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Full speed ahead

The ASU Charter serves as our North Star, reflecting our steady commitment to transforming higher education through excellence, access and impact. Each year, it is updated based on our progress and priorities in service of achieving these goals.

Today, as we look forward, we continue the work to enhance access to quality education, now with more than 170,000 online degree-seeking students enrolled, and we continue advancing discovery with a target of \$1.5 billion in annual research expenditures. We remain committed to retaining more than 90% of our first-year students, and attaining a graduation rate greater than 85% with more than 40,000 graduates annually.

These goals are deeply rooted in our efforts to support student success and to be of the greatest service to Arizona, our nation and the world. Already, more than 1 in 4 working Arizonans with at least a bachelor's degree earned it from ASU. Noteworthy as that is, the university's value to the state includes not only our work to serve learners, but also our responsibility to be a catalyst for the Arizona economy. Our state's progress is accelerated by ASU's ongoing contribution as a leader in educational access, workforce development, research and discovery, entrepreneurship and innovation, technology and more.

ASU's annual operating and construction expenditures are equivalent to the value of about eight Super Bowls each year. Directly and indirectly, the university contributes \$6.1 billion to the state's gross domestic product. If you include additional measures of economic activity — such as alumni wages and the impact of ASU-linked businesses — the university's economic impact in Arizona is about \$32 billion.

ASU's impact is transformational, improving quality of life for all of Arizona's residents. Our responsibility is to help create an environment where all citizens can thrive. As we enter spring commencement season, I hope that you feel the same sense of pride and progress for Arizona and our nation that we do at the university.

Michael M. Crow

President, Arizona State University

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Empowering learners in Arizona and beyond. Fountain Hills High School teens are earning 18-21 college credits.

Leading a healthy

help reduce risk

for Alzheimer's

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EVENTS



California summer camps



Embark on an exciting learning adventure in fashion and film:

Sports Fashion and Marketing Summer Camp, June 16–20, ASU California Center Grand LA Summer Film Camp, June 16–20, ASU California Center Grand Fashion Design Summer Camp, June 16–20, ASU California Center Grand Fashion Design II Summer Camp, June 23–27, ASU California Center Grand asufidm.asu.edu/summer-camps, film.asu.edu/summer-camps

Camp Ages 15-19

STEAMpunk Machines in Motion Camp

In this immersive weeklong day camp, participants in grades 8–12 will be introduced to the engineering design process while they learn science, technology, engineering, arts and math, or STEAM, concepts to construct steampunk-themed automata.

June 9-13 and June 16-20, 9 a.m.-5 p.m., Polytechnic campus eoss.asu.edu/access/programs/ summer/search

Camp Grades 8-12

West Valley Camps

This summer, kids of all ages can dive into exciting learning adventures at ASU West Valley.

- Integrated Engineering Design Camp, grades 3–5, June 2–6
- Integrated Engineering Design Camp, grades 6–8, June 9–13
- MicroMaker Camp, grades 9–12, June 23–27

June, West Valley campus newcollege.asu.edu/west-valley-camps

Camp Grades 3-12

Engineering camps for all ages

At the Fulton Summer Academy, students in grades 3–12 can participate in various hands-on day camps to learn about STEM (science, technology, engineering and math).

June, July, ASU campuses outreach.engineering.asu. edu/fulton-academy

Camp Grades 3-12

Logic, leadership and life skills

In this day camp, teens complete licensed professional development training. Students will set new goals, learn proven leadership skills and get individualized attention from certified teen life coaches.

Dates vary, ASU campuses eoss.asu.edu/access/ programs/summer/search

Camp Grades 7-12







Kick up your heels for 'Moulin Rouge' magic

Enter a world of splendor and romance, eye-popping excess, glitz, grandeur and glory. The Broadway spectacular "Moulin Rouge! The Musical" - winner of 10 Tony Awards, including Best Musical – sets the stage for a world where bohemians and aristocrats rub elbows and revel in electrifying enchantment.

Tuesday, July 22-Sunday, Aug. 3, ASU Gammage

asugammage.com

Ticketed



2025 Season Opener: Sparky vs. Louie the Lumberjack

Join your Big 12 champion Sun Devil Football team for the 2025 season-opening game vs. NAU. Come out and watch as the Sun Devils begin their defense of the Big 12 Conference title.

Saturday, Aug. 30, Mountain America Stadium sundevils.com/sports/mens/football

Ticketed Family



Get ready for Game Day

Sun Devil Football

August

Home game

30 vs. NAU

September

at Mississippi State

vs. Texas State 13

20 at Baylor Big 12

vs. TCU Big 12

October

at Utah Big 12

vs. Texas Tech Big 12

25 vs. Houston Big 12

November

1

at Iowa State Big 12

15 vs. West Virginia Big 12

22 at Colorado Big 12

vs. Arizona Big 12

See all details of games and ticket options at sundevils.com.



Kenny Dillingham, head coach. football

Sun Devil Rewards has an updated look, new games and more rewards!

Found in the ASU Mobile App, play Sun Devil Sudoku, crosswords and other favorites for more of those shiny gold 'Forks.

sundevilrewards.asu.edu

Visit asuevents. asu.edu for events. Visit sun devils.com for athletics.





QUINTON KENDALL/ASU ASU THRIVE MAGAZINE 7



Closing the local life expectancy gap

There's a 14-year life expectancy gap between north Scottsdale and south Phoenix residents. and the Maricopa County Board of Supervisors and ASU's College of Health Solutions are partnering to address the gap.

During the five-year project, the College of Health Solutions will work with Equity Health to develop baseline assessments in areas like health care and food deserts - for instance. identifying grocery store locations and opportunities for creating more community gardens and walkable areas.

"I feel really strongly that we as a college want to be socially embedded in our communities. And because the college is in downtown Phoenix, this is in our community," says Deborah Williams, a director and clinical assistant professor.

Learn more at chs.asu.edu.



Exposure to common weed killer linked to brain damage

ASU research shows an active ingredient in many weed and grass killers can cause lasting brain damage. School of Life Sciences Assistant Professor Ramon Velazquez and his team at the ASU-Banner Neurodegenerative Disease Research Center at the Biodesign Institute found that even brief inhalation of or skin contact with glyphosate can increase the risk of neurodegenerative disease.

They observed Alzheimer's-like symptoms, anxiety-like behaviors and premature death in mice after varying doses of the chemical were able to cross the protective blood-brain barrier, including at comparable limits of what's currently considered safe. This dose led to harmful effects, even after exposure ceased for months. Additionally, the new findings suggest that ingestion of glyphosate residues on foods sprayed with the herbicide potentially poses a health hazard. Most people living in the U.S. have been exposed to glyphosate during their lifetime through food, inhalation or skin contact.

Recent findings such as this raise questions about existing safety thresholds and whether glyphosate use is safe at all.

Find out more at biodesign.asu.edu.

"There is an urgent need for more basic research on the effects of this herbicide."

 RAMON VELAZQUEZ, A RESEARCHER AT THE ASIL BIODESIGN INSTITUTE AND ASSISTANT PROFESSOR WITH THE SCHOOL OF LIFE SCIENCES

New biomaterials created to help heal wounds faster

In past work, ASU researchers demonstrated that introducing histamine directly to wounds or combining it with silk-based biomaterials significantly sped up wound closure in both normal and diabetic mice.

Now, additional published research shows that the targeting of specific histamine receptors combined with biomaterials could help create solutions for chronic and slow-healing wounds, which affect approximately 6.5 million people in the U.S. annually and contribute to \$20 billion in health care expenses each year.

Assistant Professor Jordan Yaron with the Biodesign Center for Biomaterials Innovation and Translation and his colleagues in the Ira A. Fulton Schools of Engineering explored the wound-healing process and histamine. Histamine plays a crucial part in the early stages of wound healing by causing inflammation and increasing blood flow to the affected area. The work explored which histamine signaling pathways speed wound healing and how precisely acting drugs can target those.

Learn more at biodesign.asu.edu or engineering.asu.edu.





DNA mapping expected to create new medicines

Valuable secrets await discovery in the DNA of Earth's millions of species that can help researchers create new medications to combat cancer and other diseases, food crop genes for improving farming, new materials for manufacturing and genetic resources to rebuild threatened ecosystems. This effort, called the Earth BioGenome Project a collaborative. international effort coordinated at ASU is on schedule to fully sequence the genetic material of 10.000 species by 2026.

Learn more at biokic. asu.edu/collections.

Keep up with the headlines at ASU by subscribing to the **ASU News e-newsletter** at news.asu.edu/ subscribe.

"University researchers power nearly all of our country's technological breakthroughs."

- MICHAEL M. CROW, ASU PRESIDENT



From the iPhone and beyond, university research drives **US** breakthroughs

"I spoke at a conference at Rice University," says Michael M. Crow, ASU president. "I left my iPhone out to illustrate a point about how

Watch the video that has over 4M views across all channels.



university researchers power nearly all of our country's technological breakthroughs.

"There's not one aspect of the iPhone 16 which has not been deeply empowered and enabled by, at one point or another, academic research," Crow says.

The research from universities has helped make possible the biggest

innovations in American history, from the iPhone and other American Apple products, to the internet, space travel, X-ray machines, statins, pacemakers, Kevlar, drones, 3D printing, bionic limbs, cancer immunotherapy - the list goes on, as there are hundreds.





Product minimizes pavement damage in extreme weather and saves taxpayers money

A new product developed by ASU researchers improves the performance and durability of road infrastructure.

Aerogel Modified Bituminous Materials reduces pavement cracks, lowers maintenance costs, contributes to a more sustainably built environment and potentially decreases the urban heat island effect, where heat stored in urban roads during the day is released at night.

