



Oct 14, 2015 James Morra | Electronic Design

The unique perspective of UAVs and the evolution of image sensors has motivated companies to explore their potential for commercial applications. (Image courtesy of Thinkstock

After being assembled and calibrated by a group of engineers, the quadcopter lifted itself in the air, hovering with its whirring propellers, and flashing a light bulb at the long-exposure cameras standing in a large, open warehouse. Through the use of stop -motion animation, the aerial drone appeared to trace cubes, ellipses, waves, and messages with these points of light. It was all part of a recent promotional video released by PreNav, an unmanned aerial vehicle (UAV) company based in San Carlos, Calif. The company has built a new UAV system that can make the exacting movements necessary to inspect industrial equipment and tall structures, such as wind turbines and cell towers.

The heart of the patent-pending navigation system is a tripod-mounted ground station, which controls the quadcopter's flight path around the structure or interior space. This "guidance robot" scans the structure with lasers and generates a threedimensional point cloud, from which it develops a flight path for the aerial drone. Once the flight begins, it sends position updates to the drone, controlling its flight around the structure, and keeping it stable against wind and other disturbances. The UAV is apparently capable of flying within centimeters of a structure, according to the company.

Unlike most other UAV navigation systems, the PreNav drone does not rely on GPS data. Many autonomous drones use GPS to navigate pre-set flight paths, but the information is not accurate enough to fly close to sensitive or dangerous equipment. "The current generation of drones struggle when they need to fly close to structures, due to the limitations of GPS and collision-avoidance sensors," says Nathan Schuett, the CEO of PreNav and former machine-vision engineer at The Society for Creative Research

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KTSM-TV
KVIA-TV
KRWG-TV
KBNA-AM/FM & KAMA-AM
KHEY-AM/FM, KPRR-FM & KTSM-AM/FM
KLAQ-FM, KISS-FM & KROD-AM
KPAS-FM- ALGIE A. FELDER CSBE
KINT98.COM INTERNET RADIO NETWORK
BURST COMMUNICATIONS INC THOM JOHNSON
GIESLER BROADCASTING SUPPLY INC.
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SCMS, INC
TNT BROADCAST AND TELECOMMUNICATIONS CONTRACTORS,INC
KSCE-TV
RF Specialties of Texas Dan Sessler.
KCOS-TV
KELP-AM ARNOLD McClatchy.

MARSAND, INC.

Ho Tah Say. LLC













In flight, the PreNav quadcopter not only takes images of a structure but also reconstructs it into a 3D model, which can then be distributed to technicians on the ground. According to Schuett, the system can fly close enough to identify nuts, bolts, serial numbers, cabling, damages, and other details that would normally only be visible to technicians. In the case of wind turbines and cell towers, technicians usually have to scale these tall structures to inspect for damages and perform maintenance. The unique perspective of UAVs and the evolution of image sensors has motivated companies to explore their potential for commercial applications. A large number of drone companies, including the consumerfocused Parrot Drone, are developing systems that can be used for agricultural mapping, infrastructure inspection, and security. Sony Corp., for instance, recently released a prototype of an enterprise UAV that processes information over the cloud. Skycatch, a San Francisco-based company, was founded on the idea of using aerial drones to gather data for construction and mining

operations. Although the system will not be available until 2016, PreNav notes that it has already started working with wireless carriers, cell-tower owners, and wind-turbine operators who are interested in the technology. A venture-funded startup, PreNav has received around \$1.2 million in seed funding from Pejamn Mar Ventures, Toivo Aznnus, Drone.VC, and others

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PROGRAM CHAIRMAN: Warren Reeves

> NEWSLETTER: Antonio Castro

EAS CHAIRMAN: David Halpering

EXECUTIVE COMMITTEE: Antonio Castro Carlos Sosa Walter Hanthorn



EL PASO, TX SBE CHAPTER 38 MEETING MINUTE

DATE 10/13/2015 LOCATION: COMO'S ITALIAN REST,

MEETING CALLED TO ORDER: 12:27 PM, BY ANTONIO CASTRO, THERE WERE 10 ATTENDANTS.

REPORT OF THE SECRETARY: MINUTES IN THE SEPTEMBER NEWS-LETTER. ACCEPTED BY GLENN LEFFLER, SECONDED BY OWEN SMITH.

REPORT OF THE TREASURER: \$ 6,669.21. ACCEPTED BY WARREN REEVES, SECONDED BY BRUNO CRUZ.

REPORT OF THE CERTIFICATION COMMITTEE: NO REPORT.

REPORT OF THE MEMBERSHIP COMMITTEE: NO REPORT.

REPORT OF THE FREQUENCY COORDINATOR COMMITTEE: INTER-FERENCE TO FAA FOUND BY FCC. KPRR TO INSTALL A BAND PASS FILTER. OWEN SMITH REQUESTED FREQUENCIES FOR SUNBOWL.

REPORT OF THE SCHOLARSHIP COMMITTEE: NO REPORT

REPORT OF THE WEBSITE COMMITTEE: 1948 HITS LAST TIME, NOW 1967. (19)

REPORT OF THE EAS CHAIRMAN: OWEN SMITH REPORTED THAT HUDSPEDH COUNTY IS NOT INCLUDED IN LP1, ONLY IN LP2.

REPORT OF THE PROGRAM COMMITTEE: WARREN REEVES WILL DO A PPRESENTATION IN NOVEMBER

UNFINISHED BUSINESS: NONE.

NEW BUSINESS OR ANY ITEMS FOR THE CHAPTER INTERES: PIC-NICK PARTY COMES BACK THIS YEAR AT ANTONIO CASTRO HOME. SATURDAY NOVEMBER 14. INVITATION TO FOLLOW.

NEXT MEETING DATE AND LOCATION: TUESDAY, NOVEMBER 10th, @ NOON AT THE COMO'S ITALIAN RESTAURANT.

MEETING ADJOURNED: AT 13:00 PM.

FOR THOSE ATTENDING THE CHRISTMAS PARTY AT THE OLIVE GARDEN ON DECEMBER THE 15TH OF THIS YEAR, THE SPONSORS WILL LIKE TO HAVE THE R.S.V.P. NO LATER THAN DECEMBER 7. PLEASE DO IT AT <u>farahjac@sbcglobal.net</u>



SIMPLY THERE IS NO PRESEN-TATION IN NOVEMBER, THE PROSPECT PRESENTER DID NOT CONFIRM BY THE TIME OF CLOS-ING OF THIS PUBLICATION.

BUT INSTEAD A FORMAL PRESENTATION, THIS TIME WE ARE GOING TO HAVE A FOR-MAL PARTY IN THE FORM OF A PIC-NICK.

IT WILL BE NOVEMBER 14 @ 3 PM (SATURDAY) AT THE RESIDENCE OF THE CHAIRMAN ANTONIO.

800 ARREDONDO DR. EL PASO, TX. 79912 PH. 915-525-8507

BRING THE FAMILY AND LET'S HAVE A GREAT TIME.

SEE DIRECTIONS ON THE NEXT PAGE !!



SBE CH-38 2015 ANNUAL PIC-NICK

SATURDAY NOVEMBER 14



BRING THE FAMILY

-BURGERS -HOT-DOGS -TAQUIZA -CHELAS(BEER) -OPTIONAL B.Y.O.B. -SODAS -GOODIES 800 ARREDONDO DR. EL PASO, TX. 79912, corner w/Bishop Flores.

I-10 exit 9, Take REDD up; at Jack in the Box, turn right, then one block at the left corner. From RESLER, turn left in Bishop Flores, then one block at the right corner. Ph.584-1220