wi-Fi coverage.

Asset Management Easier with Softdocs

IT's Senior Manager, Client Services, Reyn Oyadomori was the subject of a Q4 Softdocs blog post for his creative solution in using Softdocs for Pepperdine IT's computer asset management process.

Reyn Oyadomori

Using an eForm, Oyadomori can select a specific employee. The form will populate with PeopleSoft data to associate the department information with that employee. When complete, the information goes into IT's computer asset management system, updates the data, and then the assigned computer asset is tagged.

"You can go up and down the ladder depending on how granular you want to get," said Oyadomori. "And this is because Softdocs was able to combine that PeopleSoft data with our computer asset management database."

That operational efficiency extends to purchasing new devices or upgrades, locating missing devices, and using aggregated data insights to streamline and improve department device management. The new process also allows Pepperdine to manage computer software updates, including the University's international campuses.

Lorem ipsum

PEPPERDINE
Information Technology

2023

Count IT

We are sharing fewer metrics for 2023 in order to display AI's version of what ARIA–the bot on the IT website–would look like. See the prompt below.

ARIA

Static Questions Answered
3,715

Dynamic Questions Answered
249

Tech Central

Calls
10,266

Support Tickets
14,414

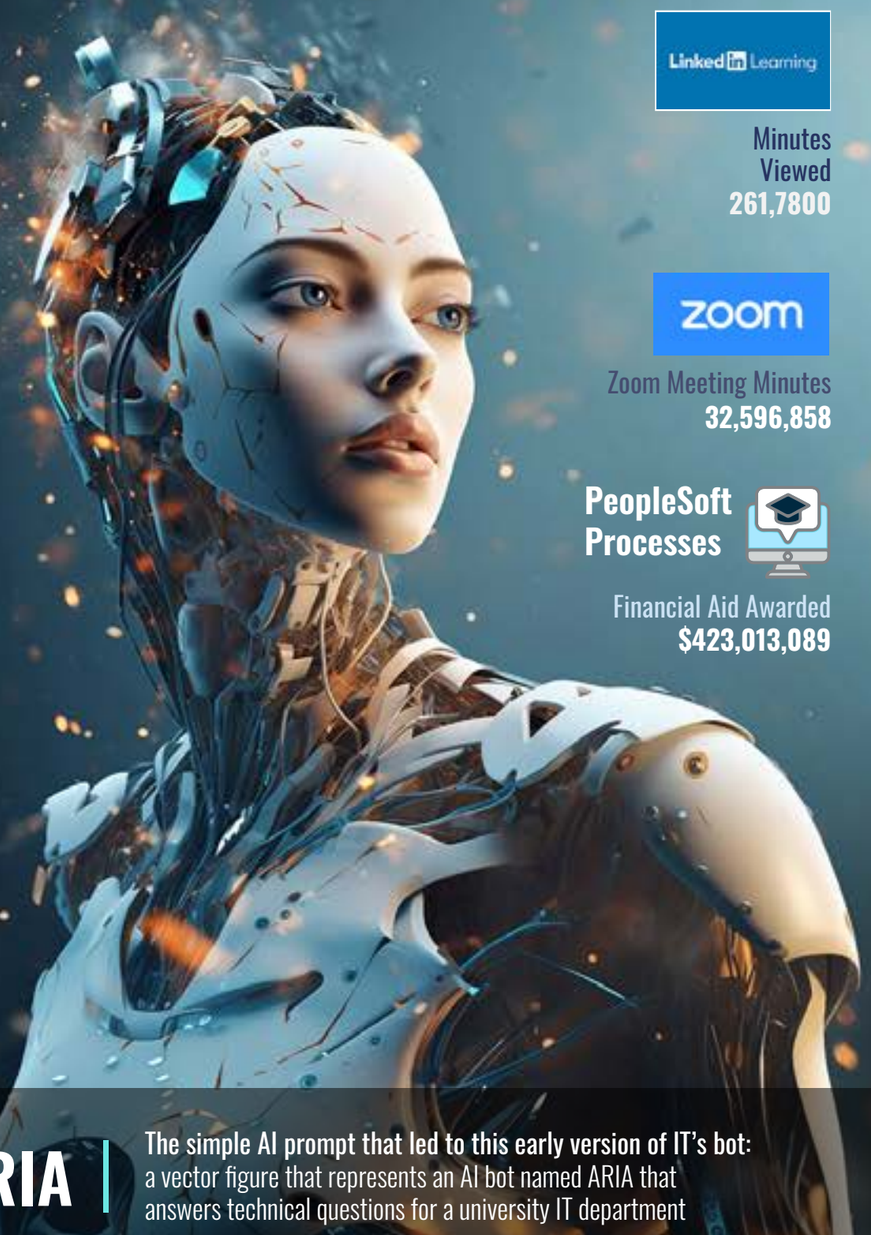
Staff Training

Sign-ups
961

Classes Offered
143

Courses

Logins
2,383,932



LinkedIn Learning

Minutes Viewed
261,7800

Zoom

Zoom Meeting Minutes
32,596,858

PeopleSoft Processes

Financial Aid Awarded
$423,013,089

AI's ARIA

The simple AI prompt that led to this early version of IT's bot:
a vector figure that represents an AI bot named ARIA that answers technical questions for a university IT department

Keck Data Science Institute

To learn more about academic and research programs in Data Science and Artificial Intelligence at Pepperdine University, contact:

- Professor Fabien Scalzo, Ph.D.
- fabien.scalzo@pepperdine.edu
- or visit–https://www.keckdatascience.net/

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