Innovating With Industry

Stevens Institute of Technology teams with leading state and national firms and government agencies to accelerate medical, digital, sustainability and other innovations

Just across the Hudson River from Manhattan, Stevens Institute of Technology is a student-centric, premier research university

Just across the Hudson River from New York City in Hoboken, New Jersey, Stevens Institute of Technology has long been a center of innovation and new venture development.

The university was founded in 1870 by the "first family of American inventors," as the Stevens family — who pioneered U.S. rail and steam transit, among other innovations — were known, and it has built upon that legacy ever since. Faculty and alumni have managed NASA lunar missions; discovered the elusive neutrino particle; invented bubble wrap packaging material and the IMAP email protocol; co-founded General Motors and Texas Instruments; and created countless other novel technologies through the decades.

Now, as Stevens approaches its sesquicentennial year (2020), the university is taking innovation to a new level, searching aggressively for new medicines, technologies, applications and software while leveraging its historical strength in the sciences to engineer a safer world — often in partnership with New Jersey's and the nation's industry leaders.

These activities will prove critical as the state of New Jersey moves forward in a digital era, pursuing economic development priorities including

A Stevens student team's carbon fiber, solar-electric motorboat participates in an international race and design competition annually

healthcare, the life sciences, finance, sustainable energy, smart city research and enhanced entrepreneurship.
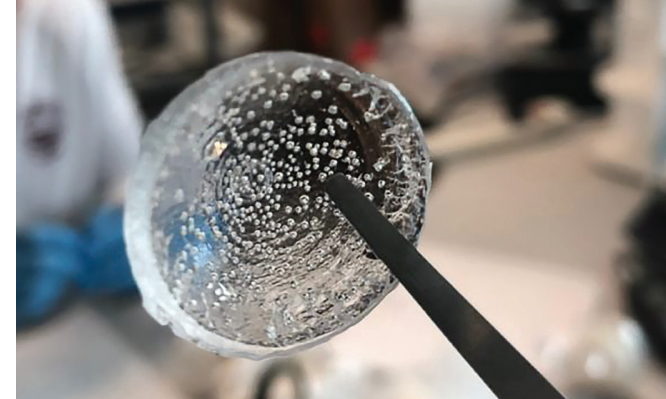
EXCITING NEW RESEARCH, CORPORATE PARTNERSHIPS

As the New Jersey economy has rapidly evolved, a growing urgency has appeared for next-generation research and the concurrent development of a tech-savvy workforce with hands-on experience in key areas of exciting technical innovation.

Fortunately, as the global business environment has evolved, so too has Stevens. The university has built out capabilities in exploding new areas as diverse as artificial intelligence, quantum computing, drug discovery, materials science and sustainability. Recent work at Stevens has produced new cancer-treatment insights, novel medical devices and a host of discoveries at the frontiers of information technology in critical areas such as cybersecurity and fintech.

In partnership with collaborators such as Hackensack Meridian Health's Hackensack University Medical Center, for instance, Stevens students and researchers develop technology innovations in regenerative medicine, cancer therapy, digital health and more.

A Stevens student team designed this 'smart' contact lens, powered by nanotechnology, that can detect pressure changes in the eyes of glaucoma patients

One team of Stevens researchers recently developed a new method of fabricating scaffolding for biological cultures. The technique makes it possible to grow cells that are highly uniform in shape, size and functionality, relying on an extremely fine-scale form of 3D printing that uses an electric field to draw fibers just one-tenth the width of a human hair.

Through its new venture incubator, the Stevens Venture Center (see box), Stevens is also fostering the growth and success of new companies launching products and creating jobs in New Jersey and the metropolitan New York City region. Success stories from this venture center incubator include FinTech Studios — a Manhattan-based firm that uses artificial intelligence to provide best-in-class analytics to Wall Street firms — and Mira Therapeutics, providing transformative solutions for patients suffering from post-traumatic stress disorders.

In 2018, Stevens launched the Stevens Institute for Artificial Intelligence (SIAI). With more than 50 faculty affiliated, SIAI conducts research into areas that impact everyday life such as early-warning detection applications for Alzheimer's disease, dementia, skin cancer and irregular heartbeat and enhanced infrastructure safety through such innovations as AI-equipped underwater robots and more secure, trustworthy data encryption methods.

LEVERAGING TECH TO BUILD A SAFER WORLD

As new challenges arise in safety, security and privacy, Stevens has also continued to build upon its long tradition of collaboration with corporate partners and government agencies to help ensure a safer, more secure world.

Toward that end, Stevens researchers work diligently to test and harden cybersecurity methods; monitor and prepare local and regional agencies for the consequences of climate change, including stronger storms and higher floods; combat terrorism; develop new, more sustainable energy processes and sources; and rethink our notions of collective civil defense.

Sustainability technologies currently in development on the Stevens campus include smarter storm water management systems; enhanced battery technologies; new biofuels and other renewable energy sources; and improved solar panels. Other projects work to monitor and improve the structural health of buildings and bridges, and design and engineer more storm-resilient struc-

tures, including a prize-winning solar home on display as a permanent exhibit at Liberty Science Center in Jersey City.

In the field of quantum computing, Stevens has developed and launched the nation's first campus hybrid quantum communications network and the nation's first battery-powered, portable quantum random number generator, each of which holds potential to help fuel the next waves of security, financial and medical research.

CORPORATE EDUCATION, ENHANCED ENTREPRENEURSHIP

Stevens is also committed to creating a highly skilled workforce through its tech-focused and analytics-based corporate education programs. The university works closely with firms such as Verizon, Pfizer, JPMorgan Chase, Lockheed Martin and ExxonMobil, among other local and national corporate partners, to offer professional programs at their sites or online.

Stevens' leading-edge Hanlon Lab for Financial Analytics and Data Visualization incorporates Oblong Industries' immersive technology, as well as more than 30 work stations equipped with Bloomberg, Thomson Reuters, Morningstar and other software

THE STUDENTS OF TODAY, THE COMPANIES OF TOMORROW

The Stevens Venture Center (SVC) is an integral part of the entrepreneurial education Stevens uniquely provides to its students. Through the SVC, Stevens students apply skills they learn in the classroom to the launching of new ventures. Over the past four years, SVC companies have raised more than $10 million in outside capital to grow their businesses and expand the university's global impact. SVC companies are continually engaging with opportunities outside the university through competitions and conferences. In pitch competitions, these companies have won recognition at local, state, national and international levels, including a recent win by the SVC student startup LifeSkills Software in New Jersey's statewide UPitchNJ entrepreneurship competition.

For those interested in partnering with Stevens, contact **Mary Ann Piazza** (**mpiazza@stevens.edu**) at **201.216.3625** or visit **stevens.edu/research** to learn more.