The aerogel is a dry, low-density, highly porous solid particle produced by removing liquid from a conventional gel. When blended into an asphalt mixture, it increases the ability to absorb fluids, which decreases temperature fluctuations in the pavement's structure.

This is helpful because many regions, including desert climates, experience high daytime air temperatures that can drop by up to 30 degrees Fahrenheit at night, says Kamil Kaloush, a FORTA Professor of Pavement Engineering in the Ira A. Fulton Schools of Engineering.

Kaloush and his team created the ASU startup company Aerogel Coating Technologies to scale the technology and has numerous projects in the works across Arizona to save the state and taxpayers money.

Learn more at ssebe.engineering.asu.edu.





Fingerprint technique can save money when testing for drugs

Peeing in a cup may be an effective way to detect drug use, but ASU researcher Min Jang may have discovered something better.

Fingerprints.

"It is simple and noninvasive," says Jang, an assistant professor of forensic chemistry in the School of Interdisciplinary Forensics on the West Valley campus. "It can be done in 10 seconds."

Jang has signed agreements with health care companies to use this method for substance-use testing.

In addition to this new method of drug testing, Jang's research has critical applications in forensic investigations to help police departments solve crimes.

Learn more at newcollege.asu.edu/sif. "We wanted to use the best models to accurately describe the environment, understand spatial reasoning and assist with other important tasks in navigation."

- KELLY RAINES, '24 BS IN COMPUTER SCIENCE. CURRENT MASTER'S STUDENT



Al assistant helps people who have vision loss

A new Al assistant is enhancing accessibility for individuals with visual disabilities. Al is paired with smart glasses to act as a guide for people with partial vision loss, a condition that affects more than 6 million Americans. Smart glasses can already combine digital information with real-world images.

Leveraging those capabilities, with the new app, the wearer can speak questions aloud, asking for more details. A person might ask the Al assistant how many steps of a staircase are ahead, to identify an object in the distance or to read the text of a street sign.

Kelly Raines, '24 BS in computer science, and a student in the computer science accelerated master's degree program in the School of Computing and Augmented Intelligence, developed the app while an undergraduate at ASU.

Learn more at scai.engineering.asu.edu.



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Management resources yield tips for self-leadership

Self-leadership is the practice of understanding who you are and developing strategies to motivate yourself to achieve a desired goal. When applied correctly, it helps people thrive. If misapplied, it can sometimes cause negative self-talk and additional stress. That's according to findings by Christopher Neck, professor of management at the W. P. Carey School of Business, in a study he recently co-authored. His advice? When going after goals and seeking to improve, use positive and constructive strategies.

- Engage in positive coping behaviors to handle stress, such as problem-solving, participating in physical activity or seeking emotional support.
- Set realistic goals, use positive self-talk
 and visualize successful outcomes. All of
 these can build resilience and reduce stress.
 For example, instead of dwelling on failures,
 reflect on your achievements and lessons
 learned from mistakes.
- Seek feedback from trusted peers or mentors. This can help you identify patterns of self-leadership that you may lean on that may be counterproductive instead of helping you work toward your goals.

Learn more at wpcarey.asu.edu.



The science behind successfully achieving goals

- Set a specific goal, says Michelle Shiota, ASU psychology professor, who studies the science of behavioral change.
- Then set a specific action plan that's realistic. "For example, I want to be getting eight hours of sleep a night. How am I going to do that tomorrow? Next week?" Shiota explains.
- 3. "Come up with a list of barriers to your goals. And then in each of those cases, ask yourself, 'If this (barrier) happens, what will I do to make sure I still achieve my goal?" she adds. "Whatever behavior

"Whatever behavior you are trying to adopt, if it's adopting a behavior or replacing an old behavior with a new behavior, find a way to make it enjoyable," Shiota says.

Learn more about healthy living at chs.asu.edu.

"Direct air capture is now a necessity if we are to manage CO2 levels in the atmosphere."

 GARY DIRKS, ASU PRINCIPAL INVESTIGATOR FOR THE NEW SOUTHWEST REGIONAL DIRECT AIR CAPTURE HUB



Regional effort will remove CO2 from atmosphere and create jobs

Under ASU's leadership, regional stakeholders are pioneering a Direct Air Capture Hub in the Southwest Four Corners region to remove carbon from the air.

"The project lays the foundation for a new industry that can provide much-needed employment and a robust tax base for rural communities," says Gary Dirks, ASU principal investigator for the project.

The team has also created a "Community Benefits Plan" for engaging with local communities, tribes, state and local governments, and other stakeholders. It will provide training, conduct STEM outreach, and engage with local unions, trade schools and community colleges to develop an educational pathway for the workforce.

The Four Corners Hub will rely on technology pioneered by Klaus Lackner, founding director of the ASU Center for Negative Carbon Emissions.

Learn more at globalfutures.asu.edu/cnce.

This is our Moment

Changing Futures From Arizona. For the world.

At Arizona State University, we believe a better future is possible, and this is our moment to bring it to life.

Through Changing Futures, we will transform global education, advance technology for good, build the future of health, empower community resilience, reshape our relationship with the planet and inspire tomorrow's game changers. With your support, we will change the future

- for our students and the world.

 ASU is leading the NASA Psyche mission for a better future.



This moment demands partners like you.

Join us at asuchangingfutures.org





SABIRA MADADY/ASU ASU THRIVE MAGAZINE 15





SOME PEOPLE SEEM TO BE NATURAL

at self-promotion, while others struggle with talking about their achievements. Regardless of whether self-promotion feels natural, your career advancement depends on senior managers understanding your skill set and value. When you do not call attention to your achievements, you risk being overlooked, stalling your career.

To help you, consider using these five strategies for communicating your successes in a compelling yet authentic way.



May Busch is a former COO of Morgan Stanley Europe, who is now an executive coach, speaker, advisor, author and executivein-residence in ASU's Office of the President. maybusch.com/ asuthrive

Make the accomplishment the preamble to a recommendation

In conversations with senior leaders. instead of directly stating your achievements, incorporate them into a broader dialogue. Use them as a way to propose opportunities for progress.

For example, if your accomplishment is closing a big project, you might say, "Now that we've successfully delivered on the \$1 million project, I would like to discuss how we can leverage this success to expand into new markets."

This approach positions you as a strategic thinker who helps drive the organization's success.

Invite people to see you in action Sometimes it's easier to show than to tell. Invite senior leaders to observe you at your best - in situations such as leading a meeting,

moderating a panel or presenting to a client.

I discovered this strategy when I asked my boss's boss, John, to a key meeting with a senior client. Up until then, he had only seen me in my worst setting - internal meetings where I struggled to speak up. But with clients, I was at my best.

After the meeting, John called to say, "May, that was the best meeting I've ever been to. If I were a client, I would want you as my banker." That invitation changed how he saw my capabilities and opened new opportunities.

Share successes along the way You don't need to wait for a project's completion to formalize

ways to share your progress. Regularly updating stakeholders on small wins - via a quick email,

summary – keeps your work visible and brings people along on the journey to an achievement that may take months.

This approach keeps your achievements top of mind and helps you stay aligned with leadership.

Weave successes into an 'elevator-pitch' story Storytelling is one of the oldest ways to connect with others and make an impression. Try framing your accomplishment as a simple narrative that can be given as a short statement: Explain the challenge, describe your approach and highlight the outcome.

For example: "We noticed customer complaints rose by 30%. I led a cross-departmental effort to streamline onboarding, reducing complaints by 25% in six months.

satisfaction but also boosted team morale."

Short stories like this make vour achievements memorable and showcase your problemsolving skills.

> Create a formal case study

A case study is a concise one-pager that outlines a challenge you faced, the actions you took and the results you achieved.

You can share it as a document or use it in a presentation.

If your work led to streamlined processes or boosted revenue, a case study helps share the details in a way that allows others to replicate the success, expanding opportunities for your organization while highlighting your contributions.

Reframing self-promotion

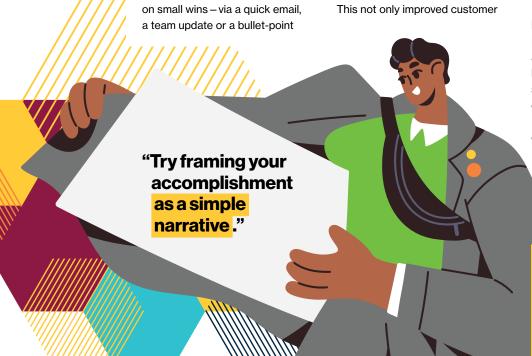
Remember, sharing your accomplishments is not about being self-serving. Keeping key stakeholders updated on your contributions is your responsibility.

By using these strategies to communicate your accomplishments, you can inspire others, elevate your team and open doors for new opportunities.

> Which strategy will you try first? ■

Get more career tips

Get additional advice on driving your career forward at maybusch.com.



Career upskilling, personal growth



Training to help you earn promotions or shift your career

Become an urban climate expert

Become a professional in your organization with knowledge of sustainable urban development. "Urban Climate: Keeping Cities Livable with Climate Research" equips you with the tools to address urban climate challenges and contribute to healthier, more resilient cities. 2 hours; free; certificate and digital badge upon completion.

careercatalyst.asu.edu Online Self-paced





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Online Self-paced





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Online Self-paced

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Learn the technical and stylistic components of visual media to present inclusive and impactful information on behalf of your organization. Discover graphic design resources, learn visual design principles and push your designs to the next level. 3 hours; \$149; digital badge upon completion.

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Online Self-paced

Let ChatGPT work for you

Artificial intelligence can redefine productivity and transform work as we know it In "Generative AI for the Workplace," study its impressive and ever-increasing capabilities to analyze text, numerical data, images and spoken language in professional environments. 3 hours; \$249; certificate and digital badge upon completion.

