

Institution description, HPC facility and usage

Marco Vinicio Villalta Fallas



PATTERN RECOGNITION AND
INTELLIGENT SYSTEMS
LABORATORY

Universidad de Costa Rica | Faculty of Engineering | Electrical Engineering Department

Workshop on High Performance Computing (HPC) Architecture and Applications in the ICTP
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- 1 **PRIS-Lab**
 - Description
 - Research lines
 - Projects
 - HPC facility

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Description and History



- U.C.R. - E.I.E.
- Founded in 2nd January, 2012.
- Interests:
 - 1 Pattern Recognition.
 - 2 Intelligent Systems.
 - 3 Machine Learning
 - 4 Data Mining
 - 5 Digital Signal Processing
 - 6 Digital Image Processing
 - 7 Object Tracking
 - 8 Abstract Data Structures
 - 9 Algorithms and Programming



Research lines

Biocomputing: EXCESS



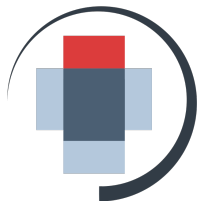
Biocomputing: ESSENCE



Sport Analysis: ACE



Cognitive Robotics: CORE

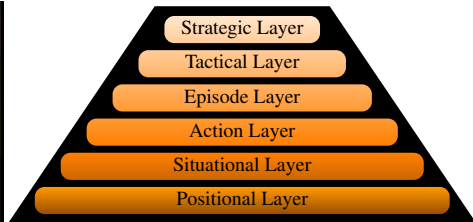


Projects

Ace: Sport Analysis



- **Automated Football Player Tracking from TV Broadcast**
- **Semantic abstract modelling of Football from positional data**

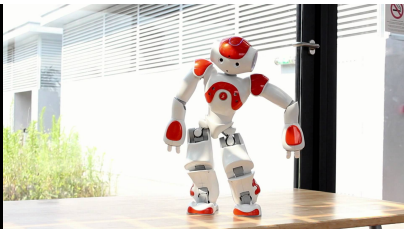
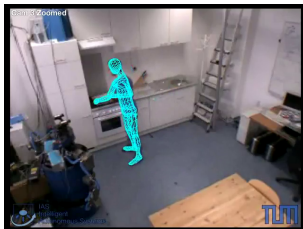


Projects

Core: Cognitive Robotics



- **Human automatic observation system**
- **Learning Hierarchical Action Models**



Projects

Essence: Biocomputing – agriculture

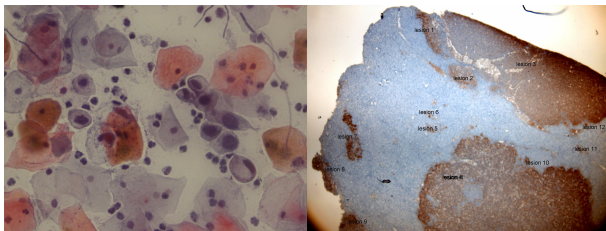


- **Automated Orchids Taxonomy from Seeds**
- **Fertilizers Effect from Plant Sequences**





- **Cancer Cervix Cells Classification**
- **Classification of Cancerogenic Tissue**



HPC facility

Sura cluster

- Beowulf type cluster.
- Master: CPU: Intel Xeon E5620 @2.4Ghz (16 cores), 8GB RAM, 500B on RAID5 storage. NVIDIA GT218 graphic card. Gigabit Ethernet
- Slaves (5): CPU: Intel Core i5 750 @2.67Ghz, 3GB RAM, 230GB storage. Gigabit Ethernet.
- OS: Debian squeeze
- Libraries:



HPC facility

Planned expansion

- Head node: 1x 2U Quad Xeon E5 Processor Server with 64 GB RAM, 1TB storage, 10 GbE, redundant power supply.
- Compute nodes: 51x 2U DP Xeon E5 4x GPU (Tesla K10, K20/K20X, Intel Xeon Phi) Server with 512GB RAM, 1TB HDD, 10GbE network interface, 2x Tesla K20x, redundant power supply.
- Storage node: Storage for 800TB using 4U 36x 3.5" Drive DP Xeon E5 Storage Servers (as many as needed)
- Racks: 3x 42u racks.
- Network fabric: 3x 24 port 10GbE switch.
- OS: CentOS



Thank you
for your attention!

Questions,
Suggestions,
Comments?

