

VM SUMMIT 2017



Artificial Intelligence Computes the Man + Machine Equation

NEW YORK—Artificial Intelligence (AI), arguably the most transformative force in business and health care today, took center stage at Vision Monday's Global Leadership Summit, held here on March 29.

Nearly 400 senior level optical industry executives and eyecare practitioners came to the 11th annual VM Summit to learn how their businesses and practices can benefit from AI, and how to put AI to practical use. Throughout the day-long program, more than a dozen AI experts offered a penetrating look at how AI is rapidly affecting commerce and health care as well as social interactions.

Using examples such as self-driving cars, chatbots and predictive analytics, they described how machine learning, deep learning, artificial neural networks and other aspects of AI are powering executive decision making and bringing a new level of personalization to the customer and patient experience.

Supported by Premier sponsors Essilor, Europa Eyewear and VSP Global, Signature sponsors Alcon and Luxottica and Supporting sponsors ABS Smart Mirror, CareCredit and The Vision Council, the VM Summit got underway with Marc Ferrara, CEO, Information Services Division of Jobson Medical Information, who offered an overview of AI in popular culture. He said, "The AI discussion is all around

VM global leadership SUMMIT 2017



Artificial Intelligence
Supercharging Knowledge and Decision Making

us, every day. The more we explore AI, we realize it's not A thing, it's THE thing."

Marge Axelrad, senior vice president and editorial director, *Vision Monday*, discussed how AI fits within the context of prior Summits and how it is "supercharging decision making" for today's business leaders. She predicted the "overlap of humans and machines" would be a recurring theme of the Summit discussion.

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John Gelles, OD, FIAO, FCLSA, Chief of Emerging Technologies, Cool Doctors



AI as a Tool, Not a Threat, to Eyecare and Society

The Vision Monday Summit kicked off with Session One: “Insight, Integration and Investment” starring Hilary Mason, founder and CEO of Fast Forward Labs, a data research company that helps organizations utilize their data science and machine intelligence capabilities.

“AI is whatever computers can’t do today,” said Mason, who described herself as a “nerd.” Despite her intricate and intimate knowledge of the artificial intelligence field, Mason put cerebral concepts into relatable contexts, identifying AI’s everyday appearances in technologies such as Google Maps, search engines and email spam filters.

Spam filters, she said, use natural language processing, a branch of AI that deals with a machine understanding spoken or printed words in human languages. This can be very convenient in the work environment. “Rather than having a person decide whether an email is spam or not spam, a machine figures it out. That’s a very powerful technique,” she said.

Google Maps is one of Mason’s favorite examples of AI’s capabilities to enhance everyday life. “You can look at your phone and make a decision about what you’re going to do with no understanding of what’s going on with the data. You don’t even have to think about it at all. This, to me, is the most successful type of AI product,” she said.

Another concept Mason covered was automatic summarization, or in laymen’s terms, using a computer program to summarize a text document, such as a news article or lengthy report. “These are tools for understanding very large, complex amounts of information that were previously out of reach for us,” said Mason, who disputed the fear that using AI for things like automatic summarization could take away the need for human work.

“We’re looking for areas where people do



Hilary Mason, founder & CEO, Fast Forward Labs, a data science company, believes that AI is not a threat, but rather a tool that is “advancing the human professional in the work that they do.”

repetitive tasks to generate data. Using AI in these instances will reduce overall costs and give permission to do more creative work, to build new products that wouldn’t have been built before.”

As Mason and other players in her field would agree, AI is not a threat, but a tool that is “advancing the human professional in the work that they do. We’re really just at the beginning of seeing the impact of these tools in our society,” she concluded.

Mobility: The Next Disruption

Mark Platshon, managing director and co-founder of Icebreaker Ventures-Autonomous World Fund, sought to educate the audience about the next disruption—mobility—by discussing self-driving vehicles and dispelling some of the myths surrounding autonomous

driving in his presentation on the future of mobility.

Platshon spoke at length about the research relating to autonomous cars, the car industry as well as how this AI technology relates back to humans, but first he started things off by explaining the current state of things—that the automobile industry is in the middle of a “WTF” moment: What’s the Future?

Platshon said, “The car hasn’t changed in 100 years and all of a sudden, this technology comes in and here’s the WTF moment: What’s The Future? How are we getting from four wheels to something that’s a computer on wheels that will take us into the future?”