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Online Self-paced

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"Al in Learning Analytics for Talent Development" will equip you with the knowledge and skills to integrate AI into your talent management processes, ensuring that you stay at the forefront of this transformative industry trend. 10 hours; \$999; certificate and digital badge upon completion.

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Online Self-paced

You don't have to be the boss to be a leader

What is the difference between being a manager and a leader? In "Modern Leadership," you will learn how leadership and management differ, why leading is not just based on position and much more. 3 hours; \$224; digital badge upon completion.

careercatalyst.asu.edu

Online Self-paced







Our planet is talking to us.

The Global Futures Laboratory is listening and working to build a healthier relationship with it. With a holistic, life-systems approach to solving critical resource challenges, we're driving toward a future in which all living things thrive. Join us.

globalfutures.asu.edu/join

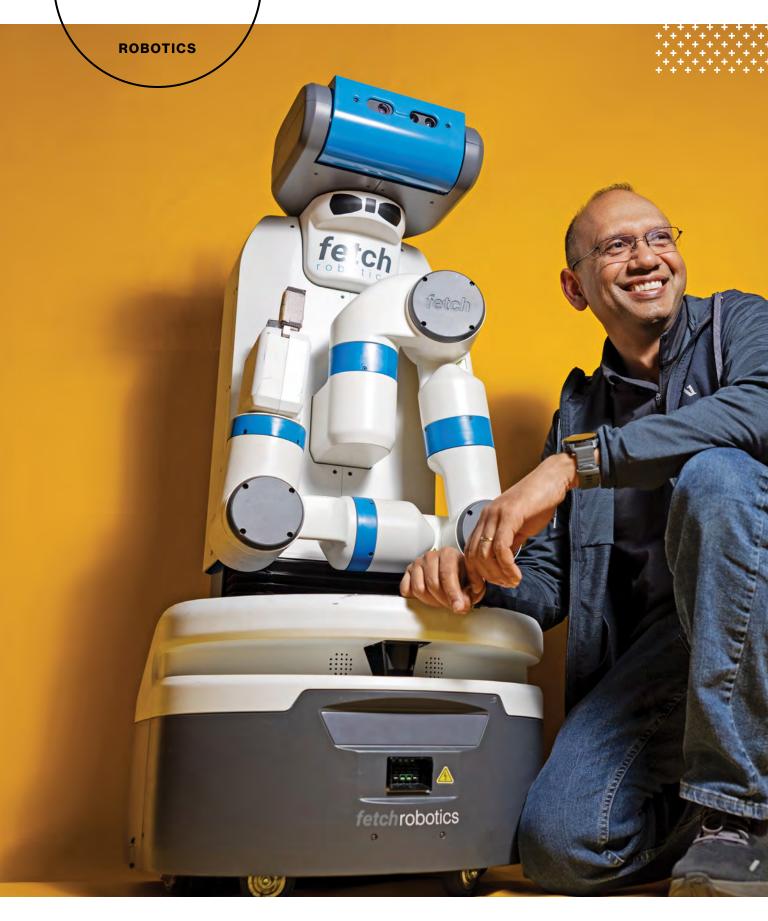


Arizona State University

Reshaping our relationship with our world



CHAO LING ASU THRIVE MAGAZINE 21





Robots at service

ASU researchers are helping robots learn everyday tasks

Story by DANIEL OBERHAUS Photos by SABIRA MADADY

Over the past decade, robots have become an increasingly important part of our daily lives. Autonomous vehicles shuttle us from point A to point B, drones deliver lifesaving medicine to remote towns, sidewalk robots deliver groceries, industrial robots package online orders and robotic surgeons perform lifesaving operations. These are specialized use cases, but each represents an important step toward general purpose robots that can coexist with us in the most intimate of settings: our own homes.

For roboticists like Nakul Gopalan, an assistant professor in the School of Computing and Augmented Intelligence – one of the largest computer science programs in the country and home to 1 in 12 ASU students – the challenge of

building an automaton that is safe and effective enough for domestic use is something of a final frontier that makes freeway driving feel tame by comparison.

"Every factory floor is precisely measured for automation so that a robot can assemble objects with millimeter precision on the assembly line," says Gopalan. "But inside our houses, there's no precise location for anything objects move, and there is visual clutter everywhere. If I ask a robot to grab an object that has moved or is hidden behind other objects, it's just going to break things."

Although millions of Americans already cohabitate with robotic vacuum cleaners, what Gopalan is imagining is something closer to Rosie out of "The Jetsons": a general purpose bot that can

safely and reliably help with a variety of domestic tasks. It may sound whimsical, but the robots being developed by Gopalan and his collaborators are designed to address an acute problem: the lack of caretakers for a rapidly aging global population.

Alfred, a butler

Even if a robot is able to learn by example, there is still the challenge of how to tell the robot what, exactly, you'd like it to do. Today, robots are programmed by specialist software engineers who are fluent in computer code. But less than 1% of people know how to "All of these tasks would benefit from autonomous robots. but they need to be able to transfer what they've learned in a reliable fashion because places like households and hospitals are pretty risk-sensitive settings."

 SIDDHARTH SRIVASTAVA, ASSOCIATE PROFESSOR OF COMPUTER SCIENCE AND **ENGINEERING**

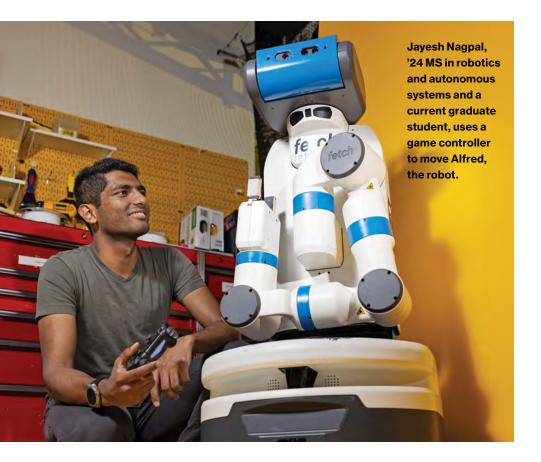
write code, which means that any general purpose robot in the home is going to need to learn how to speak our language. And this, says Siddharth Srivastava, an associate professor of computer science and engineering in the Ira A. Fulton Schools of Engineering and director of the Autonomous Agents and Intelligent Robots Lab, is more challenging than it first appears because it requires teaching robots how to generalize across situations.

Consider something as simple as asking a robot to make a cup of coffee. For a human, we interpret the task the same wav each time we make it. It doesn't matter if the beans were in a cupboard before and today they were on the counter.

But for a robot, if you change any element, it is the equivalent of learning a brand-new task because the robot does not have general concepts for relationships such as "the container that has coffee beans" and the "location of the coffee mug," and for acts such as "pour," "pickup" or "place." It doesn't help that from the robot's perspective, making coffee appears to be one cohesive sequence of motions and not individual steps.

To overcome this problem, Srivastava and his colleagues designed a method that allows robots to "invent" their own logical concepts with clear meanings in the real world.

Their prototype robot, Alfred, is able to develop concepts like "placement" that allow it to set a dinner table without being shown how. But this capability destines Alfred to be more than a robotic busser; it opens a path to a truly





Heni Ben Amor developed a transformational prosthetic limb that can keep up with the speed of someone walking.

generalizable robot. The way it learns can be applied to chores that are dangerous or unpleasant, like folding laundry or delivering medicine in a hospital.

Getting Alfred to accomplish these types of jobs reliably every time is the next step, Srivastava says.

The robotic prosthesis

At ASU. Associate Professor Heni Ben Amor successfully built a basketball-playing robot that was able to teach itself how to shoot hoops in a matter of a few hours. After this achievement. Google invited him to work with DeepMind, one of Google's Al divisions, in 2023, for his sabbatical, to build the world's best table tennis robot.

While Ben Amor's robots may seem like novelties, they are a test bed for robots that can react fast enough to keep up with humans - a critical prerequisite for living side by side with them in our daily lives.

Table tennis, which requires split-second decisions involving complex, real-world physics, is the perfect test case. The team adapted the techniques behind the table tennis and basketball robots to create a prosthetic limb for people with lower leg amputations. This impacts real lives, as each day, around 400 people in the U.S. undergo a lower extremity amputation because of medical issues such as diabetes or trauma.

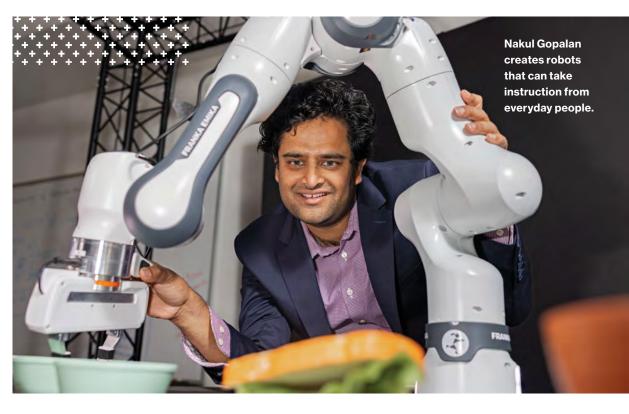
The problem is that modern prosthetics aren't able to adapt to the individual's locomotion and gait.

Ben Amor's smart prosthesis minimizes musculoskeletal stress on the wearer by adapting to their gait and the terrain in real time.

Providing research for the public good

Safe evacuations. Researchers at ASU developed a collision-avoidance algorithm for robots and shared it in the public domain. It became the foundation for Pathfinder by the startup Thunderhead Engineering, which simulates how people evacuate buildings so architects can test evacuation strategies in stadiums, skyscrapers and trains before construction begins.

