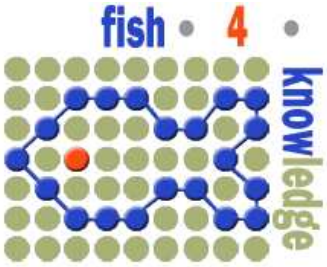

Fish4Knowledge Deliverable D6.3

International scientific workshop 2

Principal Author: UEDIN
Contributors: All partners
Dissemination: PU

Abstract: This document reports the delivery of the second international workshop, namely the 2012 International Workshop on Visual Observation and Analysis of Animal and Insect Behavior (VAIB 2012).

Deliverable due: Month 24

1 The workshop concept

The Fish4Knowledge team organised a one day workshop on "Visual observation and analysis of animal and insect behavior", held on November 11, 2012, as part of the 21th Int. Conference on Pattern Recognition (ICPR), Nov 12-15, Tsukuba, Japan. The proposal was accepted by the ICPR conference organising committee.

The call text was:

"There has been an enormous amount of research on analysis of video data of humans, but relatively little on visual analysis of other organisms. The goal of this workshop is to stimulate and bring together the current research in this area, and provide a forum for researchers to share expertise. As we want to make this more of a discussion workshop, we encourage work-in-progress presentations. Reviewing will be lightweight and only abstracts will be circulated to attendees.

The types of issues that research will address include:

- detection of living organisms
- organism tracking and movement analysis
- dynamic shape analysis
- classification of different organisms (eg. by subspecies)
- assessment of organism behavior or behavior changes
- size and shape assessment
- counting
- health monitoring

These problems can be applied to a variety of species at different sizes, such as fruit and house flies, crickets, cockroaches and other insects, farmed and wild fish, mice and rats, commercial farm animals such as poultry, cows and horses, and wildlife monitoring, etc. One aspect that they all have in common is video data."

The workshop organisers were:

R. Fisher	University of Edinburgh
J. Hallam	University of South Denmark
B. Boom	University of Edinburgh

Additional program committee members were:

D. Armstrong	University of Edinburgh
M. Betke	Boston University
A. Branzan Albu	University of Victoria
P. Dickinson	University of Lincoln
G. Farinella	University of Catania
A. French	Nottingham University
Y. Kita	Japanese Nat. Inst. of Advanced Industrial Science and Technology (AIST)
M. Mirmehdi	University of Bristol
G. Mori	Simon Fraser University
E. Pauwels	Centrum Wiskunde & Informatica
S. Ravela	Masssachusetts Inst of Technology
M. Ruether	Technische Universitat Graz
T. Serre	Brown University
R. Sillito	Actual Analytics
C. Spampinato	Universita' di Catania
Y. Xiao	University of West England

2 The workshop delivery

- We chose to select talks for presentation based on 4 page extended abstracts to create a less formal atmosphere suitable for young researchers and preliminary research. The aim was to encourage discussion and sharing of ideas in the emerging area.
- The workshop was advertised to about 12000 computer vision/image analysis people by direct email plus several newsgroups and the main conference web site.
- 24 extended abstracts were received and each was reviewed by 3 members of the organisers and programme committee.
- 18 talks were accepted based on the abstracts.
- About 35 people attended the workshop.
- It was interesting, fun and the delegates seemed to find it a worthwhile event. We received several compliments on the programme.
- We are considering running the workshop again at the 2014 ICPR (Stockholm).

3 The workshop programme

The programme was:

8:30 Welcome and administrative details

Insects 1

8:40 Identifying All Individuals in a Honeybee Hive - Progress Towards Mapping All Social Interactions
C. L. Luengo Hendriks, ZQ. Yu, A. Lecocq, T. Bakker, B. Locke, O. Terenius

9:00 Bumblebees Detection and Tracking
B. D. Miranda, J. Salas, P. Vera

9:20 Counting the Bumblebees Entering and Leaving a Beehive
J. Salas, P. Vera

9:40 Local Appearance Feature Based Classification of the Theraphosidae Family
À. Utasi

10:00 3D Tracking of Building Processes in *Macrotermes*
K. Petersen, N. Napp, J. Chin-Lee, J. Werfel, R. Nagpal

Flying Animals 1

10:20 Vision System for Wingbeat Analysis of Bats in the Wild
M. Breslav, N. W. Fuller, M. Betke

10:40 Break

Flying Animals 2

11:00 Analysing the hovering flight of the hummingbird using statistics of the optical flow field
F. Martinez, A. Manzanera, E. Romero

11:20 Error Analysis and Design Considerations for Stereo Vision Systems Used to Analyze Animal Behavior
G. Towne, D. H. Theriault, Z. Wu, N. Fuller, T. H. Kunz, M. Betke

Ground Animals 1

11:40 Multiple Animal Species Detection Using Robust Principal Component Analysis and Large Displacement Optical Flow
P. Khorrami, JP. Wang, T. Huang

12:00 Rat behavior: human versus automatically generated annotation
E. A. van Dam, L. P. J. J. Noldus

12:20 Lunch

Ground Animals 2

14:00 HMM Based Behavior Recognition of Laboratory Animals
S. Sandikci, P. Duygulu, A. B. Ozguler
14:20 Automated tracking of motor behavior as a means to assess severity of symptoms in the 6-OHDA marmoset model of Parkinsons disease
T. Palmèr, M. Santana, R. Fuentes, P. Petersson
14:40 Learning animal social behavior from trajectory features
E. Eyjolfsdottir, X. P. Burgos-Artizzu, S. Branson, K. Branson, D. J. Anderson, P. Perona

Fish and Other Marine Animals 1

15:00 Three-dimensional behavior measurements of small aquatic lives using a single camera
K. Kawasue, S. Nagatomo, Y. Oya
15:20 Using non-local background modeling to quantify the schooling behaviour of sticklebacks
R. Ardekani, A. K. Greenwood, C. L. Peichel, S. Tavarè

15:40 Break

Fish and Other Marine Animals 2

16:00 Using Sparse Representation for Fish Recognition and Verification in Real World Observation
Y.-H. Shiau, F.-P. Lin, C.-C. Chen
16:20 Long-term underwater camera surveillance for monitoring and analysis of fish populations
B. J. Boom, P. X. Huang, C. Beyan, C. Spampinato, S. Palazzo, J. He, E. Beauxis-Aussalet, S.-I. Lin, H.-M. Chou, G. Nadarajan, Y.-H. Chen-Burger, J. van Ossenbruggen, D. Giordano, L. Hardman, F.-P. Lin, R. B. Fisher
16:40 Marker-Based Tracking of Subsurface Locomotion in Noisy Environments
M. M. Serrano, S. S. Sharpe, D. I. Goldman, P. A. Vela

17:00 **Close**

The online version of the programme at
`http://homepages.inf.ed.ac.uk/rbf/vaib12.html`
has the PDF for each paper linked to the titles.

