When Glendale resident Mark Humayun first entered medical school, he planned for a career in neurosurgery. Then his grandmother began to lose her eyesight from diabetes complications, and he changed his course of study to ophthalmology.

Decades later and with a team of patients and colleagues, he invented the Argus II, the first U.S. Food and Drug Administration-approved retinal implant that restores some sight for people who are blind.

Humayun was recently named as one of eight people nationwide to receive the National Medal of Technology and Innovation. He had planned to receive the medal from President Obama on Friday, but the White House postponed the ceremony because of a severe snow storm expected to hit Washington, D.C., so Humayun will receive the medal at a later date.

Reached by phone on Wednesday, the USC professor said the honor is “amazing.”

“It’s a real testament to this whole project and the number of people that have worked on it,” he said.

The Argus II works through a pair of glasses worn by blind patients. The glasses contain a camera that sends information wirelessly to an implant located in and around the patient’s eye.

The device turns the information it collects from the camera into tiny electrical pulses that jump-start the blind eye.

The result gives those who are blind an ability to see outlines of large objects such as doorways, tables or silhouettes of people.

— Kelly Corrigan
January 22, 2016

The Charles Draper Prize for Engineering recognizes Viterbi’s development of the algorithm that makes clear telecommunications possible

The National Academy of Engineering will award Andrew J. Viterbi, USC trustee, Presidential Chair and professor of electrical engineering systems and namesake of the USC Viterbi School of Engineering, the 2016 Charles Draper Prize for Engineering.

The prestigious distinction is accompanied by a $500,000 award. The citation reads “for development of the Viterbi algorithm, its transformational impact on digital wireless communications, and its significant applications in speech recognition and synthesis and in bioinformatics,” according to the NAE announcement.

Viterbi was presented with the prize at a gala dinner in Washington, D.C., on Feb. 16.

“Andrew Viterbi stands among USC’s most distinguished alumni, and his extraordinary innovations have touched countless lives all over the world,” said USC President C. L. Max Nikias.

“His Viterbi algorithm revolutionized how we communicate with one another, whether at home talking on a cellphone or at NASA tracking a spacecraft. This award speaks to his numerous contributions over the last half century and builds on an already stellar legacy in engineering and communications. Andy is such an inspiring role model for our students — and will continue to be so for generations to come.”

NAE President C.D. Mote Jr. added: “Andrew Viterbi’s Viterbi algorithm has led to significant benefits to the health, safety and well-being of the world’s citizens. I am very honored to recognize him with this year’s Draper Prize. His work embodies the prize’s mission to recognize an engineer whose accomplishment has meaningfully impacted society.”

— Robert Perkins
January 6, 2016
A trio of USC researchers has been elected to the National Academy of Inventors, recognizing them as innovators whose work has had a significant positive impact on the world.

This year’s new fellows from USC are P. Daniel Dapkus, Scott Fraser and Andreas Molisch. They join 582 scientific luminaries that include 27 Nobel laureates, 27 inductees of the National Inventors Hall of Fame and 32 recipients of the U.S. National Medal of Technology and Innovation and U.S. National Medal of Science.

“These three awardees exemplify the exceptional creativity, innovation and impact of USC’s faculty,” said Randolph Hall, USC vice president of research. “All of our NAI fellows are not just outstanding researchers, but also inventors who have created technologies that benefit society.”

USC President C. L. Max Nikias was inducted in 2012 as a charter member.

Dapkus, William M. Keck Distinguished Professor of Engineering, professor of electrical engineering at USC Viterbi’s Ming Hsieh Department of Electrical Engineering and physics and astronomy at USC Dornsife, is an expert on photonics, fiber optics and lasers. He runs the Photonics Center at USC, the focal point of the university’s research on using light signals to pioneer fields like communications and signal processing. Currently, he’s developing light-emitting diodes for efficient solid-state lighting, as well as materials that will allow for the integration of photonic components into electronic circuits.

Fraser, Provost Professor of Biological Sciences and Biomedical Engineering and the director of science initiatives with joint appointments at the USC Dornsife College of Letters, Arts and Sciences, the Keck School of Medicine of USC and the USC Viterbi School of Engineering, joined USC in 2012. A pioneer in advanced imaging technologies, he brings together researchers from across disciplines to create microscopes that allow scientists to study living systems as they change and develop.

“This lets us get a better idea of how regenerative medicine could be done better,” Fraser said when he first arrived at USC. “If we know the rules and the interactions that cells follow to pattern an embryonic heart valve, for example, we’re hoping we might be able to tap into some of those signals and interactions to help heart valves rebuild themselves.”

Molisch, professor of electrical engineering systems in the Ming Hsieh Department, earned most of his patents in the area of multi-antenna technology and ultra-wideband communications. While continuing to work on multi-antenna technology, Molisch has lately been focusing on wireless video distribution systems and Orbital Angular Momenta – twisting light and radio beams to send data.

Dapkus, Fraser and Molisch will be inducted into the NAI on April 15 as part of the academy’s fifth annual conference at the U.S. Patent and Trademark Office in Alexandria, Va.

In announcing this year’s new fellows, the NAI described election as “a high professional distinction accorded to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.”