Space-bound. NASA's Jet Propulsion Laboratory and ASU are developing robotic arms for cube-shaped satellites that could autonomously assemble larger structures in space, such as solar arrays and antennas.



The team patented its prosthetic in 2024, and has been working with Mayo Clinic and a local startup called SpringActive to bring the technology out of the lab and into the real world.

Nanny Ogg, a sandwich maker

By 2050, projections indicate that there will be just one working person for every two people over the age of 65, which will result in an acute lack of caretakers for our rapidly aging population. Robots can help fill this gap by taking over critical caretaking tasks such as meal preparation that will allow seniors to age in place. For the past year, Gopalan and his team have been working on this problem by inviting people into their lab to teach Nanny Ogg – a robotic arm suspended from the ceiling - how to make a sandwich using a specialized joystick to cut cheese, slice bread and spread butter using the robotic arm.

"Applying butter on bread is actually pretty hard if you think about it because the knife has to "Applying butter on bread is actually pretty hard if you think about it ... humans do it with a lot of visual and tactile information, but right now a robot has to do it with only visual information."

 NAKUL GOPALAN, AN ASSISTANT PROFESSOR AT THE SCHOOL OF COMPUTING AND AUGMENTED INTELLIGENCE

make contact with the bread and you have to make sure the butter sticks to the bread," says Gopalan. "Humans do it with a lot of visual and tactile information, but right now a robot has to do it with only visual information."

The key, says Gopalan, is ensuring the robot can learn how to prepare new recipes from limited examples. Today, most robots are hard-coded with instructions in advance by specialist software engineers. But if grandma decides

she doesn't want mayo on her sandwich sometimes, the robot needs to be able to adapt to this new instruction from someone who may have never written code or even interacted with a robot.

"In our lab, we want to see how the average person who doesn't have experience in robotics prefers to teach the robot," Gopalan says.

Gopalan's sandwich bot can make recipes with as few as five demonstrations from a non-expert user, but this is just the beginning.

A robot for everyone

ASU robotics researchers are optimistic that robots able to function more like a personal butler than specialized task-doer will be an integral part of daily life within the next decade.

"The work at ASU is very exciting and sort of democratizes robots by allowing everyone – whether a worker in a factory, a nurse in a hospital or someone in their home – to engage with the robot in a safe and meaningful way," Ben Amor says.



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Break

in Alzheimer's prevention research profes ASU-Banner Ne Disease Research profession and professi

A healthy lifestyle and a future treatment for a common virus may reduce risk for Alzheimer's disease

Story by LEAH ROSENBAUM **Photos by** SABIRA MADADY

NEARLY 7 MILLION AMERICANS are living with Alzheimer's disease, a condition that devastatingly impairs memory and identity. It's a heartbreaking disease that robs loved ones of their sense of self and ability to recognize loved ones.

There's some good news.
Research from scientists at ASU shows that there are ways to reduce risk, including through exercise and getting enough of the essential nutrient choline. In addition, a recent breakthrough suggests there may be a connection to a common virus in 25% to 45% of new cases, which may allow the use of medication to prevent the virus from causing damage in the brain.

Dr. Ben Readhead, an associate

research professor at the ASU-Banner Neurodegenerative Disease Research Center, has witnessed the toll of Alzheimer's firsthand in his grandfather. This personal experience fuels his dedication to disease prevention research.

Heading off Alzheimer's by treating a common virus?

Dr. Readhead and his team recently published research that illuminated a surprising link between a chronic gut infection caused by a common virus and the development of Alzheimer's disease in many people.

"We think we found a biologically unique subtype of Alzheimer's that may affect 25% to 45% of people with this disease,"

Dr. Readhead says.

ASU and Banner Alzheimer's Institute researchers, along with their collaborators, discovered that some people exposed to "We think we found a biologically unique subtype of Alzheimer's that may affect 25% to 45% of people with this disease."

- BENJAMIN READHEAD, ASU-BANNER NEURODEGENERATIVE DISEASE RESEARCH CENTER

throughs



cytomegalovirus may have a lingering infection in the gut. This herpes virus infects over half of adults by age 40 and may persist in the gut, traveling to the brain via the vagus nerve — a critical information highway that connects the gut and brain. Once in the brain, the virus may trigger the brain's specialized immune cells, called microglia.

Ongoing research

Dr. Readhead says they haven't found clinical differences between



"Our work provides further support that dietary choline should be consumed on a daily basis given the need throughout the body."

RAMON VELAZQUEZ, ASU-BANNER
 NEURODEGENERATIVE DISEASE
 RESEARCH CENTER

people who might have this subtype of Alzheimer's disease and people who have the more typical form of Alzheimer's disease, but their clinical data has been limited because most of their research has been conducted on patients after death. His team is currently working to develop a blood test that could identify people who have a chronic gut infection, while they are still alive, which would help provide a better clinical understanding of the disease and how it might differ in subtle ways from conventional Alzheimer's disease.

"We are hopeful about the potential for a preventative role for some sorts of therapies," he says, "maybe antivirals, or maybe it'll be something else that could strengthen the immune system."

It's important to note, however, that contracting HCMV doesn't mean you will get Alzheimer's disease, and its role in the disease is likely complex. By age 40, half of American adults have been infected with HCMV — but only 10% of Americans age 65 and older will go on to develop Alzheimer's disease. Most people who contract HCMV will only experience a mild, flu-like illness. What might be notable, according to the researchers,

is whether an HCMV infection lingers for years in the gut, as it did in a subset of their research participants. The presence of the virus in the intestines specifically seemed related to Alzheimer's disease — but this shouldn't be a concern for most people.

Aerobic exercise, nutrition and Alzheimer's disease

Researchers at ASU have shown that a healthy lifestyle, including exercise and choline, an essential nutrient, reduces risk of the disease.

Professor Fang Yu, Edson Chair in Dementia Translational Nursing Science at the Edson College of Nursing and Health Innovation, says that aerobic exercise may help prevent cognitive decline through a variety of mechanisms in the brain. For example, in animals, aerobic exercise has been shown to reduce amyloid plaques and tau tangles, two hallmarks of the disease.

Aerobic exercise has also been found to improve neuroinflammation and oxidative stress, both of which can lead to cell damage in the brain. It might also increase hippocampal volume, a key part of the brain that is responsible for memory.

Yu says that it doesn't really matter what type of aerobic exercise people do to reduce cognitive decline. "They all work through similar mechanisms," she says.

As a nurse, however, she is familiar with working directly with patients and understanding their daily limitations. She has found that recumbent stationary exercise bikes are one of the safest and most effective ways for people



with limited mobility or with the beginnings of cognitive decline to get aerobic exercise.

Nutrition may also play a key role in preventing Alzheimer's disease, according to ASU research.

An estimated 90% of Americans don't get enough choline, an essential nutrient produced in small amounts in the liver and found in foods including eggs, broccoli, beans and meat, according to the National Institutes of Health. This compound is necessary for brain health and is used to produce acetylcholine, a neurotransmitter that plays an essential role in memory, muscle control and mood.

Current recommendations are 550 milligrams per day for men and 425 milligrams per day for women, Ramon Velazquez, assistant professor at the ASU-Banner Neurodegenerative Disease Research Center and ASU's School of Life Sciences, published research that shows consuming enough dietary choline may help protect the brain from Alzheimer's disease and cognitive decline.

Velazquez and his colleagues found that multiple organs in

mice's bodies were negatively impacted by a choline-deficient diet, while adequate choline showed improvements in spatial memory, compared with those receiving a normal choline regimen. Not only that, but their offspring also showed improvements in spatial memory.

Another study by Velazquez and his colleagues showed that mice deprived of choline exhibited weight gain, changes to their metabolism, organ damage and poor motor function. They also showed brain proteins that could lead to Alzheimer-like tangles.

"Our work provides further support that dietary choline should be consumed on a daily basis given the need throughout the body," Velazquez says.

In humans, Velazquez has found that Alzheimer's patients with lower levels of choline in their blood tend to have more severe forms of Alzheimer's disease pathology in the brain, compared to those with higher amounts of choline in the blood. He also found strong associations between low blood choline and higher accumulations of amyloid plaques and tau tangles in the brain.

The growing awareness of choline's importance should encourage all adults to ensure proper choline intake, Velazquez says. This is particularly true for those on plant-based diets, which may be low in naturally occurring choline, he says.

The researchers encourage people to discuss with their doctor whether to take an inexpensive. over-the-counter choline supplement to help protect the brain from neurodegeneration.

To raise awareness about the importance of lifestyle factors in brain health, Velazquez has partnered with Lifetime Fitness at the Arizona Biltmore to develop a seminar series for adults aged 65 and older. The focus is the impact of diet, exercise and other lifestyle choices on cognitive well-being. ■

Learn more about staying healthy by signing up for ASU Health's newsletter Doing Well at doingwellnews.substack.com.

Learn more about research at news.asu.edu/research-matters.



The downtown Phoenix Bioscience Core will house ASU Health by fall 2028. The facility will be uniquely community-facing.

"You can't walk in [to many university medical schools] and learn anything," says Dr. Sherine Gabriel, executive vice president of ASU Health. "We're going to change that."

Within 10 years, ASU Health's results will create nearly 200,000 jobs and add \$19 billion to the state gross domestic product, says Phoenix Mayor Kate Gallego.

The facility will house ASU's new medical school. HonorHealth, the primary clinical affiliate, will colocate in the facility. Multiple other disciplines, including the new School of Technology for Public Health, will be in the facility where there will be a focus on innovative work in data science, care practices and hands-on tools to train future health care leaders to improve the health of Arizonans.

Learn more at asuhealth.asu.edu.





