

# Seeing the Deepest Corners of the Earth



Ryan Kastner

Co-Director , Wireless Embedded Systems Masters of Advanced Study Program Co-Director ,  
Engineers for Exploration Professor , Computer Science and Engineering

## CURRENT RESEARCH

### Extending the limits of human exploration using drones and 3D imaging

As archaeologists, biologists, ecologists, and oceanographers continue to study the corners of the earth to further understand its mysteries, there are countless mysteries that are still too difficult to explore and understand. These scientists are limited by the nature of the terrain, as it can be dangerous and uninhabitable. Or they are unable to unlock mysteries due to their inability to see things in a new light. These scientists require technology that is at the cusp of realization, but yet to be developed. Once created, this remote sensing technology will create a renaissance in archaeological, ecological, biological, and oceanographical discoveries. Dr. Kastner of UC San Diego is at the forefront of this movement.

Dr. Kastner has created systems that facilitate high-resolution aerial mapping of large areas. Unmanned aerial vehicles with a variety of sensors capture images and other sensor data of large plots of land to understand a variety of questions. This allows us to see through the jungles in Central America to detect undiscovered Mayan ruins; it enables us to better understand how human encroachment of forests and jungles have altered the ecosystem; and it tracks the plight of endangered species across large swathes of time and space.

Dr. Kastner's projects are not limited to terrestrial exploration. His recent deep sea exploration project aims to create an underwater GPS system. Unlike on-land communication, wireless radio frequency signals cannot be transmitted underwater. With IMU technology along with longitude and latitude readings, images can be stitched together to create a 3D map of the ocean.

- The automated algorithm in the software and can be...

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## AFFILIATION

-  University of California, San Diego

## EDUCATION

- PhD in Computer Science 2002 ,University of California, Los Angeles
- Masters in Engineering 2000 ,Northwestern University
- B.S. in Electrical Engineering and Computer Engineering 1999 ,Northwestern University

## AWARDS

- Cornell Cup

## RESEARCH AREAS

Veteran's Causes, Technology, IOT, Devices, Data, Robotics

## FUNDING REQUEST

Your contributions will help create systems that monitor endangered species, automatically mark and track invasive plant species, create 3D maps of underwater shipwrecks, and uncover secrets of the Mayan culture. Dr. Kastner will use the funding to build and deploy innovative technology around the world. These projects are helping to protect our environment, understand our cultural heritage, and educate future engineers.

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