

**CAP 6018 Multimedia Programming**  
Dept. of Computer Science and Engineering  
Florida Atlantic University, Boca Raton, FL

**Summer 2009**  
MW 3:00 AM to 6:10 PM

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

**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, SIMD programming, Open MP, DirectShow architecture, and Intel performance tools (Compiler, IPP, VTune). The course will include hands-on software development and performance analysis.

**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

**Instructor:** Dr. Hari Kalva

**E-mail:** hari@cse.fau.edu

**Telephone:** (561) 297-0511

**Office Hours:** MW 1:00 to 3:00 PM

**Topics:**

1. Software optimization
2. Intel programming tools and SDKs
3. Video compression basics, MPEG-4, and H.264
4. Performance analysis
5. SIMD programming
6. Microsoft DirectShow
7. FFMPEG
8. Open MP/Multi-core programming

**Grading:**

About 6 assignments

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.**