LIZA ROGER; SAMANTHA CHOW/ASU A SU THRIVE MAGAZINE 33





Teens build their confidence and earn college credit, all before high school graduation

Story by AMANDA LOUDIN Photos by BRANDON SULLIVAN

AS PARENTS OF SEVEN children. Julie and Dietrich Evans spend a lot of time thinking about how to pay for college tuition. So, when they moved to Fountain Hills, Arizona, in 2021, they were disappointed to learn the local high school didn't offer a dual-enrollment option. They still had half their brood to usher through high school. Last fall, all that changed for the better when Fountain Hills High School partnered with the Accelerate ASU program.

Through the partnership with ASU, junior and senior students at Fountain Hills High School can earn credits in college-level courses with no fees. Teachers are present and support the online ASU coursework - and in fact, build it into the school day - and students are expected to participate. When the Evans family learned about the program with ASU, they knew this would be an opportunity for their son, Avery, to get a head start on college.

"We immediately planned out how many classes he could take senior year to maximize the opportunity," mom, Julie, says.

Avery has done just that and will graduate high school with 16 to 18 college credits this spring. With an

eye on a career in sports medicine, Avery's ASU classes have included sports medicine, math and English. He accomplishes it all while balancing a busy, high-level multisport athlete's schedule, as well, part of the Evans' family tradition - three older siblings are currently college athletes.

"We highly value academics and athletics, using sports as a platform for a strong and healthy life," says Julie, '98 BA in elementary education. In fact, the family of entrepreneurs own a fitness gym as one of their small businesses.

Avery aspires to play basketball in college and has also earned top placements in state-level swimming competitions. Put together with the rigors of the ASU classes and his high school classes, Julie says that Avery has developed time management skills that will serve him well when he enters college full time next fall.

"If you stay disciplined," Avery says, "it's much easier to manage everything."

Shania Rivera balances four sports a year with school and work.

"It's well organized with prompts leading up to major assignments, making the process more manageable for students."

- JULIE EVANS, WHOSE SON AVERY IS AN ACCELERATE ASU STUDENT

The structure of Accelerate has been helpful in this approach.

"It's easy to ask for help when I need it," says Avery. "The professors are available. Having a high school teacher in the room also helps."

Avery's parents have watched him develop through the program and have been impressed by what they've seen.

"It's well organized," Julie says, "with prompts leading up to major assignments, making the process more manageable for students."

For his part, Avery says he's learned a great deal in the collegelevel courses. "The material is more in-depth, and I feel like I'm getting ahead in college-level work."

Inspiring others and gaining college credits

Like Avery, Fountain Hills High School senior Shania Rivera is a multisport athlete, and throughout school has played softball, volleyball, swimming and basketball. She's also active in leadership roles, sitting on the superintendent and student advisory councils, and works two part-time jobs - one at a daycare and one at a post office. On top of all that, thanks to Fountain Hills High School's programming with ASU, which the school calls Fountain

Hills University, Rivera is halfway to earning her associate degree.

With a packed schedule like that, Rivera benefits from a hefty dose of self-discipline, and a willingness to start each day early, beginning with an economics class at 7:45 a.m.

"Then I work on my ASU courses, and from noon to 3 p.m., I work," she explains. "I have an hour to prepare for softball practice, which runs from 4 to 5:30 p.m. After that, I focus on schoolwork, socializing and other responsibilities."

Rivera's Accelerate courses have included "Intro to Anatomy and Physiology," "Intro to Psychology," "English 101" and several math classes. Her Accelerate time counts toward both high school and college credits, and when she graduates high school this May, Rivera will have earned 19 college credits.

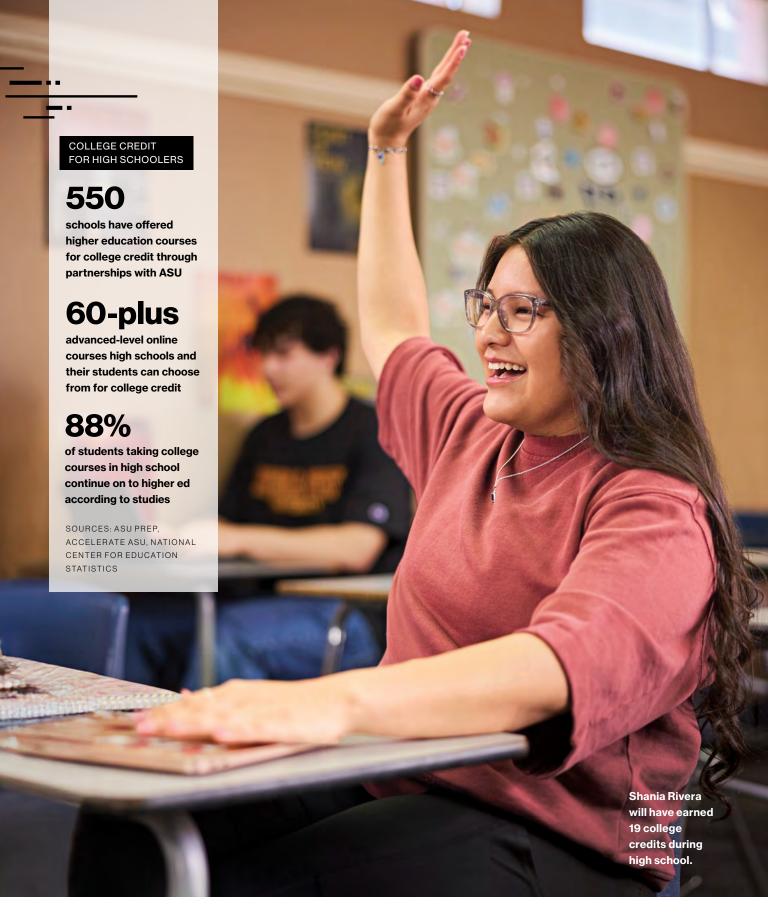
According to Shania's mother, Francisca Rivera, Shania's ability to keep so many balls in the air is no surprise.

"She has always challenged herself, even as a kindergartner running for student council," Francisca says. "She pushes herself academically and takes advantage of opportunities like these ASU classes. Fountain Hills offering these courses is a great opportunity for students."

The Rivera family resides in Fort McDowell Yavapai Nation, bordering Fountain Hills, and Shania has been an active member of the community.

"I have held ambassador titles within my tribe," she says.

Prior to the Accelerate ASU program. Shania found the idea of college coursework intimidating,



but the self-paced format has made it manageable, she says: "It helps busy students like me balance school, sport and work."

Shania's next step is preparing for college, where she will play softball and work toward a career as a physical therapist.

What's good for the students is good for the school

Brent Olsen, '22 BA in English, a Fountain Hills English teacher and basketball coach, has watched Avery, Shania and all the students thrive through the program the school has with ASU, and says its

Sierra Vista's solutions for its middle and high school students

In Southern Arizona, in response to community needs, the Sierra Vista Unified School District worked with ASU Prep Global to create a new Academy offering a flexible hybrid learning option for students in grades 7–12. Students complete coursework online and attend in-person sessions at least four hours a week, a unique model that works best for students and families who seek more flexibility during the school year.

Hybrid students remain SVUSD students, with access to all extracurricular activities, clubs, sports and events like prom and graduation.

Classes include an array of offerings, such as human anatomy and physiology, engineering and physics, and macro- and micro-economics, taught by ASU Prep Global instructors. Students can also earn college credit for certain ASU classes. Currently, the Academy serves 52 students, with plans to expand to over 200.

Learn more at asuprepglobal.org.



"Many students who previously didn't see themselves as 'college material' are now finding success in these courses, building confidence and seriously considering higher education."

BRENT OLSEN, FOUNTAIN HILLS
 ENGLISH TEACHER AND
 BASKETBALL COACH

flexibility works well for students.

"For instance, while Avery has dedicated class time, he also has the freedom to move at his own pace, working ahead or taking breaks when schedules become more demanding," Olsen says. "The same is true for Shania, and for our other students."

One of the biggest benefits of the Accelerate ASU program is that it removes the barriers to college for students, according to Olsen.

"Many students who previously didn't see themselves as 'college material' are now finding success in these courses, building confidence and seriously considering higher education," he says. "Others who may have thought college was financially out of reach are seeing new possibilities, thanks to the program's affordability.

"The majority of our students are earning A's and B's, entering college with strong GPAs, and, most importantly, gaining the confidence that they can handle collegelevel work."

The student population at Fountain Hills totals 335, according to principal Barrie Muzbeck Pinto. Students took 115 courses this year in the Accelerate ASU program.

"Next year, we plan to open some courses to accelerated sophomores," she says. "If a sophomore takes full advantage of it, they could complete up to nine college courses before they graduate."

By partnering with ASU, Fountain Hills High School has also raised its own status. "It helps us continue our 'A' rating," Pinto says, "and also increases student engagement and performance."

Parents, according to Olsen, have been overwhelmingly positive about the program.

"They have asked, 'What's the catch?" Olsen says. "The truth is, there isn't one."

That's exactly what Julie Evans has discovered.

"Now that ASU's program is in place, we're absolutely thrilled."

Serving K-12

School administrators interested in learning about college credit for high schoolers can request information about Accelerate ASU at accelerate.asu.edu.



MANY OPTIONS

ASU Preparatory Academy (ASU Prep)

The K-12 charter schools in the Phoenix area and in Casa Grande are designed for in-person learning.

ASU Prep Digital

K-12 online school that offers a personalized learning experience across the U.S. and world for students to study on their schedules. It also has hybrid learning opportunities onsite at an ASU campus.

ASU Prep Global

This online school offers fulltime and part-time enrollment for partner schools and individual families, including remote learning for students in grades 6-12 with expert digital teachers. It also partners with schools to help them provide specialized college-level prep courses otherwise unavailable to students. Classes include a wide array of offerings, like human anatomy and physiology or macro- and micro-economics, taught by an ASU Prep Global instructor.