Since the initial WTF moment, more and more companies have realized that this is something they should chase and work on. With gains

Continued on page 36





AI's Role in the Next Big Disruption—Mobility

Continued from page 34

happening every year and technology continuing to improve, the disruption that the automotive industry is going through is affecting many different facets of life and society.

Autonomous cars work by using mapping/localization, perception, analysis and planning and robotics to drive. “Everything that happens in the economy is related to people and good movement. The more you take friction out of the system you boost economy. You get tremendous leverage in productivity and creativity.”

Platshon went on to detail the areas in which there were huge applications for autonomy such as in Industrial: farming and construction. Specialized: tourism and medical. Transportation: mass transit and ride/hail. Consumer: retail and shared. Logistics: delivery and cargo/freight to name a few.

In addition to the many areas autonomy can be applied to, autonomous vehicles will generate huge economic benefits. According to Morgan Stanley research about the U.S. market, they predict that autonomous cars total savings would be \$1.3 trillion. In a more detailed breakdown, \$488 billion would be saved from accident avoidance, \$507 billion from increased productivity from autonomous cars, \$138 billion from congestion avoidance, \$11 billion in fuel savings from congestion avoidance and \$158 billion in fuel savings.

With all of the research and trials being done in testing autonomous vehicles, Platshon went on to detail how to safely test all of this emerging software and elaborated on how a crowd-sources fleet utilizing “shadow mode” generates big data in a safer way for the companies conducting the testing.

“You don’t have to do true autonomy to test autonomous driving data. This is the next industrial revolution ... it will get us to safe, effective autonomy and beyond.”



Mark Platshon, managing director and co-founder of Icebreaker Ventures-Autonomous World Fund sought to educate the audience about the next disruption—self-driving vehicles.

Man and the Machine

As the final speaker in the Insight, Integration and Investment segment, Chandra Narayanaswami, PhD, chief scientist and senior manager of IBM Commerce Research took to the stage to discuss cognitive computing systems and how all of this technology and deep learning translates into the eyecare and eyewear industry.

After telling an anecdote involving three IBM scientists who used an excimer laser to carve a Thanksgiving turkey, Narayanaswami went into detail about artificial intelligence and its impact

on the potential to solve problems, opening many new frontiers. He explained how the laser was then used to experiment on live tissue which led to the development of LASIK surgery.

He continued by discussing early AI systems before going into the next phase of artificial intelligence called the “AI Renaissance.” This renaissance is occurring due to the recent trends driving change, such as probability and statistics, that provide a fundamental formalism for AI as well as a more sophisticated machine learning algorithms, more computing



Chandra Narayanaswami, PhD, chief scientist and senior manager of IBM Commerce Research, outlined artificial intelligence and its impact on the potential to solve problems, opening many new frontiers.

power and vast amounts of data.

Now, in this phase of artificial intelligence, man and machine are working symbiotically with each other leveraging the other's expertise and strengths.

"As a result of all of these developments, neuro networks approach human accuracy in speech recognition and image recognition. This has great implication in eyecare for image analysis in disease screening," Narayanaswami said.

He went on to illustrate this with examples such as diabetic retinopathy with glucose monitoring in eyecare as well as personalization and smart glasses in eyewear.

"It's not us versus the machine. It's us with the machine," he concluded. ■

— Catherine Wolinski and Jamie Wilson

AI Begins to Reshape the Customer/Patient Experience

How will Artificial Intelligence begin to affect the customer/patient experience? That was the question posed to the second panel of the day as they examined how AI algorithms learn what we like, enabling personalized brands to create new experiences and choices for consumers. The advance of new smart tools help make data actionable, creating competitive advantages for retailers, professionals, designers and suppliers.

Victor Morrison, chief strategy officer and SVP of sales, Next IT Healthcare, outlined his company's Digital Health Coach platform which is uniquely poised to disrupt and transform patient engagement. Morrison is a top player in the health care-focused cognitive technology industry, and he's been busy building a foundation for the company's Health Coach platform.

He described his company's take on AI this way: "It's all about using connectivity and integration to understand user/patient intent. Ultimately, patient engagement will be the blockbuster drug of this century," he predicted.

By analyzing data for health care, "We can know how to profile what patients do or don't need, drugwise."

