Graduate Studies in Engineering and Computer Science
at the
University of Central Florida

Department of
Computer Science

Dept. of Computer Science:
Basic Facts

❑ 47 faculty = 37 T/TE Faculty + 10 Intstr./Lecturer

❑ Preliminary Fall 2017 Enrollments:

Degree Program	Enrollment
CS Ph.D.	167
CS MS	116
MS Digital Forensics	100
MS Data Analytics	34

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Dept. of Computer Science:
Top Ranked Research Areas

- ❑ Computer Vision and Image Processing (#6 in US)
- ❑ Virtual Reality (#19 in US)
- ❑ Human Computer Interaction (#20 in US)
- ❑ AI, Machine Learning, Data Analytics (#36 in US)
- ❑ Bioinformatics and Systems Biology (#41 in US)
- ❑ Networking and Mobile Computing (#52 in US)
- ❑ Software Engineering and Systems (#59 in US)
- ❑ Cyber Security and Privacy (#72 in US)

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Dept. of Computer Science:
Other Research Areas

❑ Theory of Computing, Algorithms, Quantum Computing (#67 in US)

❑ Databases (#74 in US)

❑ Parallel Computation

❑ Computer Architecture

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Dept. of Computer Science: Rankings from csrankings.org

Overall: **57 in US** and 97 in world

❑ 33 in US for Interdisciplinary areas (59 in world)

❑ 36 in US for AI areas (71 in world)

❑ 72 in US for Systems areas (119 in world)

❑ 80 in US for Theory areas (169 in world)

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Dept. of Computer Science:
Facts of Interest

Professional Society Fellows:

Professor	IEEE Fellow	AAAS Fellow	Other Societies
Mubarak Shah	√	√	2
Kien Hua	√		
Avelino Gonzalez	√		1

6 NSF CAREER award winners
    (Heinrich, LaViola, Sukthankar, Wocjan, Wang, Hu)

3 AFOSR YIP winners (Chatterjee, Sukthankar, Jha)

3 UCF Pegasus professors (Shah, Hughes, Hua)

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Center for Research in
Computer Vision (CRCV)

❑ *Video Surveillance and Monitoring*
- ➤ Visual Tracking
- ➤ Scene and Object Recognition
- ➤ Human Activity Recognition
- ➤ UAV Video Analysis

❑ *Video Registration*

❑ *Video Categorization and Segmentation*

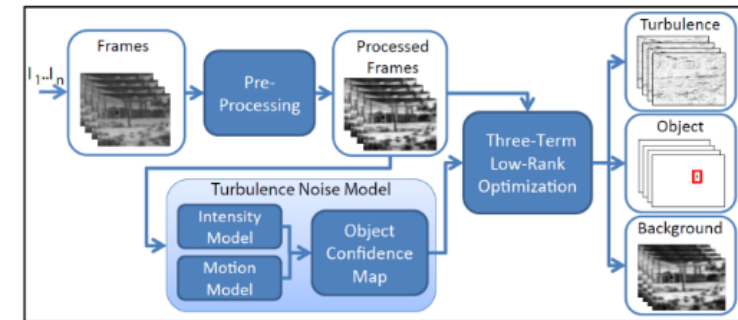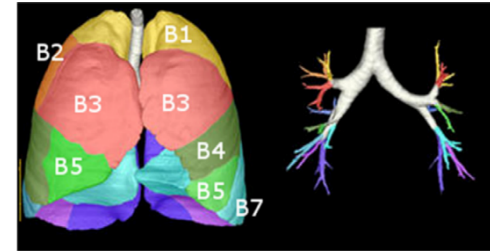❑ *3D reconstruction*

❑ *Content-based Video Retrieval*

CRCV (Vision) Faculty

❑ Ulas Bagci: Medical Image Processing

❑ Ali Borji: Visual Attention and Search, Active Learning

❑ Boqing Gong: Domain Analysis, Transfer Learning

❑ Niels da Vitoria Lobo: Mobile Robotics, UI, Modeling

❑ **Mubarak Shah**: Video Surveillance & Monitoring, Video Registration, Video Segmentation, Video Retrieval

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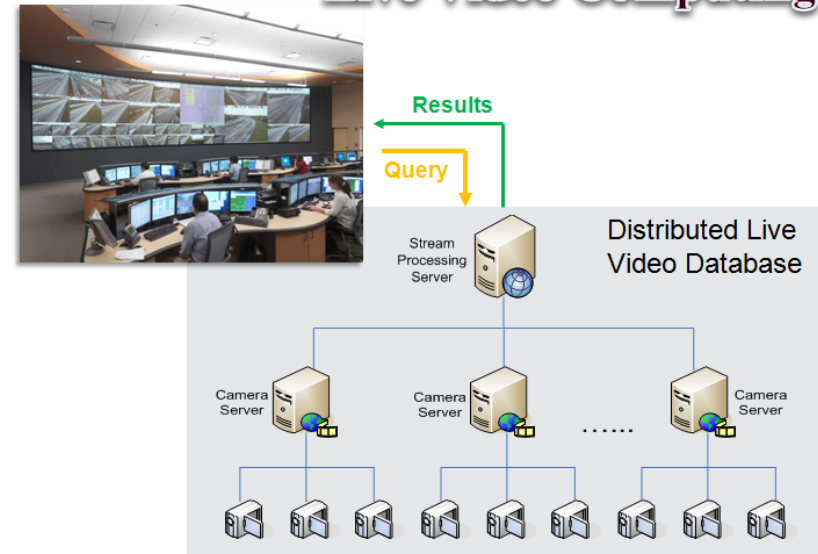UCF
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Other Image Processing & Vision Faculty