Learn more at asuprep.asu.edu.

Empowering learners in Arizona K-12 ON TRACK TO COLLEGE and beyond

ASU Preparatory Academy includes a network of charter schools and also partners with other K-12 schools to offer college-prep level secondary education, as well as ASU college courses that meet high school requirements and provide college credit. Students have the opportunity to learn in subjects such as calculus, economics, anatomy and more.

74,000



K-12 students

in ASU Prep Academy, ASU's tuition-free secondary education schools available both in person and online

43,000+ teachers trained

around the world in related subjects like the use of Al and other innovative methods

350+

partners

around the globe work to improve education for their students through partnerships with ASU Prep

23 US states

are served by ASU Prep, including Indiana, Massachusetts, North Dakota and Texas

25 countries

around the world

75 schools in Arizona

including in rural communities like Tuba City and Piñon, and in the Phoenix area and Tucson

13 schools in California

including in Los Angeles, Meridian and San Diego

5,910 college credits earned

in 2024 by ASU Prep students

SOURCES: ASU PREP ACADEMY NETWORK, ASU LEARNING ENTERPRISE





Outdated laptops. Handheld ticket printers.

Decommissioned servers. Each year, businesses discard a vast amount of unwanted technology. An Arizona company run by two ASU alums has grown annual revenues to over \$32 million a year helping businesses sunset old technology while protecting critical data.

Take the major airline that wanted to dispose of seatback screens. DMD Systems Recovery wiped the tablets and sold them to be used for taking restaurant orders.

It's just one example of the homegrown innovation that fills the ranks of the Sun Devil 100. This elite group of entrepreneurs and corporate leaders spans a wide array of industries, from marketing to biotech to banking to construction and more.

The companies on the 2025 Sun Devil 100 list employ 256,862 people full time.

The organizations in this year's group collectively reported a total revenue of \$70.7 billion for the 2023 fiscal year, a figure audited by an outside accounting firm. Large multinational firms CBRE and BMO are included in that revenue number. Looking at the other companies on the list, they have delivered a notable economic value of over \$17 billion in revenue in fiscal year 2023.

Together, they're part of what has turned the Phoenix metro area

into an economic powerhouse over the last three decades, and drawn iconic corporations like Apple and Taiwan Semiconductor Manufacturing Company to make multibillion-dollar investments here.

"There are so many industries that are blooming here in large part because we have that foundational infrastructure – physical and people," says Chris Camacho, president and CEO of the Greater Phoenix Economic Council. "And as much success as we've had in recruiting companies, 80% of the jobs [in an economy] come from the local base."

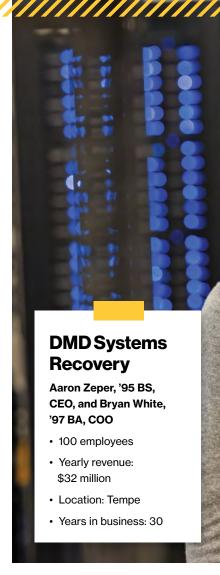
Data masters

DMD Systems Recovery has been around for nearly three decades – but its real transformation began in 2020. Aaron Zeper, '95 BS in finance, took over as CEO in 2020. He saw big potential in what was then a tiny company in the waste management industry. He began designing services for large companies, handling decommissioned electronics not as throwaways, but as assets.

DMD's process ensures that data is deleted securely – including from the many unexpected devices, like printers, that have hard drives – and in accordance with the relevant tangle of compliance laws.

Bryan White, '97 BA in communication, a third-generation alum, is the company's chief operating officer. The company now employs 100 people, and recently acquired another business in Palo Alto. California.

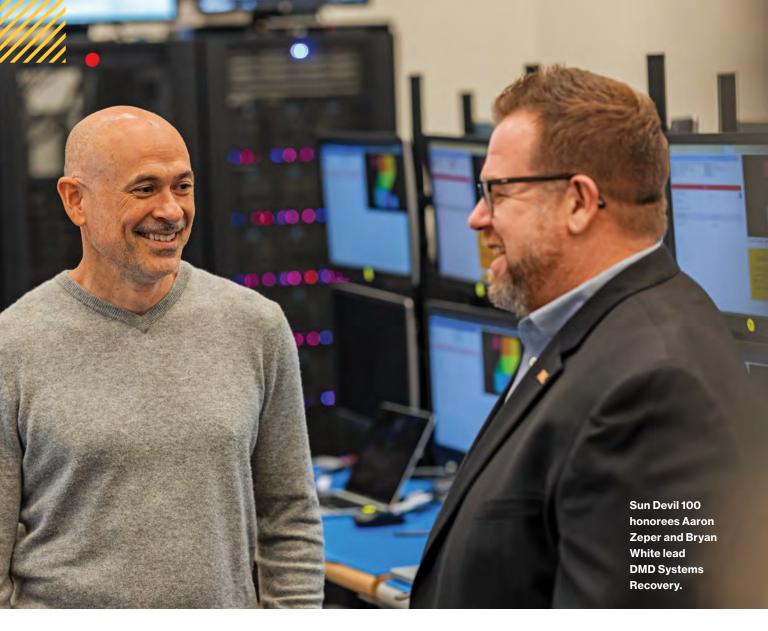
"We're just down the road from ASU's main campus," White says,



"which makes it easy for us to connect with talented students and recent grads who are excited to get started in the tech world."

DMD's rapid growth has earned it a recurring spot on the Inc. 5000 list of the fastest-growing companies in the U.S. It has also been recognized as a Top Workplace in Arizona. But to Zeper, its inclusion in the MO 100, an award that celebrates leaders of certified B corporations who are creating prosperity not just for themselves, but all stakeholders, is the most motivating.

"The view of it to me is if you provide well-paying jobs, treat your



employees well and you continue to grow, then that creates other opportunities for the economy," he says. "We have a responsibility to keep scaling."

Building Arizona's infrastructure

360X Staffing, founded by Eric Ganz, '03 BA in communication, is a leading Arizona-based construction staffing firm generating over \$50 million in annual revenue - and strengthening local economies across the state. With more than 750 skilled employees - over 300 based in Arizona - 360X

"The view of it to me is if you provide wellpaying jobs, treat your employees well and you continue to grow, then that creates other opportunities for the economy."

- AARON ZEPER, CEO DMD SYSTEMS RECOVERY

partners with major contractors on high-impact projects, including the TSMC semiconductor facility in Phoenix and the VAI resort in

Glendale. When commercial and industrial teams need qualified tradespeople to meet tight deadlines, they turn to 360X.

"Whether clients need support for two weeks or two years, they rely on us for flexible, high-quality staffing - without the long-term burden of hiring and layoffs," Ganz says.

What began as a construction referral two decades ago has grown into a national operation with deep local roots. Today, 360X specializes in 12 core trades across the commercial, marine, renewables and industrial sectors.

"By focusing on a narrow set of trades, we've become true experts," Ganz says. "That lets us place workers who don't just meet technical requirements — they thrive across job sites, from wastewater plants and Amazon centers to mines and power plants."

360X also creates meaningful flexibility for skilled professionals, empowering them to choose jobs based on location, pay and schedule. Many earn a full year's salary in just nine or 10 months, giving them the freedom to take time off or spend more time with family.

"Every time we staff a large project especially in places like Flagstaff — the benefits ripple far beyond the job site."

-ERIC GANZ, CO-FOUNDER, 360X STAFFING

At the core of 360X's growth is its investment in innovation. Proprietary recruitment software and Al-powered automation help the company source and place candidates faster and more

effectively than competitors – a strategic advantage.

"Every time we staff a large project — especially in places like Flagstaff — the benefits ripple far beyond the job site," Ganz says. "We're bringing business to hotels, restaurants and local service providers. It supports the whole community."

Laser focus on strategy

A car accident changed Bob Maguire's career trajectory. On the last day of his executive MBA program at ASU, Maguire, '13 MBA, had a rollover accident on the Loop 202. Amazingly, he walked away without a scratch.

"I remember thinking to myself, 'Am I really doing everything I can to help people?" he says. "And the answer was. 'No."

In 2018, Maguire founded BioLab Sciences, known today as BioLab Holdings. Previously, Maguire had founded a regenerative medicine company and brought in Jaime Leija, '14 MBA, whom he met in the W. P. Carey School of Business executive MBA program, to help start BioLab after Maguire moved on from the previous company. BioLab makes wound care membranes to help wounds heal after outpatient surgeries. They can't take credit for the science behind it – the product is a commodity these days – yet BioLab has been on a rocket ship trajectory. In just seven years, the company has grown to 100 employees and increased revenue by more than 689% since 2022.

Before BioLab, Maguire and Leija both had long careers as





executives almost entirely outside of the medical industry.

"That was our strength, that we were naive, that we didn't know," Maguire says. "I can't tell you how many naysayers said, 'You can't do this. You don't know what you're doing. You're not a PhD or MD.' You're right, but we'll hire them."

BioLab lets wholesalers sell their product and compensates them based on performance. They also handle all of the regulatory and billing complexities, so medical centers don't have to.

"I think the key to our growth is that we've been laser-focused," Leija says.

Transporting our everyday products

You may not recognize the name Forrest Logistics – but chances are, something you own has passed through its network. From clothing to electronics, the freight company helps move everyday products from ports and rail yards to their final destinations.

Today, Forrest Logistics generates \$85 million a year and employs 95 people — all while helping small independent truckers grow from owning one or two trucks to managing full fleets. But the company had modest beginnings. Forrest Logistics President Vince Fasso, '10 BS in global business, co-founded the company out of a guest house and funds from his and his business partner's 401(k)s.

"We bought used desks and computers, and grew everything organically – never took on any debt," Fasso says. "That mindset of being frugal and financially sound

definitely came from what was taught at ASU."

