CS 468 — Differential Geometry for Computer Science

Spring Quarter 2013

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Class time :
MW, 9:30am-10:45am in Clark S361

Online Resources:
All class materials will be available on the course web page, at
`http://cs468.stanford.edu`. Questions and discussion can be
posted to the course bulletin board, at
`http://www.piazza.com/stanford/spring2013/cs468/home`.

Suggested Texts :
Polygon Mesh Processing by Botsch, et al.
Differential Geometry of Curves and Surfaces by Do Carmo

Evaluation:
Four homework assignments (60%)
Final project (30%)
Note-taking (10%)

Course Information

- This course will present both continuous and discrete aspects of the differential geometry toolbox with an eye for applications in computer science. Differential geometry appears in a variety of applications, including graphics, medical imaging, vision, and learning. We will present parallel threads introducing concepts from the differential geometry of surfaces (curvature, deformation, differentiation, differential equations, mapping) and their corresponding discretizations and applications.

- Prerequisites are mathematics at the level of Math 51 and 52 as well as coding experience.

- Assignments will include some written problems and some Matlab programming.

- You should freely discuss homework assignments with your peers but then you must write up solutions by yourself and in your own words.

- Homework due dates will be indicated on the homework problem sheet. If you must hand an assignment in late, then you will be deducted 10% per late day from your assignment, until five days have elapsed; then you will receive a grade of zero. There will be no exceptions to this policy.

- The final project will involve implementation of an algorithm related to course material.

- Each student will be responsible for taking notes during one lecture. These notes should be of a "publication-ready" quality and will be posted online for all students to use. A sign-up sheet will be posted online. Notes are due one week after the lecture they cover.

- Confused about the material? Your first resource should be the office hours offered by the teaching assistants and the instructors. Office hours are also a good time to give us feedback on the class.