Morrison believes AI is changing the way health care companies connect with patients. "The platform can remember what we talked about yesterday and that may change your profile. But the way we respond to something you said a few minutes ago, we can now do it in real time, just like humans can do."

Morrison stressed that AI can "engage the person, not the disease sufferer." He then played a video titled "Life With a Virtual Health Assistant (VHA)" which chronicled a typical day for Richard, a diabetic and how he interacted with health cues from Sarah, his VHA: go for a run, activate his playlist, remind him to weigh in, register blood glucose and take his meds. She also reminds him to schedule a checkup



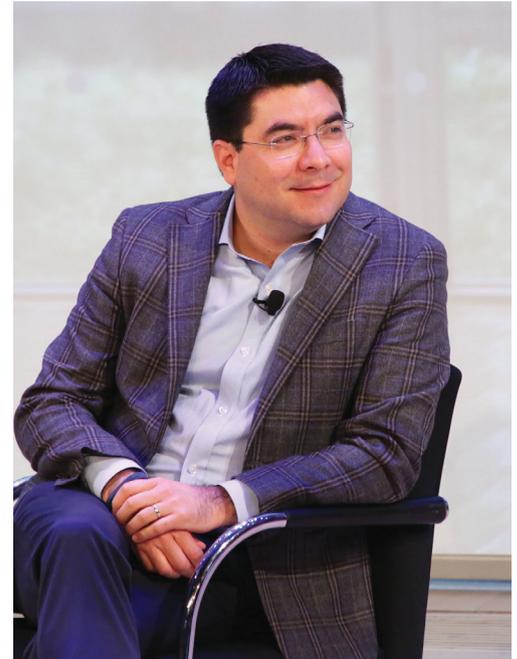
Victor Morrison, chief strategy officer and SVP of sales, Next IT Healthcare said AI is all about using connectivity and integration to understand user/patient intent.

for his eyes and feet, which she books for him. Finally, at the end of the day she sends him an overview of the week's health stats, which she reviews with him.

Next up on the panel was Alberto Jimenez, OMS and payments leader for IBM Watson Commerce, which combines business expertise with industry-leading solutions. Through the use of embedded cognitive capabilities, IBM gives commerce professionals the power to create consistent, precise, personalized experiences that customers want and value.

Jimenez touched on the role of AI in the business of order management and payments. "We do think that retail and commerce is changing forever and we think that there's going to be a gap between businesses that use artificial tools and those that don't."

While online shopping remains a popular op-



Alberto Jimenez, OMS and payments leader for IBM Watson Commerce, touched on the role of AI in the business of order management and payments.

tion, "retail stores are a key asset in the battle against digital only players. Some 90 percent of transactions still take place in retail stores and by digitizing it, retailers will get the best of both worlds."

Jimenez urged retailers to empower associates with customer and product info at their fingertips: deliver in-store service and experiences; use store inventory efficiently; and increase store revenue and customer experience with order captures.

"AI can help monitor on-line browsing and help retail associates when customers come in to pick up items. The technology now allows for personalization at a level that has not been possible before," he said.

Or Shani is CEO & founder, Adgorithms, creators of Albert, the world's first and only self-driven marketing and advertising platform.

Albert is a fully automated, digital marketing solution that doesn't just replicate what human marketers do, but increases prospects.

He pinpointed several major industries, such as health care, aviation and the criminal system, which are already taking advantage of the capabilities of artificial intelligence.

"One of the biggest misconceptions about AI, is some people look at it as if it's some kind of magic word or magic trick. They say, 'I have a problem with my business and AI is going to solve everything.' It's not like AI can solve every problem. Even a self-driving car that drives on its own, that system does not understand what it means to be human. AI is simply a different type of intelligence."

Shani said some problems need many algorithms in order to be solved. He pointed to



Or Shani, CEO & founder, Adgorithms, helped shatter some myths about AI in the field of marketing.

three levels of intelligence that are key to AI marketing: handcrafted knowledge, statistical learning and conceptual adaptation.

"Our company is looking to de-mystify AI. Digital marketing has become too complex and inefficient. Our AI marketing algorithms are better, faster and more robust," he said.

Shani did admit that AI can be "fascinating and terrifying, at the same time. But if you're losing business to your competitors, AI can help."