The company started as a freight brokerage, hiring trucking companies to pick up containers from ports across the country to deliver to their customers. It later expanded to become a trucking company in its own right. Today it works with many of the top 10 retailers in the U.S., providing flexible capacity solutions in the most complex sector of America's supply chain. The technology they have adopted optimizes efficiencies and allows their team to focus on safety and quality of service. In five and a half years of operation, Fasso says, they've had zero insurance claims.

"Our job is to move freight safely, cost-effectively and in a way that works for everyone involved," Fasso says.





"They're hardworking, they're humble, they are changing the face of our community every day."

- DANIELLE FEROLETO, OWNER AND FOUNDER, SMALL GIANTS

Building businesses

Small Giants is another local enterprise that is helping an ecosystem of businesses flourish. After earning her undergraduate degree, founder Danielle Feroleto, '94 BA in journalism, '98 MMC in mass communication, took a job at trade magazines, doing everything from writing to selling ads to visiting the printer, and fell in love with the architecture and construction companies they covered.

"They're hardworking, they're humble, they are changing the face of our community every day," Feroleto says.

They also didn't know how to build their brands, so in 2006. she founded Small Giants as a full-service marketing firm to serve the commercial real estate and construction industries. The company, which is led by an executive team of seven who have all built their names in the industry, employs 45 people.

It leverages AI to innovate, enhance and complement such services as writing press releases and managing marketing analytics. An in-house animation team helps customers present their visions for multimillion-dollar projects.

Recently, their most powerful shift wasn't based on technology.



Feroleto says the team heard from clients that their firms desperately needed more employee training options in soft skills, leadership and other proficiencies to grow and scale. So Small Giants created a full curriculum of trainings, called the Academy for Construction Excellence, to provide another level of support to its clients.

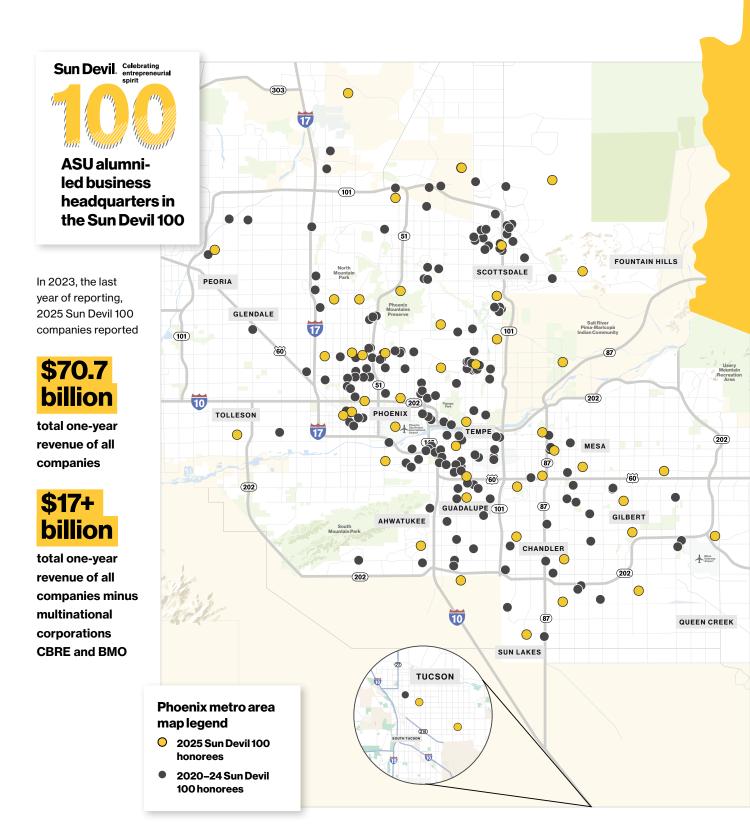
Feroleto says the agency has served more than 400 general contractors, subcontractors and developers.

"Probably 80% of those are in the state of Arizona," she says. "So we've very directly helped companies grow

their own companies, which feeds back into the local economy, which I'm super proud of."

Major impact

"Sun Devil 100 celebrates exceptional ASU alumni who embody entrepreneurial spirit and uphold the values of the ASU Charter," says Christine K. Wilkinson, president and CEO of the ASU Alumni Association. "These business leaders are achieving excellence in their respective fields, representing the very best of ASU's commitment to innovation, leadership and service." ■



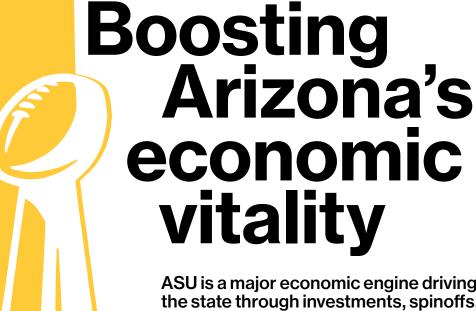
ASU's economic impact in the state

in fiscal year 2023-24



ASU's operating and construction expenditures deliver eight times as much impact on the state's GDP as hosting a **Super Bowl**

in fiscal year 2023-24



ASU is a major economic engine driving the state through investments, spinoffs, alumni-founded companies, research, taxes paid by alumni and more

ASU is a comprehensive teaching, learning and discovery enterprise - more than 1 in 4 working Arizonans with at least a bachelor's degree earned it from ASU - but its benefits extend well beyond broadening the horizons of students and learners.

The university is a major economic engine for the state. The impact of the university on the state is economic and transformational, improving quality of life for all of Arizona's residents. ASU wants everyone in the state - enrolled student or not - to thrive and succeed.

Sun Devils contributing to economy

More than 1 in 4

working Arizonans with at least a bachelor's degree earned it from ASU

306,000+

estimated ASU graduates working in Arizona

56,000

iobs created for Arizona

\$6.1

billion

estimated nontuition spending of **ASU** students

\$24.1

in wages for ASU working

graduates in Arizona

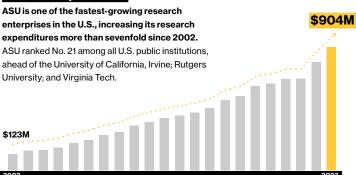
ASU's annual

operational expenditures contribution to Arizona's gross domestic product

SOURCES: ASU Office of the University

Economist, The Seidman Research Institute, National Science Foundation and ASU Knowledge Enterprise

Research expenditures







oni Saylor, '04 BS in industrial design, '16 MS in design, implements a signature problemsolving method at IBM focusing on users first called design thinking to get business results.

Rolling out the method across the 282,000-employee corporation included courses for employees, 50 collaborative design studios and a boot camp for new hires. The results? A 50% reduction in time-to-market and a 300% return on investment.

"People are at the center of everything we do and every problem we solve. Design isn't just a job it's a deep responsibility to the people we serve."

- JONI SAYLOR, VICE PRESIDENT OF DESIGN FOR IBM'S PRODUCT **EXCELLENCE OFFICE**

"One of the things that really inspired our approach to how we bring teams together at IBM was my experience in InnovationSpace at ASU," says Saylor, vice president of design for IBM's Product Excellence Office. That's where student teams from across The Design School, Ira A. Fulton Schools of Engineering, W. P. Carey School of Business and other majors collaborate to solve real-world problems, a new concept when ASU created it.

Innovative thinking from 1911 to today



Harkening back to IBM's roots

The refocus on good design that IBM undertook in 2012 goes back to what made IBM an American powerhouse from its founding in 1911. Its punch-card tabulating systems, "IBM cards," held most of the world's stored data for nearly 50 years. In the 1960s, IBMers built the computers and software programs that got man to the moon.

Today's R&D breakthroughs at the iconic corporation

Today, IBM generates over \$60 billion in revenue and runs more quantum computers than the rest of the world combined. Company leaders say that design thinking has helped IBM create products and services that meet user needs, like the IBM quantum computing system shown below.

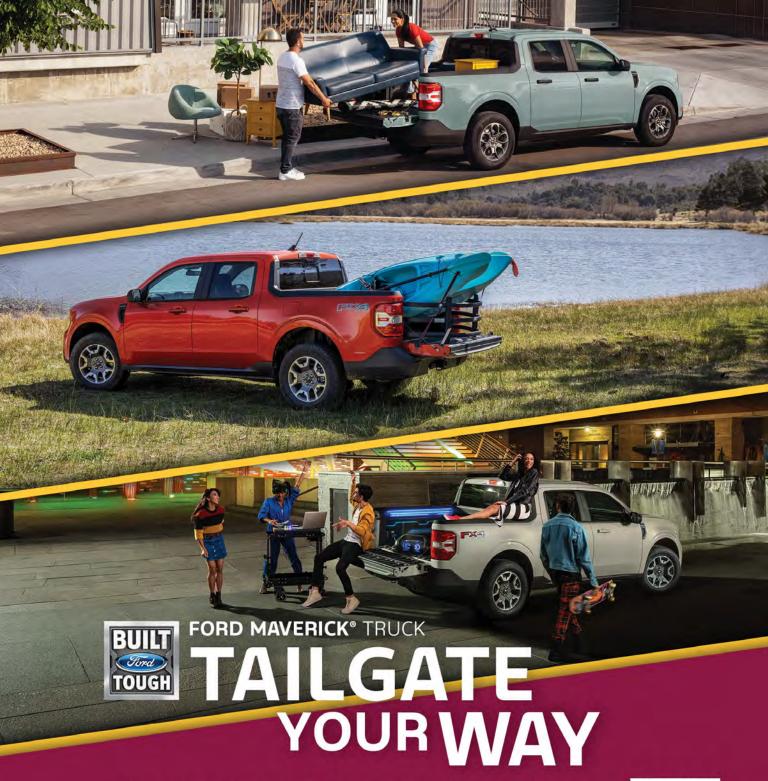


Helping teams deliver at a fast pace at scale

IBM employs over 3,100 designers, with over 100 directly reporting to Joni Saylor, who has helped IBM reintegrate design culture into the business. Results of participation in design thinking workshops include a 75% boost in team efficiency for IBM teams.

