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3D Printed Terrain Map of UMBC Campus

(PRLEAP.COM) July 3, 2014 - Potomac Photonics , an industry leader in micro Digital Fabrication, has 3D printed a re-creation of the University of Maryland, Baltimore County [UMBC] Campus that is about 4,000 times smaller than its actual size. The micro 3D Print was created from a model generated by aerial robotic photography as part of Ecosynth, an open source project at UMBC for creating 3D models of terrain.

To generate the model, UMBC mechanical engineering students Stephen Gienow and Lindsay Digman used a camera mounted on a robotic Octo-copter, which is a radio-controlled [RC] helicopter with eight propellers. Over 5,000 photos were captured in three consecutive flights that took over an hour of time to collect. The students explain: "The copters fly a grid pattern autonomously, all the while taking thousands of photographs which completely blanket the terrain. These photographs are then digitally processed using the software Agisoft Photoscan, which builds 3D geometry from the thousands of photos."

The resulting full color 3D map includes 10 centimeter per pixel resolution, and approximately 10 meters of GPS accuracy. Potomac Photonics then used a 3D Systems high resolution ProJet 3D printer to 3D Print a miniaturized representation of the UMBC campus from the map. President and CEO Mike Adelstein comments that the miniature buildings they were able to create are a natural extension of their work creating micro-parts for the medical device, sensors, microelectronics, microfluidics, consumer and biotech industries.

Mr. Adelstein adds, "Potomac is especially excited to work with UMBC as part of our Education

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Manufacturing Initiative, whereby we donate or discount digital fabrication services including [3D Printing, laser and CNC micromachining](#), and other technologies to researchers, faculty and students who need manufacturing assistance." He goes on to explain that supporting STEM education (Science, Technology, Engineering, and Mathematics) is also about economic development and so "It's gratifying to help Stephen and Lindsay who are working to leverage their experience into a small business which offers 2D mapping, 3D scanning, and miniature landscape printing services."

About the Micro 3D Printing Project Participants

Ecosynth is an open source project developed by UMBC for constructing 3D models of terrain using small RC aircraft; the Ecosynth lab's focus is on ecological study.

Stephen Gienow is pursuing his undergraduate degree in mechanical engineering from UMBC and plans to graduate in spring 2015. He has been an intern for Ecosynth since 2012 and is experienced with designing, building, and piloting multicopters as well as generating 3D terrain maps from multicopter imagery. Stephen is the former president of DEVICE, UMBC's inventors' club. He hopes to use his degree to build a career in unmanned aircraft.

Lindsay Digman is a Mechanical Engineering undergrad at UMBC and plans to graduate in Fall 2015. She was an intern with Ecosynth in 2013 where she gained experience building, testing and piloting multicopters. Lindsay is also the current president of DEVICE, UMBC's inventors club. She hopes to have a career working with robotics and to potentially become a successful entrepreneur in the STEM fields.

About Potomac Photonics

Potomac Photonics, Inc. provides micro digital fabrication contract services including 3D Printing, laser micromachining, micro CNC machining, and hot embossing for prototypes to production. The Baltimore-based company is an authorized re-seller of 3D printers from the 3D Systems Corporation and offers extended in-house service of the machines. For more information visit <http://www.potomac-laser.com>