But questions about this new technology abound, as some marketers wonder if AI will take their jobs. Realizing that the rise of AI is perceived as a threat by some in the marketing industry, he reassured the audience saying, "AI comes in peace." ■

— Mary Kane

Scene at the VM Summit



1. Joseph Mallinger (l), OD, MBA, FFAO, Vision West Inc. with David Golden, OD, PERC.

2. Fabian Bruneau (l) with Bernie Lifschutz, both with ABS Smart Mirror.

3. (L to R) The Kenmark contingent included Cynthia McWilliams, Mike Cundiff and David Duralde.

4. (L to R) Jobson's Marc Ferrara with VSP's Victoria Hallberg and National Vision's Reade Fahs.

5. The group from the Canadian Association of Optometrists included Barry Thienes, Michael Dennis and Laurie Clement.



6. (L to R) Bill Gerber, OMG/Contentling, Peter Friedfeld, ClearVision Optical, Cliff Robinson, B Robinson Optical and Allen Nightingale, Centennial Optical.

7. (L to R) Frames Data's Tom Lamond with Leo Mac Canna and Alice Austin, both with Ocuco.



Professor Urges Audience to Think Outside the Box When it Comes to AI

Many philosophers have a pragmatic view of the world, and it would appear that Alex John London, a professor of philosophy and director of the Center for Ethics and Policy at Carnegie Mellon University, counts himself among this group.

London, the first afternoon speaker at the day-long VM summit, addressed the topics of engagement, ethics and leadership as they relate to Artificial Intelligence (AI). But, first, he cautioned attendees about forming their thinking about the opportunities and consequences around AI by pushing their perspective into the way-off or far future.

“I think the focus on the far future is a ‘wizard,’” he said, quoting Homer Simpson from an episode of “The Simpsons.” “It obscures the way that the decisions that people like you and your firms make now, and the way those decisions will determine which future we will bring about. It also affects what values we build into the systems that we are creating and how we deploy those systems in our society so that they determine the kinds of interactions we have—less with the machines and more with how these new innovations affect the way that we relate to and interact with one another.”

Instead, London said his work and focus are on the “transitional problems,” or the AI-related issues that may arise in the next five to 10 years. “The near- to mid-term problems are appearing now and these are the problems that are going to create adverse effects or ethical problems now ... and that need our attention,” he explained.

The kind of questions that his ethics and policy group are addressing include the handling of AI-human interactions, the reliability of AI, and how people can be assured the AI systems they create are going to do what they want them to do and that can be relied upon and trusted?

“These systems already encode values. So the question is not whether we encode values into these systems, the question is which values do



When queried on the role of ethics in AI by VM's Andrew Karp (r) Alex John London, professor at Carnegie Mellon University, said, “The people who are developing AI are very concerned with value questions.”

we encode in the systems?” he said. “And how do we ensure that they are not just narrow, or a limited set of values, but rather that they have the hooks to interface with larger social values in the greater ecosystem in which these systems are deployed?”

There also are social challenges that are required along the path to ethical integration of the autonomous systems into society, and how to assure that this integration leads to a more inclusive social order and not “as a very powerful tool for ‘commodification’ or social domina-

tion or repression,” he explained.

However, there is time now to consider all of these issues and challenges. London said he does not expect that “in the near term” we will encounter a fully autonomous system deployed. “The future that we have now is going to be highly dependent on human/AI interaction,” he said. “And the quality of the product that we get is going to depend on our ability to make sure those interactions are seamless, fruitful and not inefficient.”

As a result, a challenge today for rolling out

AI is to ensure the human/machine systems are “well-paired and that we’re mixing and matching the strengths of the human with the strengths of the machine and not having them work at cross purposes,” London explained.

Another challenge related to AI is, unlike a traditional computer program where the norms of the operations that will be performed are programmed into the system, machine learning is far more inscrutable to the user, London explained. “The user and the programmer may not understand how that machine does what it does,” which may make creating effective teams even more difficult.

In further advances and iterations of AI, London said he believes a primary issue will be the consideration that’s given to whether the systems are deployed fairly “so that firms can advance their interests, but that we don’t leave



Professor London cautioned attendees about forming their thinking about the opportunities and consequences surrounding AI by pushing their perspective into the way-off or far future.

important social values withering.”

He added, “We want to make sure that the future that we inherit is a more just and inclusive future and not one that supports exclusion and in which people are reduced to data points that are mined to the advantage of a lot of nameless or faceless corporations. That is the dystopia scenario,” he said.

