AIIA LAB-Education & Research

The lab serves educational and research needs in intelligent digital media:

- **Signal Processing**
  - Audio, Music, Speech Processing
  - Biomedical Signal Analysis

- **Image & Video Processing**
  - Digital Imaging
  - 3D Image / Video Processing
  - Computer Vision

- **Computational Intelligence**
  - Machine Learning/Pattern Recognition
  - Neural Networks
  - Neuroinformatics

- **Graphics**
  - Animation
  - Virtual Reality and Presence
  - Graphics and Haptic Interfaces
  - Volume Graphics

- **Cross-discipline applications**
  - Networked and Social Media
  - Affective Computing
  - Human-Centered Interfaces
  - Web and Multimedia Information Retrieval
  - Ambient Intelligence
  - Biometrics
  - Multimedia Protection and Forensics
  - Cognitive Systems and Robotics
  - Socially Intelligent Surveillance
  - 3DTV
Undergraduate Courses

- Signals & Systems
- Digital Signal Processing
- Stochastic Signal Processing
- Discrete-Time Speech Processing
- Digital Image Processing
- Pattern Recognition
- Digital Video Processing
- Neural Networks
- Computational Intelligence
- Computer Graphics
- Modeling/Digital Image Synthesis

Applications

- Human Computer Interaction
- Multimedia Systems
- Learning Theories & Educational Software

Foundations & Specialization
Graduate Courses

- Statistical Signal Processing-Time Series Analysis
- Biomedical Signal Processing-Bioinformatics
- Advanced Signal Processing
- Computer Vision
- Digital – Internet TV
- Computer Animation
- Virtual Reality
- Discrete-Time Speech Synthesis- Language Technology
- Multimedia Content Analysis, Description & Protection
- Computational Intelligence- Statistical Learning
AIIA LAB-People

- **5 Faculty members**
  - Professor *Ioannis Pitas* (Lab director)
  - Associate Professor *Constantine Kotropoulos*
  - Assistant Professor *Nikolaos Nikolaidis*
  - Assistant Professor *Nikolaos Laskaris*
  - Lecturer *Anastasios Tefas*

- **Researchers**
  - 10 PhD candidates (varying number 10-20)
  - 5 researchers (varying number 5-20)
AIIA LAB-Research Activities

1. Human-Centered Multimedia Analysis

- Face recognition
- Facial expression recognition
- Activity recognition
AIIA LAB-Research Activities

2. 3D TV Content Analysis

• Low-level analysis
• Semantic (anthropocentric) analysis

• Annotation
• Archiving, indexing, retrieval
3. Music Signal Processing

- Genre recognition
- Tagging
- Structure analysis
- Mood recognition
AIIA LAB-Research Activities

4. Virtual Reality in Medicine

• Virtual dental patient
  • 3D modeling of human head
  • Haptics-enabled simulation of dental operations
AIIA LAB-Research Activities

5. Understanding Brain Waves for BCI
6. Emotional Speech Recognition
AIIA LAB - R&D Projects

In the last 5 years:

- **3DTV content analysis**
  - 3DTVS, FP7, 967,000 € (Start 2011, prime contractor)
  - i-3Dpost, FP7, 636,000 €

- **Anthropocentric computing**
  - MOBISERV, FP7, 528,000 €
  - SHARE, FP6 436,000 €
  - SIMILAR, Network of Excellence, FP6, 310,000 €
  - BIOSECURE, Network of Excellence, FP6, 35,000 €
  - PENED2003, Greek Ministry of Technology, 83,000 €

- **Multimedia content analysis, indexing/retrieval, protection**
  - NM2, FP6, 350,000 €
  - ECRYPT, Network of Excellence, FP6, 107,000 €
  - MUSCLE, Network of Excellence, FP6, 154,000 €
  - DELOS, Network of Excellence, FP6, 16,000 €
  - HRAKLEITOS I, Greek Ministry of Education, 33,000 €
  - HRAKLEITOS II, Greek Ministry of Education, 45,000 €
  - PYTHAGORAS II, Greek Ministry of Education, 60,000 €

- **Biomedical imaging**
  - BIOPATTERN, Network of Excellence, FP6, 242,000 €

- **Total funding: 4,002,000 €**
AIIA LAB member collaborations

- Synergy of different staff member R&D priorities on Digital Media:
  signal processing, image/video analysis, computational intelligence, computer graphics, biomedical signal processing (for HCI)

- Joint participation in R&D projects (15 projects)
- Joint paper authoring
- Cooperation in teaching activities

- International cooperation (more than 200 R&D partners)
Publication record in the last 5 years:

- 3 books
  - 1 edited book with international publishers
  - 2 books in Greek
- 89 papers in international journals (36 IEEE ones)
- 168 papers in international conference proceedings
- 23 book chapters

Other published material:
- 2 traditional Greek music collections (33 CDs)
AIIA LAB- Student Excellence

● High PhD standards:
  – Minimum number of journal publications: 3
  – Average number of journal publications: 4.3
  – Average number of conference papers: 7.3
  – Target towards high-impact journals (e.g. IEEE ones)

● MSc student publications in the last 5 years:
  – 6 in journals, 19 in conferences

● BSc student publications in the last 5 years:
  – 3 in journals, 15 in conferences

● 2 ERCIM Alain Bensoussan fellowships:
  – Dr. Ververidis, Dr. Kotti (2009)

● M. Kotti selected by the IBM Watson Res. Center among the 12 top senior Ph.D students (2008)
# AIIA LAB-International Recognition

## Overall citation record (September 2011)

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AIIA LAB-International Recognition

Overall h-index record (September 2011)

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AIIA LAB-Distinctions

Distinctions summary in the last 5 years:

- More than 3100 citations only in the last 5 years
- IEEE Fellow (Prof. Pitas, class 2007).
- 2009 best cited author award by Aristotle University of Thessaloniki
  - Prof. Pitas 8500+ citations in 2009
- 24 invited talks
AIIA LAB- Future Goals

- Excellence in research and education
  - participation in competitive R&D
- Build-up of the lab infrastructure
  - smart room, audiovisual lab
- International cooperation
  - MSc in English

Thank you!