UC SANTA BARBARA

THE Current

June 3, 2024
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An entrepreneurial eye for solving climate change

Pitching a business that uses artificial intelligence (AI) and satellite imagery to create effective solutions for fighting climate change, the student creators of EyeClimate won first place during UC Santa Barbara's 25th Annual New Venture Competition (NVC) Finals, earning $12,500 in cash and prizes. The EyeClimate NVC team comprises Satish Kumar, an electrical and computer engineering Ph.D. student; Bowen Zhang, a computer science Ph.D. student; and Max Gordon, a third-year undergraduate student and English major.

"We are incredibly honored and excited to be the winners of the New Venture Finals," said Kumar, who is advised by Professor B.S. Manjunath, chair of the Electrical and Computer Engineering Department. "This achievement is a reflection of our hard work, as well as a testament to the collaborative spirit and support we've received from our mentors and advisors throughout the entirety of the NVC process. We are eager to take what we've learned here and continue to push the boundaries of innovation in our field as we grow our business."

"This victory fuels our commitment to innovate and drive forward," said Zhang, who is also advised by Manjunath. "We are all geared up to take this business to the next level, implementing the feedback and lessons learned from the NVC program."

The event marked the culmination of the Technology Management (TM) Department's rigorous eight-month technology-business-plan competition, which is

open to students from all disciplines at UCSB. Three hundred students from 25 majors filled the roster at the start of the academic year. Mentored by professionals who have lived and thrived in the fast-paced world of tech entrepreneurship, students honed their entrepreneurial skills, refined their business plans and practiced pitching their stories and ideas. Of the 40 teams that started the program in October 2023, 18 were selected to participate in the spring NVC Fair, and six of those advanced to the finals.

“The teams that make the finals are typically the ones that have a viable business model and have done the work to validate it in the marketplace. This year’s finalists were no different,” said Dave Adornetto, the TM Department’s entrepreneurship director. “They had done their homework, were well prepared, and all of them presented well. UCSB has some exceptionally talented and high-achieving students, and it’s very satisfying that our program attracts many of them.”

During the NVC Finals, each team pitched their products and business plans for ten minutes and answered questions from the audience. A panel of four esteemed judges with entrepreneurial experience met with and evaluated the teams prior to the finals as part of a new format unveiled this year by organizers. Judges awarded first place and $10,000 to EyeClimate. Taking second place and $7,500 was DeNovo Therapeutics, which created an AI workflow for pharmaceutical companies to develop new drugs, significantly reducing the time and cost to get drug candidates into preclinical trials. Third place and $5,000 went to Sonico Biosciences for its pitch of a cutting-edge treatment for Parkinson’s disease that uses ultrasound to non-invasively stimulate deep-brain tissue, providing a safe and effective alternative to open-brain surgery.

“What separated EyeClimate from the other well-accomplished teams were the relationships they have established in the marketplace, with two pilots already in progress,” said Adornetto. “The team was highly coachable and it was gratifying to watch them evolve from academic researchers to legitimate startup entrepreneurs over the course of the program.”

EyeClimate and Empro shared the People’s Choice Award, which was based on votes from the audience; each team received $2,500. Empro, a team of all undergraduate students, designed a high-quality, cost-effective front-wheel conversion to transform a mechanical bicycle into an electric bike.

The idea for the EyeClimate business emerged from a graduate research project in computer vision and remote sensing that spanned seven years. An interdisciplinary team of researchers, which included Kumar, developed an AI-powered hyperspectral imaging tool to detect real-time methane emissions and trace them to their sources. The U.S. Environmental Protection Agency has reported that methane is more than 80 times more potent than carbon dioxide for trapping greenhouse gases in the atmosphere. The tool works by processing hyperspectral data gathered during airborne scans of the target area. Gordon, Zhang and Kumar represented a portion of EyeClimate's eight-member team, which is led by Kumar, the company's founder and CEO.

"We strategically shifted from pure research to developing a business," said Kumar, who spent the past several years working on the methane mapping project. "This transition was driven by our belief in the impact our work could have on climate change and was brought to life through the NVC process."

The team's primary focus over the past year has been to identify and achieve product-market fit. They engaged in extensive market- and customer-validation processes, which involved interacting directly with potential users and collecting detailed feedback.

"Throughout the NVC program, we've leveraged the expertise of seasoned entrepreneurs and business experts to fine-tune our business strategy and business model," said Gordon, who is also a member of the UCSB men's volleyball team. "We wanted to ensure that we are not only creating a valuable product, but also effectively communicating its benefit to our prospective customers.

The team's next course of action will be to collaborate closely with its pilot customers to refine and enhance the product based on crucial real-world usage and feedback. They will also explore strategic partnerships and funding opportunities to accelerate their growth and expand their impact.

"The program has been an incredible learning experience for all of us. It taught us the importance of resilience, the intricacies of scaling a startup, and the value of diverse perspectives," added Kumar, who received a prestigious Schmidt Science Fellowship earlier this month to fund postdoctoral research and investigate if plants can serve as bioindicators to detect and mitigate global pollution.

“We are profoundly grateful for the opportunity to have been a part of this program and can never be thankful enough for all the guidance and support we received from our mentors,” said Zhang. “We’d also like to thank [NVC program coordinator] Sarah Hilliard-Rueff, and our program lead Dave Adornetto, whose commitment to the program, as well as to our personal and professional growth, has had a significant impact on all of us.”

Empro, Bioblend Industries, and SciRx each received honorable mentions and earned $2,500. BioBlend offered commodity chemicals derived from plant waste materials, and SciRx leveraged AI technology to restructure data within scientific literature.

This year’s judges included Tim Arnold, the general partner at Steamwork Ventures and a former CEO and founder of Hemisphere Design & Manufacturing; Carolyn Frey, the chief people officer for Hungry Root and a former investor at Lead Edge Capital and SemperVirens Venture Capital; John Greathouse, a former TM professor of practice and a successful entrepreneur and long-time angel investor; and Andrew Salzman, founder and principal of Iris Advisors and a former senior advisor at the Chasm Institute.

Find out more about the New Venture Competition or the Technology Management Department, visit tmp.ucsb.edu

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