SCHOOL OF COMPUTER SCIENCE

CS 5753 SCIENTIFIC COMPUTING II
SPRING 2012

Topic: Dynamic Data Assimilation and its Applications

Instructor: S. Lakshmivarahan

Class Time: T-Th 1.30 – 2.45 PM

Class Room: Felgar Hall Room 320

Office Hours: T-TH from 9.00 to 10.00am
T-TH from 3.00 to 3.30pm

Course outline:

1) Basic variational principles and the notion of adjoint operators
2) First and second-order adjoint methods - 4D VAR
3) Forward Sensitivity based method and its relation to adjoint sensitivity
4) Assessment of impact of observations and information content of observations
5) Theory and applications of optimal nudging
6) Data Assimilation as an optimal tracking problem in optimal control theory


We will also use several current research papers to add to the contents of the class.

Final Exam: Wednesday, May 11, 2011 from 1.30 to 3.30 pm in FH 320

Grading: Assignments 8-10, one midterm, and a final. Assignments – 40%, Mid-term-30%, Final Exam 30%. Grading scale: A is 90 or above; B is 80 to 89; C is 70 to 79 and D is 60 to 69. Below 60 is F.

For more information contact the instructor: varahan@ou.edu