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Prominent university wireless research center names new director

Theodore Rappaport, an innovator whose millimeter wave research underpins 5G, hands leadership of NYU WIRELESS to Thomas Marzetta, the originator of Massive MIMO antenna technology

BROOKLYN, New York, Tuesday, September 17, 2019 – NYU WIRELESS has appointed [Thomas Marzetta](#) – the originator of antenna technology that is enabling vast improvements in wireless communications – as director of the world-recognized research center at the NYU Tandon School of Engineering.

He succeeds another researcher credited with seminal findings that underpin 5G, or the fifth generation of wireless communication: [Theodore \(Ted\) S. Rappaport](#), who founded the research center in 2012. Before Rappaport published his 2013 paper, “[Millimeter Wave Mobile Communications for 5G Cellular: It Will Work](#),” few experts acknowledged the possibilities of tapping that underutilized spectrum. He will retain his title of founding director of NYU WIRELESS and maintain leadership and research roles at the center. Rappaport is also the David Lee/Ernst Weber Professor of Electrical Engineering at NYU Tandon, a professor of computer science at NYU Courant Institute of Mathematical Sciences, and a professor of radiology at the NYU School of Medicine.

Marzetta, who joined NYU Tandon in 2017 as a distinguished industry professor of electrical and computer engineering, is celebrated for originating the concept of Massive MIMO (Multiple-Input Multiple-Output), a key enabler for 5G. It utilizes numerous small, individually controlled, low-power antennas to direct streams of information, selectively and simultaneously, to many users. This confers spectral efficiency orders of magnitude greater than that experienced in 4G service, along with high-quality service throughout the cell, simplicity and scalability, and outstanding energy efficiency.

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He is now focusing on the sixth generation of wireless technology. Within a research initiative that he calls “Beyond Massive MIMO,” Marzetta is investigating entirely new principles of operation that could result in wireless systems performing at previously unimaginable levels.

Marzetta’s seminal paper on Massive MIMO, "[Noncooperative Cellular Wireless with Unlimited Numbers of Base Station Antennas](#)," published in 2010, has been cited well over 4,000 times. The lead author of the text *Fundamentals of Massive MIMO*, he developed the concept during his 22 years at Bell Labs, where he directed the Communications and Statistical Sciences Department within the former Mathematical Sciences Research Center. In 2014, he was accorded the rare honor of being elected a Bell Labs fellow. Also a fellow of the IEEE, he has received the Guglielmo Marconi Prize Paper Award, the Stephen O. Rice Prize, the W. R. G. Baker Award, the Fred W. Ellersick Prize, the IEEE Communications Society Industrial Innovation Award, the GreenTouch 1000X Award, and the Thomas Alva Edison Patent Award, among many others.

“The groundbreaking work of Professors Rappaport and Marzetta opened up possibilities of remote medicine, connected and autonomous vehicles, affordable connectivity in remote areas, and so much more that we are only beginning to imagine,” said NYU Tandon Dean Jelena Kovačević. “I thank Ted for bringing NYU and Brooklyn to the forefront of this exciting research field – and equally for his dedication to students. And I offer the gratitude of our institution to Tom for accepting this leadership challenge. His unparalleled experience and world-recognized scholarship will ensure our next generation of researchers will continue the NYU WIRELESS precedent of transformational achievement.”

Marzetta is taking the helm of NYU WIRELESS as it expands its exploration into fundamental research and applications for future decade, including terahertz communications and sensing, mobile edge and low latency networking, quantum devices and low-power circuits, and communications and machine learning foundations.

Rappaport told the NYU WIRELESS community: “My intent in rotating the directorship at this moment is to take a ‘victory lap’ with my wife and to travel around the world, lecturing and visiting foreign lands, while I make up for lost time due to my recovery from acute myeloid leukemia in 2015. My health is now strong, and the NYU WIRELESS center is also strong. Now is the ideal time to bring in a new leader to direct NYU WIRELESS, to propose fresh new ideas, and to continue the growth and vitalization of the center. I believe that Tom will fulfill this role admirably. His unique research perspectives, combined with unparalleled industrial experience, are ideally suited to serve the needs of our students as well as those of our Industrial Affiliates.”

Marzetta said: “It is a very great honor to be chosen to direct NYU WIRELESS. Under the directorships of Ted and [Sundeep Rangan](#), we have become one of the foremost academic centers of wireless research. With imagination, strenuous effort, and a willingness to take risks in our research, we can continue to discover impactful ways to connect society.”

Rangan, an NYU Tandon professor of electrical and computer engineering, is now an associate director of NYU WIRELESS, along with [Dennis Shasha](#), a professor of computer science at the NYU Courant Institute of Mathematical Sciences, and [John-Ross Rizzo](#), an assistant professor at NYU School of

Medicine's Department of Rehabilitation Medicine and Department of Neurology and at NYU Tandon's Department of Mechanical and Aerospace Engineering and Department of Biomedical Engineering.

About NYU WIRELESS

NYU WIRELESS is a vibrant academic research center that is pushing the boundaries of wireless communications, sensing, networking, and devices. Centered at NYU Tandon and involving leaders from industry, faculty, and students throughout the entire NYU community, NYU WIRELESS offers its industrial affiliates, students, and faculty members a world-class research environment that is creating fundamental knowledge, theories, and techniques for future mass-deployable wireless devices across a wide range of applications and markets. Every April, NYU WIRELESS hosts a major invitation-only wireless summit, in cooperation with Nokia Bell Laboratories, for the center's industrial affiliates and thought leaders throughout the global telecommunications industry. For more information, visit wireless.engineering.nyu.edu.

About the New York University Tandon School of Engineering

The NYU Tandon School of Engineering dates to 1854, the founding date for both the New York University School of Civil Engineering and Architecture and the Brooklyn Collegiate and Polytechnic Institute (widely known as Brooklyn Poly). A January 2014 merger created a comprehensive school of education and research in engineering and applied sciences, rooted in a tradition of invention and entrepreneurship and dedicated to furthering technology in service to society. In addition to its main location in Brooklyn, NYU Tandon collaborates with other schools within NYU, one of the country's foremost private research universities, and is closely connected to engineering programs at NYU Abu Dhabi and NYU Shanghai. It operates Future Labs focused on start-up businesses in downtown Manhattan and Brooklyn and an award-winning online graduate program. For more information, visit <http://engineering.nyu.edu>.

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