“The utopia is that we use all of these things to personalize medicine and to have systems to advance our opportunities that ameliorate our limitations, enhance our abilities and allow us to have better relationships with each other,” he added. “That’s not going to happen on its own and it’s not going to happen because machine learning was invented. It’s only going to happen if we make an explicit effort to use those tools to that end,” he concluded. ■

— Mark Tosh

Scene at the VM Summit



1. (L to R) Jon Torrey, Think About Your Eyes, Ashley Mills, The Vision Council and Beverly Marquez, Essilor.

2. (L to R) Rob Lynch and Dan Mannen, OD, both of VSP Global with Gordon Jennings, OD, VSP.

3. Speakers Chandra Narayanaswami, IBM Commerce Research and Victor Morrison, Next IT Healthcare man the White Board in the Green Room at the Times Center.

4. Kaiser Permanente's Susy Yu, OD, and Carole Geyer-Bradshaw.

5. Edward Beiner (l), Edward Beiner Group with Fabrizio Uguzzoni, Luxottica Wholesale, N.A.

6. (L to R) Marc Wawerla, Carl Zeiss Vision International GmbH, Karen Roberts, Zeiss and Marty Bassett, Walman.

7. Nearly 400 senior level optical industry execs and ECPs gathered for lunch at The Times Center.



Finding the Soul of the Machine With Violinist Mari Kimura

In the final session of the 2017 VM Summit, “The Soul of the Machine,” Mari Kimura, a violinist and teacher of Interactive Computer Music Performance at The Juilliard School, entertained the audience through a performance wearing a sensor-enabled glove.

Before getting into her performance, Kimura explained “the funny journey” she has embarked on from being a “very normal violinist, a classical good girl” to now entering into her distinctive work as a violinist who enhances the technical and expressive capabilities of music composition through the use of artificial intelligence (a Wi-Fi router and a motion sensor). Kimura, who lived next door to AI pioneer Marvin Minsky, said that he was the one who suggested she first start composing in this way.

The glove that Kimura wore on her bowing hand while playing has electrodes that monitor the angle and speed of her bowing arm. This tracked her movements as she performed, feeding the data into a laptop which used an algorithm to process it and produce its own unique sounds.

Partnering science with creativity, Kimura was able to produce a beautiful human-machine duet that delighted the audience as she performed.

Kimura is at the forefront of violinists who are extending the technical and expressive capabilities of the instrument. She is widely admired as the inventor of “Subharmonics”, and also premiered many works, including John Adams’s Violin Concerto, appearing as a soloist with the Hamburg Symphony, Tokyo Symphony and Hong Kong Sinfonietta. ■

—Jamie Wilson



In the final session, “The Soul of the Machine,” Mari Kimura, a violinist, composer and teacher of Interactive Computer Music Performance at The Juilliard School, performed while wearing a sensor-enabled glove that fed motion data into a music algorithm to produce unique sounds and sights.

Seeing Eye to AI: Sharing Data to Improve Ophthalmic Care

Paul Karpecki, OD, FAAO, chief clinical editor at *Review of Optometry*, quickly guided the audience into Session Four: “A-Eye: How Artificial Intelligence is Transforming Eyecare,” immediately introducing ways in which artificial intelligence can directly enhance the ophthalmic profession.

Karpecki referenced a project he has been working on for several years, Ophthalmic Resources, in which patient information is collected in an EMR and an algorithm is used to help determine the best treatment for patients with certain conditions, like dry eye. In this example, the algorithm combed through patient feedback to determine how well they fared from teardrops they had been prescribed. The stunning result: “With AI, we found we had been wrong 90 percent of the time,” Karpecki said.

Fast, Safe and Easy Diagnosis

AI can work in tandem with eyecare practitioners, and even outperform them. This was evidenced in a video interview conducted by VM’s Andrew Karp with Pearse A. Keane, MD, FRCOphth, consultant ophthalmologist at Moorfields Eye Hospital in London.

In the prerecorded interview, Keane explained how Google’s DeepMind, a leader in artificial intelligence research and its applications in health care, can analyze OCT scans. It does this by using deep learning, a branch of machine learning that deals with building and training neural networks with multiple layers, most often excelling at tasks that involve sorting and classifying data.

When Keane approached DeepMind co-founder, Mustafa Suleyman about applying deep learning techniques to disease diagnosis, they found that the technology could change the way doctors treat and diagnose retinal disease, and that it was exceptionally good at identifying and predicting eye diseases like macular degeneration and diabetic retinopathy.



