Anthony Duer, Applied Energy Group

Poster Title: Remote Sensing: Not Just for Psychics

Abstract: Our world is a vast, complex, and ever-changing place. Traditionally, we have tried to understand our world by sampling it: conducting surveys, doing site visits, or taking physical samples. However, these methods all share the same drawback: in a world that may look vastly different tomorrow, we can only take a snapshot of today. The era of 'big data' is beginning to change this dynamic. With the advent of modern computer vision algorithms, the reduction in data acquisition costs, and commoditization of computational power, users are suddenly able to tap into vast quantities of data to try and solve problems. One area of interest has been the availability of high-quality satellite imagery. In prior years, accessing satellite data required either a scientific grant, government sponsorship, or launching your own satellite into space â€“ none of them particularly affordable options for smaller customers. Companies, however, have begun to provide access to updated satellite imagery â€“ often only lagging a few days or weeks. This access has allowed individuals to explore the world in both unprecedented detail and scope. This has drastically expanded our ability to survey buildings â€“ rather than visiting a few hundred sites to survey them, what happens if we visit every building? Our recent work has been following recent developments in this space. Specifically, using satellite data to track the installation of solar panels across the United States. This presents a significant step forward in our ability to understand how the grid is changing across vast space and time. Using current satellite imagery, we can estimate total installed capacity at a specific site and across a region. Likewise, by using historical imagery, we can also estimate how that capacity has changed across time. Our presentation provides an overview of the ins-and-outs of understanding how to access, understand, and build models with satellite imagery to better understanding our ever-changing world.