



**MONTCLAIR STATE**  
UNIVERSITY



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### **Doctoral Program in Environmental Management Student Projects – Dr. Stefan Robila**

While I am a faculty member in the Department of Computer Science, my work fits the programmatic goals of the Environmental Management PhD Program. Consequently following the MSU's evaluation process, I was deemed as qualified for designation as doctoral faculty. As such, I am allowed to teach doctoral courses as well as initiate doctoral student projects, based on the needs of the program.

Since arriving at Montclair I have worked with undergraduate, MS and PhD students (including ENV students) in independent studies, theses and other culminating experiences. I have considerable experience within research areas of the doctoral program specifically in areas of remote sensing and image analysis and energy conservation. Additionally, many problems today require the efficient processing of large data sets. My expertise in high performance computing provides an additional advantage in crafting and completing research directions.

Bellow you will find a sample of potential projects. I am currently looking for enthusiastic students to embark on investigative work associated to them.

If you are interested in them or would like to propose your own project, please contact me.

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### ***Remote Sensing / Data Analysis***

I hold a Ph.D. degree in Computer Information Science focused on high order statistics based processing of remote sensing (in particular hyperspectral data). I continue my work with remote sensed images by designing new efficient processing methods and employing a variety of computing environments including parallel and distributed platforms. I have published my work in top Geosciences venues such as IEEE Geoscience and Remote Sensing Letters, International Journal of Remote Sensing, and proceedings of ASPRS, IEEE IGARSS, SPIE Remote Sensing, SPIE Optics and Photonics.

Remote sensing is a fascinating topic, allowing us to explore areas often inaccessible to humans, to perform temporal analysis of changes in vegetation or urbanization, to detect hidden targets and quantify ground cover. Working with me you will gain a new appreciation of the value of remote sensing, gain hands on expertise (including working with the only hyperspectral camera available at MSU), as well as investigate new applications. Potential projects can include analysis of a geographical area, design of new techniques of analysis of social implications of remote sensing. Additional projects include the use of hybrid data such as radar / LIDAR / hyperspectral as well as employment of other data sets including GIS based ones.

### ***Energy Conservation***

I have played a leading role the “Green IT” Project at MSU. The project aims to reduce power consumption within the MSU data centers, to increase community awareness of the IT equipment energy usage and develop energy saving intelligent decision systems for IT professionals. The project involved one ENV student and is supported by an external grant. I propose to extend the Green IT initiative to a broader question: how do address computing needs in a sustainable fashion? How do we measure the computing impact on the environment? How do we reduce it? Many opportunities exist, from focusing on user education, to designing new metrics, to modeling energy usage for computing systems. Moreover the same metrics can be applied to other industries (for example, mobile communication networks.)