SAN DIEGO STATE UNIVERSITY
*Leadership Starts Here*

**SDSU**
presents
a thesis defense for
Master of Science
degree in
Computer Science

Wednesday,
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12:00pm
GMCS 418

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# Steven Williams

*The Overlapping Variation Method Algorithm*

## Abstract

The overlapping variation method algorithm is a restructuring of the standard variation method for estimating fractal dimensions as proposed by Benoit Dubuc in 1989. This restructuring was created to remove redundant computations from the variation method algorithm when attempting to compute many fractal dimension estimates for regions where the fractal windows overlap. Thus the overlapping variation method is much better suited to compute multiple overlapping fractal windows on the same surface than any current standard fractal estimate algorithm.

The algorithm opens up the possibility of handling much larger DEMs than was previously possible making this a powerful tool for better understanding how surface roughness changes by providing numerous sub windows of fractal dimensions estimates from the DEM quickly. This thesis focuses on DEMs of large areas of coral reef beds as its primary data set. This is one of many possible applications of the overlapping variation method and serves as a successful example of the overlapping variation method's implementation.

## Thesis Committee

Robert Edwards, Thesis Chair, Department of Computer Science
Mary Thomas, Department of Computer Science
Forest Rohwer, Department of Biology