

## **PROGRAM PLAN FOR RIPS 2004**

**Project title:** Characterization of time-varying objects in temporal sequence of 2-D scenes.

### **Project description:**

Automatic identification and characterization of changing objects in a sequence of 2-D scenes is of much interest to many industries and scientific investigations. For example, monitoring surveillance video is a time consuming and boring task. It is highly desirable to use computer to first screen the scene and cue a human to verify if the event warrants further actions. Characterizing whitecap coverage and live time to deduce statistical behavior as a function of meteorological conditions are of much interest to oceanographers. This project set out to develop algorithms to address some of these problems. One needs to determine what changes are of interest. Then one needs to isolate and track the changing portion (or object) and finally characterize the change in the context of some preset definition.

### **Objective**

- Develop algorithms for identifying, extracting (or segmenting), tracking and characterizing the moving objects in sequence of 2-D scenes

### **Approach**

- Survey the most popular and the state of the art algorithms.
- Select a scenario for new algorithm development (whitecap scene, surveillance etc.)
- Divide team to attack different part of the problem; e.g. change detection algorithm, segmentation algorithm, tracking algorithm, object characterization algorithm and algorithm integration.
- Investigate if treating 2D+time as 3-D data and use level set method for algorithm development (e.g. scene segmentation) is a viable approach.
- Implement algorithms and apply to furnished data and make improvements if time allows.

### **Outputs**

- Brief documentation on algorithm survey results.
- Developed algorithm description, performance documentation and demonstration
- Window based software application
- Demonstration of the algorithm application on provided data
- Final Report

### **References**

See this site for example of application

<http://www.pyramidvision.com/products/index.asp>