Art, Engineering and Infinity  

By Matt Shipman

The concept of infinity and the desire to illustrate the creative process have given college students the opportunity to showcase their work alongside that of M.C. Escher and Leonardo da Vinci.

A collaboration between NC State and the North Carolina Museum of Art (NCMA) is part of a series of STEAM initiatives that combine science, technology, engineering and math (STEM) with art and design to promote innovation. NCMA came to NC State seeking engineers to use electronics to create a visual display that tied together works of da Vinci and Escher. The resulting student exhibition, Engineering Infinity, will coincide with The Worlds of M. C. Escher: Nature, Science, and Imagination and Leonardo da Vinci’s Codex Leicester and the Power of Observation that open in October.

Evan Heiman, Andy Tong, Robert Jamison and Jesse Davi took on the project in their senior design course. All four graduated in May with degrees in electrical and computer engineering.

The team developed a cube made up of 512 light-emitting diodes (LEDs), 64 on each side, which is suspended on translucent columns. The LEDs display 19 visual routines. The cube is surrounded by a second made of two-way mirrors, allowing viewers to see inside, but trapping and reflecting light from the LEDs.

"The LED cube makes the first image, but it is reflected repeatedly – back and forth between the mirrors – making the images appear to retreat into infinity. Much like Escher did in his work," Jamison says.

The cube will be displayed alongside sketches, schematics and other materials documenting the design process. These process-oriented artifacts connect to da Vinci’s Codex Leicester, a 500-year-old notebook featuring the artist’s notes, sketches and observations, providing a glimpse into the artist’s scientific mind.

Michelle Harrell, associate director of education at NCMA, is thrilled. “These students have created an interactive solution that not only required great technical skill but also a great deal of imagination and a fine eye for design.”

Video of the cube in action can be seen at https://youtu.be/j5fhjTr8zoM.