

CENTER FOR K12 STEM EDUCATION

# HIGH SCHOOL SUMMER PROGRAMS



## Get a preview of an authentic college STEM experience with NYU.

Our two-week summer programs will help you learn to think critically, harness your creativity, and become an effective problem-solver — and maybe even open up pathways to life-changing and world-saving careers.

The NYU Tandon Center for K12 STEM Education Summer STEM programs are engaging, hands-on experiences designed by actual NYU researchers and engineers, and participating students tackle real-world problems while learning in-demand STEM skills. Deploying the actual tools of scientists and engineers — from microcontrollers, electronic components, and actuators to high-end testing and experimental

equipment — they gain experience in vital areas like robotics, connected devices, virtual reality & gaming, and artificial intelligence.

2021 summer sessions will be held virtually. Instructors and students will expect to spend at least 5-6 hours a day in online instruction. Instruction will be both synchronous, i.e. face-to-face via Zoom and other platforms, as well as asynchronous.

## Machine Learning

The NYU Tandon Summer Program in Machine Learning introduces high school students to the computer science, data analyses, mathematical techniques, and logic that drive the fields of machine learning (ML) and artificial intelligence (AI). Whether they realize it or not, people experience these evolving fields regularly: in video and image recognition technologies, interactive voice controls for homes, autonomous vehicles, real-time monitoring and traffic control, cutting-edge diagnostic medical technologies, and other aspects of our daily lives.

Developed by Tandon faculty in the Electrical and Computer Engineering and Mechanical Engineering departments, this program offers a unique opportunity to learn directly from some of today's most innovative researchers. Students will gain knowledge of core principles in machine learning such as model development through cross validation, linear regressions, and neural networks, and will gain an understanding of how logic and mathematics are applied both to "teach" a computer to perform specific tasks on its own and to improve continuously while doing so.

## Connected Devices

From smart appliances to home automation systems, new IoT capabilities enable us to intelligently gather information through advanced sensors and provide valuable information to anyone from anywhere. The NYU Tandon Department of Electrical and Computer Engineering Internet of Things (IoT) Summer Challenge Program is open to students interested in designing and building a connected device and curiosity about the capabilities of IoT science and technology to help solve social problems.

Imagine designing a small device that informs you of a frozen water pipe in your home before a potential flooding disaster. Imagine sending a text message to the same device while you're on vacation, and turning on the heat or closing the water valve. Throughout the program, the focus will be on understanding the scope of IoT; revealing the underlying principles and architecture of its networks, devices, programming, data, and security; and introducing these challenges to students through a series of activities tailored especially to promote creative computational thinking.

## XR for Virtual Worlds

Virtual Reality, the use of computer technology to create an immersive 3D environment, has cutting-edge applications across a spectrum of fields like education, healthcare, entertainment, fashion, business and engineering — think everything from battling invaders in a video game setting so real you'd swear you were there to doctors performing surgery from remote locations.

This course is designed to introduce students to using VR as an interactive storytelling and marketing medium and will provide historical context, hands-on instruction in the NYU Integrated Digital Media XR Lab, and more. Students will work at the crossroads of tech and art, based on their interests, to create virtual objects and experiences and learn the core concepts of VR production and interaction.

# Program Sessions

## Machine Learning

June 21 - July 2  
July 12 - 23 • August 2 - 13

## Connected Devices

July 12 - 23  
August 2 - 13

## XR through Virtual Worlds

July 12 - 23  
August 2 - 13