Review of Optometry’s Paul Karpecki, OD, FAAO, outlined a project called Ophthalmic Resources, in which patient information is collected in an EMR and an algorithm is used to help determine the best treatment.



Pearse A. Keane, MD, FRCOphth, consultant ophthalmologist at Moorfields Eye Hospital in London (above) appeared in a video interview with VM’s Andrew Karp. Keane discussed how Moorfields’ collaboration with Google’s DeepMind, a leader in AI research, is helping to advance vision care.

“Any retinal disease you can diagnose by looking at a retinal OCT scan, we think we can diagnose using AI diagnosis,” said Keane, who is spearheading a collaboration between DeepMind and Moorfields, which performs thousands of OCT scans each month.

He is especially optimistic about applying AI to OCT scans because they are noninvasive and safe, and can be administered several times without putting a patient’s eye health at risk. “It takes 30 seconds, whether you’re a five-year-old or a 95-year-old,” Keane said. “There is a very unique opportunity with OCT imaging in this regard. Patients can have multiple scans done over time without causing damage like X-Rays do.”

And, he added, this not only makes treatment more available to “a huge number of patients,” it also creates longitudinal data and long term follow ups. “Indeed, our patients who are receiving treatment for AMD will have OCT scans every month or so,” he said.

Keane’s second focus for the time being is

diabetic eye disease, which he described as a “public crisis.” He explained that the U.K. has a national screening program for diabetic retinopathy, but that the retinal photos taken in these cases are not as high resolution as OCT scans. AI would make administering OCT scans in national screening programs financially possible, he said.

Overall, Keane expressed a confident outlook regarding AI’s applications in the eyecare field. “We can image almost every part of the eye with cellular level resolution. Ophthalmology will be the first branch of medicine to be fundamentally transformed by AI,” he concluded.

AI and Global Eyecare Policy

After the video, Kovin Naidoo, OD, PhD, FAAO, CEO, Brien Holden Vision Institute, spoke about using data to manage eye conditions around the world, particularly in relation to the Global Burden of Disease (GBD). “Increasingly, practitioners and policymakers are finding value in GBD projections and graphs that are available ... which can be used



Review of Optometry's Paul Karpecki, OD, FAAO, (far right) led a panel discussion with (l to r) Next IT's Victor Morrison, Cool Doctors' John Gelles, OD, and Brien Holden Vision Institute's Kovin Naidoo, OD.



Kovin Naidoo, OD, PhD, FAAO, CEO, Brien Holden Vision Institute spoke about using data to manage eye conditions around the world.

to affect policy change and advocacy efforts," Naidoo said.

He also referenced a "public health crisis"—myopia. "By 2050, half of the world will be myopic," Naidoo said, proposing that eye doctors must look for and embrace the "innovative, cost effective solutions to obtain data" that AI offers.

Naidoo referenced two technologies that he believes can help alleviate global eyecare crises: Portable Eye Examination Kit (PEEK) and Microsoft



Cool Doctors' John Gelles, OD, FIAO, FCLSA, emphasized that using telemedicine like Eyecarelive enables a "hybrid office," combining physical and virtual care.

Intelligent Network for Eyecare (MINE). The latter, launched by Microsoft India in collaboration with L.V. Prasad Eye Institute last year, operates with the global mission to build an AI platform for eyecare.

"Historically, gathering data has been expensive, labor intensive and costly," Naidoo said. "We're not going to make effective change unless we effect policy change. Having shared data will allow us at a national level to influence policy in various geographical areas."

Embracing the 'Hybrid Practice'

Following Naidoo was John Gelles, OD, FIAO, FCLSA chief of emerging technologies at Cool Doctors, a telemedicine platform used by optometrists and ophthalmologists. He introduced Eyecarelive, a cloud-based patient-doctor platform designed for eyecare professionals to see their patients online between in-person visits.

"We all practice some form of telemedicine," Gelles said during a panel following his presentation. Calling in prescriptions and communicating about patients with other practitioners are just two examples of this, he said. "Now we can do this with graphs and big chunks of data that can improve the care of the person in your chair."