❑ Hassan Foroosh: Compressive Sensing, Hyperspectral Imaging (HSI), Target Classification, 3D/Stereo Video, UV imaging

❑ Kien Hua: Image/Video Retrieval, Live Video Computing

❑ Guo-Jun Qi: Machine Learning, Pattern Recognition
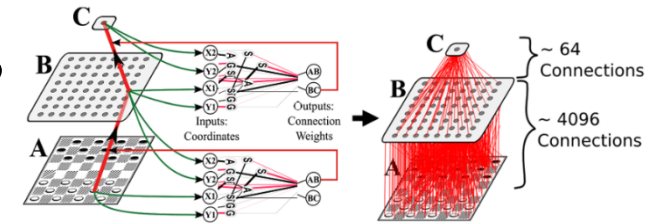
Original Image   1% Samples

Live Video Computing

Results

Query

Stream Processing Server

Distributed Live Video Database

Camera Server   Camera Server   ......   Camera Server

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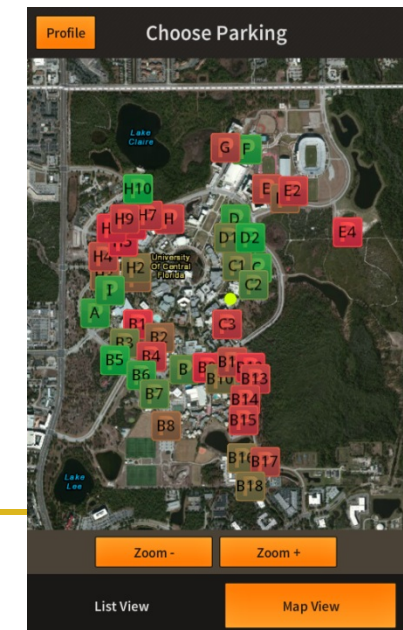
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Machine Learning (ML) and AI Faculty

❑ Ladislau Boloni: Autonomous Agents, ML for Robotics

❑ Ken Stanley: Evolutionary Computation, Search, Machine Learning, Inventor of NEAT and HyperNEAT
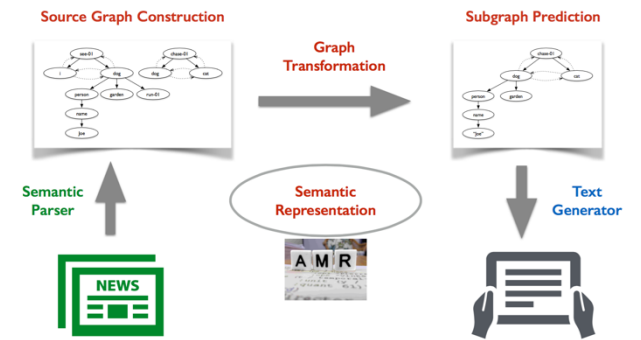
❑ Gita Sukthankar: Robotics, Intelligent Agents, Activity and Plan Recognition
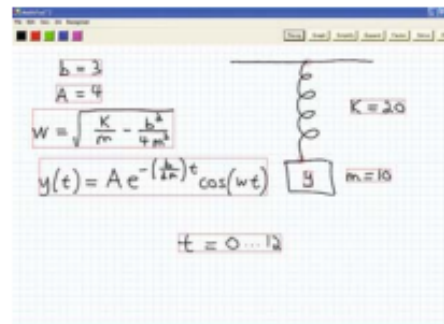
More ML and AI Faculty

☐ Fei Liu: Natural Language Processing, ML, Data Mining, Summarization

☐ Avelino Gonzalez: Human Behavior Representation, Contextual Reasoning, Knowledge-based Systems

☐ Annie S. Wu: Genetic Algorithms, Evolutionary Computation, Adaptive Systems

☐ Guo-Jun Qi: ML, Data Analytics

☐ Haiyan Hu, Wei Zhang: ML and Data Mining in Bioinformatics

Human-Computer Interaction

- Joseph LaViola: Pen-based UI, 3D UI, Post-WIMP UI

- Pamela Wisniewski: Social Media and Privacy, Adolescent Risk, Contextual Privacy in IoT

  - Multiple Best Paper awards in the *CHI* conference

Virtual Reality

- Charles Hughes (CS & IST): Mixed and Virtual Reality, Digital Puppetry, Telepresence, Robotics
  - TeachLiVE project used at over 50 universities
- Greg Welch (Nursing, IST, CS): Robotics, Healthcare, Simulations for training
- Avelino Gonzalez (CS): Human-realistic avatars

sreal synthetic reality lab

teach live

Rehearsing Teaching Skills

Credentialing for Peer Tutors

Reflection with Good Judgment

TeachLivE Education PIs

Lisa Dieker

Mike Hynes

Social Skills for those with Autism

Yeah, I got my....
Maria: I've been watching basketball too

➢ **Avatar mediated interaction**
➢ **Manifestations of surrogates**
➢ **Applications to teacher practice, social skills, train the trainer, interview practice**

Interviewing & Being Interviewed

Protective Strategies

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MS in Data Analytics

❑ 30 credit hour degree
  ➤ Joint with Statistics and IEMS

❑ Degree can be completed in 16 or 20 months

❑ Designed for working professionals
  ➤ Classes at night near UCF

❑ Face to face instruction

❑ Focus on algorithmic/technical aspects of big data

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Placement of CS PhD Graduates in Industry

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