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**Supervisor's Name and Title at FIU/FAU:** *Hari Kalva, Associate Professor, FAU*

**Name of the PIRE International Partner's Institution:** *University of Castilla La Mancha, Spain*

**Supervisor's Name and Title at the PIRE International Partner's Institution:**

*Pedro Cuenca, Professor, Dept. Computer Science (pcuenca@dsi.uclm.es)*

**Project Title:** *Data Mining for Scalable Video Transcoding and Encoding*

**Problem Statement:** *This project aims to exploit structure in video to enable low complexity encoding and transcoding of H.264 SVC. The proposed methods use data mining to reduce the complexity. The goal is to develop data mining tools to predict complex coding modes in videos. The tools exploit structural similarity in video. One of the objectives is to develop a minimum set of attributes to make optimal decisions. The methodology developed will be useful in other data mining problems.*

**Motivation and Impact:** *Data mining has been applied in video analysis and understanding but there has been little work in improving encoding performance using data mining. The proposed approach of exploiting structure in video allows more efficient encoders. The proposed solution improves encoder and transcoder parallelization. The proposed work will enable better utilization of multi-core and upcoming many-core systems. The proposed project will have applications in high-density video processing systems.*

**Current Status:** *This work is part of ongoing research in the Multimedia Lab at FAU. Dr. Pedro Cuenca's group at UCLM in Spain is active in this area of video encoding and transcoding. We have ongoing collaboration with Dr. Cuenca's group and have published more than 10 papers jointly.*

**Research Roadmap:**

*Jan 15 to May 15 2009 – Continuing work on applying data mining for H.264 SVC encoding and transcoding*

*Mar 15 to May 15 2009 – Exchange of ideas with Prof. Cuenca and developing a research plan for the students' stay in Spain*

*May 15 – Jul 15 2009 – Research plan execution. Development of data mining techniques for video transcoding.*

*Aug 15 – Dec 15 2009 – Completion of simulation, analysis, and paper preparation*

*Paper Submission:*

*Early July submission to IEEE International Conference on Consumer Electronics (ICCE 2010)*

*December submission to IEEE International Conference on Image Processing (ICIP 2010)*

**Relation to PIRE Core Research Projects:** *The data mining tools developed fit in to the CI Integration layer. The video coding application fits into CI Application layer. Low complexity video coding has applications in healthcare communication and visual data acquisitions in hurricane mitigation.*