COT 6930 Multimedia Programming Fall 2007

Dept. of Computer Science and Engineering
Florida Atlantic University, Boca Raton, FL

Goals: This course is intended to provide a background and experience in the area high performance software development.

Course Description: This is a graduate level course focusing on software optimization in general and efficient multimedia software and systems development in particular. The course will use a video coding algorithm and analyze complexity and architecture dependencies. The course will introduce efficient programming techniques including software optimization, MMX programming, DirectShow architecture, and Intel performance tools (Compiler, IPP, VTune). The course is will include hands-on development and will also have a few class room presentations by each student.

Prerequisite: COP 3530 Data Structures, good C/C++ programming skills

Text book: Class notes and papers will be distributed through Blackboard

References:
The Software Optimization Cookbook: High Performance Recipes for IA 32 Platforms by Richard Gerber, Aart J. C. Bik, Kevin Smith, Xinmin Tian

Software Optimization for High Performance Computing: Creating Faster Applications by Isom Crawford, Kevin Wadleigh

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Topics:
1. Software optimization
2. Intel programming tools and SDKs
3. Video compression – MPEG-4 and H.264
4. Complexity estimation
5. Software optimization techniques
6. MMX programming
7. Microsoft DirectShow architecture
8. Multi-core Programming

Grading:

About 5 assignments	60%
Term project	40%
No exam	

Each student in the class will receive FREE licenses to the Intel C++ compiler, Intel IPP, and the Intel VTune Performance Analyzer , and Intel Thread Checker (courtesy of Intel). These Intel tools are widely used in the industry for software development and will be used in all assignments and projects.