Gelles emphasized that using telemedicine like Eyecarelive enables a "hybrid office," combining physical and virtual care. This can increase efficiency and improve doctor-patient communication by allowing more accurate, timely data. "What we're trying to do is facilitate care of the future ... by extending our reach, we can create better outcomes," he said.

Ocular conditions he believes are suitable for telecare include glaucoma and diabetic retinopathy, which require self-administered patient maintenance such as IOP and glucose level measurements.

"A program like this is a massive time saver for the doctor and the patient. Information is going directly from the patient to meaningful statistics right away, saving time, money and resources. In a traditional scenario, a person has to come to my clinic four times in a day. The dropout rate is huge when we have to do that."

Utilizing this form of artificial intelligence, Gelles said, would introduce more consistency, accuracy and repeatability to the treatment and management of certain eye diseases. "AI will back up the doctors, not replace them. It's making the doctors better doctors." ■

—Catherine Wolinski

Innovative Optometry Students Utilize AI for Better Patient Care

Winners of the Student Innovator of the Year Award from the Rick Bay Foundation, Kathleen Hoang and Alex Martin presented on some medical innovations they are working on. The Student Innovator of the Year award recognizes the innovative and creative ideas of a current student at an optometry college.

Named after Rick Bay, former publisher and president of the *Review of Optometry* and *Review of Ophthalmology*, the Foundation's Student Innovator of the Year award aims to support optometry's next generation. Martin, from the New England College of Optometry was supported by a grant from VisionWeb, while Hoang from SUNY College of Optometry was supported by grants from Essilor of America and VSP.

Kathleen Hoang, a third-year OD student, presented her idea, track DM, a tool for diabetes management to improve health, educate on relevant updates in the field and engage users in a dynamic social community.

When patients are first diagnosed with diabetes, Hoang pointed out, they first think about all the things they have to keep track of—meals they can't have, doctor's appointments, blood glucose levels and increasing their activity—among other things.

Hoang said, "With so many things to keep track of, a lot of people fall into this vicious cycle in which they are not on top of all the things they need to manage. Diabetes has the ability to affect multiple systems in your body and it's really important to realize that the bad things that happen due to diabetes are really bad if they are not kept under control."

After realizing that phones may also be used as "personal doctors," Hoang did some research on the current diabetes app market. She found out that for the most part, there is no integration within the apps; there'd be one app for tracking blood glucose levels, another for activities and yet another for appointments.

In doing research, Hoang discovered the three major flaws within the current diabetes app market:



(L to R) Winners of the Student Innovator of the Year Award from the Rick Bay Foundation, Kathleen Hoang (l) and Alex Martin (r) with Jobson's Marc Ferrera.

- **Not everyone is a diary person—meaning not everyone is good with journaling and tracking themselves on a daily basis.**
- **The apps can be time consuming/confusing, especially for someone who is new.**
- **The engagement level is low. Diabetes apps are like most apps that you download, use for a while and then forget about.**

Hoang's track DM aims to resolve all these flaws. The app features integrated push notifications and reminders to encourage users to stay on top of appointments and other things; makes tracking easier and automated by allowing users to Bluetooth link glucose monitors, fitness trackers and other devices; allows users to make their own profiles and engage with other diabetics within the community; and it helps patients stay updated with the latest information on the disease.

Martin, who's a fourth-year OD student, presented Lengua Lista, a medical translator that

uses artificial intelligence to allow English speaking doctors to communicate instantly with Spanish speaking patients.

Martin played a demonstration for the audience, showing how difficult a medical exam can be when the ECP and patient speak different languages. "The challenge is that people are not receiving eyecare or medical care of any kind due to language barriers. They are afraid to go to doctors, creating

mistrust, disparities and lack of access to care," Martin said.

One of the challenges Martin pointed out, is that up and coming ODs like himself have a hard time learning new languages. "We are all just trying to get through school at this point," he stated. Because of language barriers, ECPs and patients end up using children as translators which leads to discrepancies and confusion because of the lack of vocabulary. Patients also resort to using phone translators, which take extra time and money and are not always accurate.

With minimum setup time, Lengua Lista uses artificial intelligence to allow ECPs and their patients to communicate in their native languages in real time. Because optometry exams follow a pattern, the device will be based on a library of past exams, so as the patient speaks, the computer will be predicting potential diagnoses, making the examination process go faster. Because of AI, Lengua Lista removes the need of having a translator and also auto populates an electronic medical record at the same time. ■

—Stephanie Sengwe