Take free online courses to learn IBM's customer-centered approach to problem-solving. ibm.com/design/thinking

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THINKING FAST

Bunting tested over 300 camera and lens combinations ahead of the U-2 photo shoot. But when the LCD display on his main camera failed in the altitude, he went back to basics by calculating the exposure in his head.





See more of the behindthe-scenes at blairbunting.com.



BREATH WORK

Because condensation from Bunting's breath could cause the plane's canopy to ice over and obstruct his — and his camera's — view, he practiced slowing his heart and respiration rates.





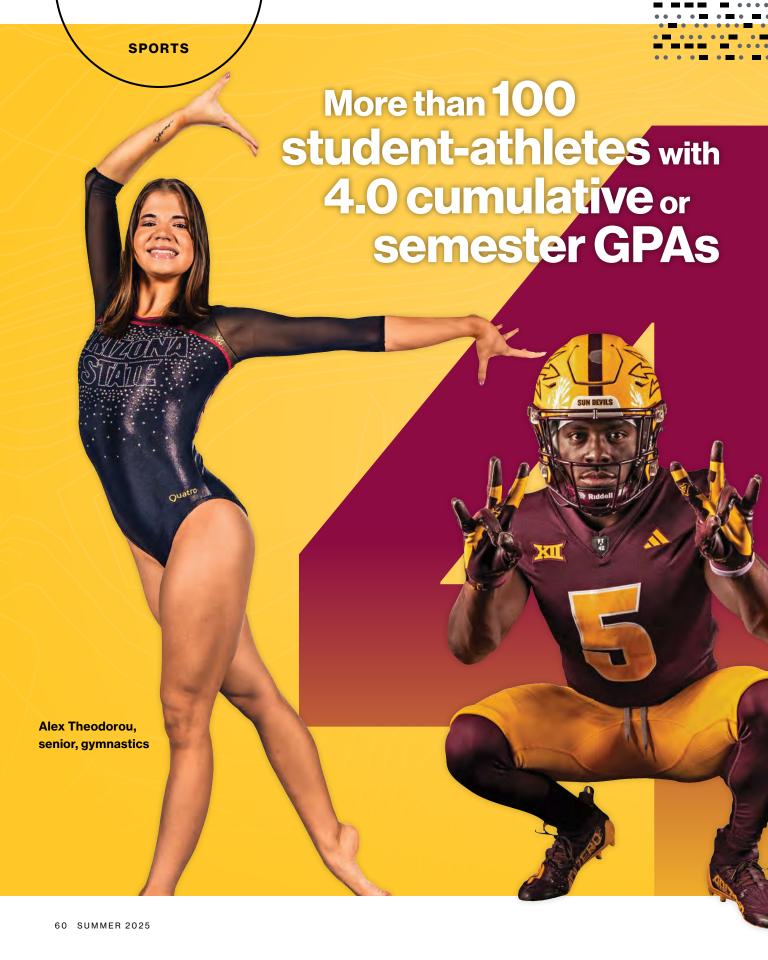
The U-2 mission required Bunting to be fitted for a custom spacesuit. That's because at altitudes over 60,000 feet, known as the Armstrong Line, humans can't survive. The problem? The spacesuit made it difficult to move. To train, Bunting wore ski gloves and a motorcycle helmet while working with camera equipment on the ground in preparation for the flight. ■







SUN DEVIL ATHLETICS ASU THRIVE MAGAZINE 59









Tiago Behar, men's swimming, '25 BS in computer science

Tiago Behar earned the 2023–24 NCAA Elite 90 Award for men's swim and dive. The prestigious award recognizes the student-athlete with the highest cumulative GPA who reaches an NCAA championship finals in their sport.

Next, he plans to pursue a career in cybersecurity and says balancing athletics and academics is "difficult in the best of times."

"I've just had to learn to be really efficient, lock in and do my work."

TIAGO BEHAR, RECENT
 GRADUATE, MEN'S SWIMMING

At ASU, he spent at least 20 hours a week in the pool or weight room — not including travel time for away meets. On a typical Tuesday, Behar had a morning and afternoon practice, a one- to two-hour weightlifting session and

two classes. He was usually in bed by 8 p.m.

"Swimming is a sport where you need to be very self-disciplined," Behar adds. "That's definitely one thing that I've learned to become."

Alex Theodorou, gymnastics, '25 BS in biochemistry

While the rest of her team was preparing for road meets the past two seasons, Alex Theodorou was taking tests inside student-athlete centers.

"That was the only option I had," says Theodorou, who hopes to become a doctor.

Such is the life of a biochemistry major with a 4.0 GPA and a demanding athletic pursuit. But Theodorou is used to it, in part because she often spent up to six hours a day in the gymnasium as a youth.

"To get high school homework done, I'd have to do it in the car," Theodorou says. "That's how the schedule demanded it."

Melquan Stovall, football, '24 MS in organizational leadership, '25 MA in global security (cybersecurity)

Melquan Stovall made one of the biggest plays of the season for ASU's football team when he caught a 63-yard pass from quarterback Sam Leavitt in the Sun Devils' 45-19 win over lowa State in the Big 12 championship game.

But that was hardly his biggest accomplishment at ASU.

Stovall graduated in May with two master's degrees — one in organizational leadership, the other in global security, and he plans to pursue a career in cybersecurity.

"Sports can end today or tomorrow," Stovall says. "But when it's all said and done, when it's time to hang up the cleats, academics is something that can't be taken away from you. Knowledge can't be taken away from you."

Helen Park, lacrosse, '25 BS in biological sciences

It didn't take long for Helen Park to grasp how difficult it would be to balance being a Division 1 athlete with the demands of pre-med. As a first-year student at ASU, Park found her mind wandering.

Once Park realized that she had to be 100% present in the moment, everything changed.

Now she is focused on applying for medical school with the goal of becoming a physician and, possibly, a surgeon.

"I know medical school is going to be hard, but I've done hard. I can do it again," Park says. ■



Three-time Olympic gold medalist and Sun Devil inducted into Hall of Fame

In 1972, Melissa Belote Ripley went to the Olympics at age 16 and won three gold medals in swimming. While competing for the Sun Devils, she won six individual National Collegiate Swimming Championships.

"I told my parents when I was 10 that I was going to go to the Olympics. Seeing the Olympic Village was like going to Disneyland. It was amazing," remembers Ripley, '79 BA in communication.

Now retired, she coaches local kids at EVO Swim School in Gilbert and Mesa, and was recently inducted into the Arizona Sports Hall of Fame.

"The Hall of Fame honor means the people in Arizona in the sports world recognize my efforts as an athlete," she says, "and I am very honored to be representing Arizona State University."

Learn more at sundevils.com/womens-swim-dive.



Partnership helps baseball players earn degrees

After retiring from professional baseball — and after nearly 20 years away from school — Chris Young, '21 BA in business administration, a former Diamondbacks outfielder who also played for other Major League Baseball teams, returned to college via ASU Online and graduated. Now he's encouraging other players to follow suit thanks to a new partnership.

The MLB + ASU Education Partnership provides current and retired athletes at

MLB and its minor leagues with university educational programs.

"To make sure that these athletes and, in turn, their families are going to have good lives and opportunities beyond the diamond is very much in line with what we want to do as a university," says Chris Howard, executive vice president and chief operating officer of ASU.

Learn more at mlb.asu.edu.



New ASU women's basketball coach

In March, ASU welcomed Molly Miller to the Sun Devil family as head coach of ASU women's basketball. Her sights are set on championships.

Here's the way Miller describes the brand of basketball ASU will play:

"You will see relentless energy and effort," she says. "We're going to play hard. We're committed to the defensive side of the ball. No one will want to play against our defense. It's like (how) no one wants to go to the dentist. That will be a staple of our program moving forward."

If that sounds a little bit like ASU head football coach Kenny Dillingham's philosophy, well, that's a vibe she strongly believes in.

Learn more at sundevils.com/womens-basketball.

SUN DEVIL ATHLETICS ASU THRIVE MAGAZINE 63



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Promotion Eligibility: To be eligible for offer bonus, new member must open accounts online by following the promotional OR code in the above ad, via the link provided at DesertFinancial.com/ASU or mention this promotion while opening in branch or over the phone. New member must not already be the primary or joint owner of an existing account or have been the primary owner of an account at DFCU within the past 12 months at Desert Financial Credit Union (DFCU). New member must be the primary account holder, be 18 years of age or older, meet Desert Financial's membership eligibility and credit qualification requirements and establish a checking account and Membership Savings account with a minimum balance requirement of \$25. Bonus amount is subject to all applicable taxes and is the responsibility of the member. Offer cannot be combined with any other account opening offer and is subject to change without notice. Employees of DFCU, its subsidiaries, affiliates, or agencies and their immediate family (including spouse, parents, siblings, children, grandparents or grandchildren) are not eligible for promotional offer.

Bonus Eligibility: New checking must meet the following requirements within the first 60 calendar days of membership - Establish and receive a minimum direct deposit of at least \$500 in a single deposit, must register for Online Banking and enroll in eStatements and have a minimum of 10 transactions (not including fees assessed by DFCU) posted to the new checking account. New accounts must be open and cannot be delinquent by more than 30 days at time of bonus payment. Bonus will be deposited into the qualifying checking account no later than 10 business days in the month following the end of the first 60 calendar day period if qualifications are met.

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-Global Employability University Ranking and Survey, 2025

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