— Robert Perkins

December 16, 2015
Teams of humans are exceptionally good at coordination. Teams of robots, however, are extremely clumsy at coordination, requiring extensive communication and computation. Reliance on this infrastructure poses a significant roadblock to bringing robot teams into real-world applications. Nora Ayanian’s project is pursuing an integrated research, education, and outreach approach for developing novel, data-driven algorithms for multi-robot coordination, inspired by human coordination. As cognitive beings that make decisions based on broad context, memory, and sensing, human capabilities are challenging to transfer to robotics. To facilitate this transfer, her project is developing an online crowdsourcing application that tasks participants with creating a global structure, such as a shape. The application constrains participants to robot-like capabilities by limiting available information and actions. The application will provide a faithful representation of the capabilities of distributed teams of robots, and will be used to gain insights into human coordination that can then be transferred to a multi-robot system.

— Excerpted from the National Science Foundation website

Nora Ayanian receives NSF Career Award
Scholar recognized for work in multi-robot coordination

USC alumni make Forbes ‘30 Under 30’ list for 2016
Here are just a few of the 13 Trojans — drawn from throughout the university — who made the list this year.

The retail/e-commerce guys
Twins Adam and Ryan Goldston ’09 started their Athletic Propulsion Labs (APL) high-end sneaker in their USC dorm room while testing its feasibility in Tommy Knapp’s Entrepreneurship 452 class at the USC Marshall School of Business. After the NBA banned its players from using the performance enhancing APL shoe in 2010, media attention sent sales skyward, and today the shoes are sold around the world in high-end retailers including Barneys New York, Saks Fifth Avenue and Net-a-Porter.

The two were on the list for their achievements in retail and e-commerce.

“I can’t think of a better way to start off 2016,” said Ryan Goldston, who along with his brother once played basketball and football for USC.

The scholar
Constance Iloh ’15 graduated from the PhD program in May and accepted a position as assistant professor of higher education at the University of California, Irvine, School of Education. However, she deferred those plans to accept a UC Chancellor’s Postdoctoral Fellowship. At Commencement, Iloh became the first from the USC Rossier School of Education to receive the USC PhD Achievement Award, the highest honor given to any USC PhD holder.

In honoring Iloh, Forbes noted that Iloh explores “narratives of the most underserved students and understudied sectors of post-secondary education,” including for-profit and community colleges.” She is the only scholar/academic listed in the education category and the only one currently working at a university or college.

The STEM star
Ask Dieuwertje “DJ” Kast ’11 what role STEM (science, technology, engineering and math) education plays in her job and she’ll put you straight.

“STEM IS my job,” she said. The Amsterdam native and marine biologist is singularly devoted to bringing the magic of science to schoolchildren.

As manager of the USC Joint Educational Project (JEP), she provides support and materials for her STEM educators in USC’s Wonderkids and Young Scientists programs. She is also the STEM coordinator for the USC Neighborhood Academic Initiative.

The curriculum she writes for STEM educators comes straight from her experiences as a STEM student, she said. And because of USC’s strength in STEM education, she is a Trojan four times over, with one bachelor’s of science, two master’s degrees and a teaching credential.

She was chosen for her accomplishments in the science arena.
The money guy
Alex Kurland ’10, was honored for his achievements in venture capital. As a principal with Kleiner Perkins Caufield & Byers’ Digital Growth fund, he has sourced and led the firm’s investment strategy in startups and disruptive technology.

“It is very rare for an undergraduate to break into venture capital, especially one of the iconic Sand Hill Road firms like KPCB,” said Julia Plotts, associate professor of clinical finance and business economics, who taught Kurland in her FBE 421 Financial Analysis and Valuation class. “But then Alex is ridiculously smart, and also funny and personable. Of the many smart students I’ve taught at USC Marshall over the years, Alex was one who stood out.”

Kurland came to USC on a baseball scholarship and, despite a demanding travel and practice schedule, maintained a high GPA, Plotts said. He graduated magna cum laude.

Making the Forbes list “is a nice recognition of hard work and a little success,” Kurland said. “What’s special, however, is the recognition of my peers and the highly respected V.C. professionals who chose me.”

The idea guy
Ryan Ozonian ’09, is a co-founder of Cyber Dust, the ephemeral messaging app backed and co-founded by serial entrepreneur Mark Cuban. While studying at the USC Annenberg School for Communication and Journalism, Ozonian took several entrepreneurship classes at USC Marshall’s Lloyd Greif Center for Entrepreneurial Studies.

“The professors at the Greif Center inspired me to challenge myself, take risks and meet as many people as possible,” he said. “Greif and SC taught me how to have fun — maybe a little too much fun at the 9-0 (Bar and Grill) — while managing my responsibilities. I still carry that mindset with me today.”

Making the list, in the category of consumer technology, is an accomplishment and proves to him that “believing in yourself regardless of what others expect of you can pay off,” he said. “I would never have made this list if it wasn’t for the people who have surrounded me throughout my life.”

He pays it forward by hiring Trojans for his team and speaking to USC entrepreneurship students who are just starting out.

… and more Trojans

Blendspace is an education technology company co-founded by Amy Lin, who studied computer science and received her BS in 2008 and MS in 2009 from USC Viterbi School of Engineering. The company provides teachers access to create lessons from digital content and was acquired by TES in 2014.

Kai Stephan ’09, who received his BS in mechanical engineering, is the founder and CEO of Pegasus Solar, a company that engineers and manufactures solar rooftop installation systems.

— Julie Tilsner
January 7, 2016

U.S. News & World Report Education

Graduate Engineering Programs
University of Southern California (Viterbi)
Los Angeles, California

Graduate Information Technology Programs
University of Southern California
Los Angeles, California