2013

Symposium on

Image Processing, Image Analysis and

Real-Time Imaging (IPIARTI) 2013

Symposium on Acoustic, Speech and

Signal Processing (SASSP) 2013

DATE: Thursday 9 May 2013

VENUE: Universiti Tenaga Nasional, Putrajaya Campus, Selangor

TOPICS (SPEAKERS):

Keynote #1:

The Status of Digital Watermarking,

Dr. Ton Kalker, VP, Security and DRM, DTS Inc., USA.

Keynote #2:

Technologies in Cardiac Imaging,

Prof. Dr. Ir. Eko Suprianto, Director, IJN-UTM Cardiovascular Engineering Centre, UTM

Keynote #3:

From theory to practice – Experiences with the DSP-Microcontroller for Mechatronic systems,

Dr. Farrukh Hafiz Nagi, Associate Professor, UNiversiti Tenaga Nasional, Putrajaya Campus

Details can be found HERE

2012

IMAGE PROCESSING, IMAGE ANALYSIS AND REAL TIME IMAGING WORKSHOP (IPIARTI) 2012

DATE: 30 AUGUST 2012 (THURSDAY)

VENUE: UNIVERSITI TEKNOLOGI MARA, SHAH ALAM, Selangor

TOPICS (SPEAKERS):

Keynote #1:

Photo Forensics: There is more to a picture than meets th e eye

Prof. Nasir D Memon

Polytechnic Institute of New York, USA

Keynote #2:

Spectral Approach to Color and

Lighting

Prof. Jussi Parkkinen

Monash University, Malaysia

Keynote #3:

Biometric Rich Gestures: A touching farewell to passwords?

Prof. Nasir D Memon

Polytechnic Institute of New York, USA

Keynote #4:

Assessing The Extent of Uniqueness of A Fingerprint

Match

Assoc. Prof. Dr. Sarat C. Dass

Michigan State University, USA

Regular Presentations:

1) *An application of the new Signal Processing Technique*

Hilbert Huang Transform (HHT) to Machine Tool Condition Monitoring - Joseph

Emerson Raja (MMU)

2) *GUI System for Enhancing*

Blood Vessels Segmentation in Digital Fundus Images - Ahmad Zikri Rozlan (UiTM)

3) *Noise Removal for Weather Degraded Image* - Mohd Helmy Abd Wahab

(UTHM)

2011

IMAGE PROCESSING, IMAGE

ANALYSIS AND REAL TIME IMAGING WORKSHOP (IPIARTI)

2011

DATE: 6

OCTOBER 2011 (THURSDAY)

VENUE: MULTIMEDIA UNIVERSITY, CYBERJAY

A,

SELANGOR

TOPICS (SPEAKERS):

Keynote #1 :

Image Analysis by Orthogonal Moments

and Implementation of them by Digital Filters

Prof. P.

Raveendr an

Universiti Malaya (UM)

Keynote #2:

Semantic Technology for

Image Understanding

Dr. Dickson Lukose

MIMOS

Keynote #3:

Advanced Image Correlatio

n Filters

Prof.

Salina Abdul Samad

Universiti Kebangsaan Malaysia (UKM)

Regular Presentations:

1) A robust texture feature extraction

using the localized angular phase - Khairul

Muzzammi l (UTEM)

2) Tree Nutrients Prediction by Image Analysis

- Lee Aik Leng (MMU)

3) *An Improved Medical Image Compress*

ion Algorithm using PCA Neural Network

- Yeo Weng Kwong (UTEM)

4) *Hilbert Huang Transform*

, a new and promising technique for

non-linear and non-stationary signal

analysis - Emerson Raja Joseph (MMU)

5) A Contrast Enhancem

ent Technique for Infrared Thermogr

aphy - Lo Tzer Yuan (MMU)

6) *Analyzing Graphic*

Design Hidden Rules and Popular Beliefs in

Contemporary Packaging Design for Various

Local Detergent Product - Hafizul Idham &

Saiful Akram Bin Che Cob (UiTM)

7) Computation of Uncertaint

y of Physiographic Features Extracted

from Multiscale Digital Elevation Models

Using Fuzzy Classification - Dinesh

Sathyamoorthy (STRIDE)

8) Classification Algorithm for Papaya

Ripeness Determination Using Digital Colour

Analysis - Low Cheng Seng (MMU)

9) *Development of Control*

System of Continuous Sterilizer of Palm Oil Mill

Using Image Processing Technique

- Dr. Saad A. Abbas (UTM)

2010

IMAGE PROCESSING, IMAGE

ANALYSIS AND REAL TIME IMAGING

WORKSHOP (IPIARTI) 2010

DATE: 16 DECEMBER 2010 (THURSD

AY)

VENUE: UNIVERSITI TEKNOLOGI

MALAYSIA, KUALA LUMPUR

TOPICS (SPEAKERS):

Biomedical

Engineering – Medical Image

Analysis in Clinical Practice

Prof. Dr. Ahmad Fadzil Hani

Universi

ti

Teknologi Petronas

Face Recogni

tion Under Variant Head

Poses

Assoc. Prof. Dr. Syed Abdul

Rahman Syed Abu Bakar

Universi

ti

Teknologi Malaysia

Statistic al

Multivariate Technique for

Some Image Analysis Problem

S

Assoc. Prof. Dr. Omar Mohd

Rijal

Universiti Malaya

Development of

Shape Extraction Algorith

ms for Tradem ark Image

Search System Application

Assoc. Prof. Dr.

Moham mad Faizal Ahmad

Fauzi

Multimedia University

FPGA-based

Written by Administrator
Monday, 01 February 2010 02:35 - Last Updated Monday, 13 May 2013 07:51

Architectures for 3-D Medical

Image Compression

Dr. Afandi

Ahmad

Universiti Tun Hussein Onn

Malaysia (UTHM)

Perform ance

Evaluation of PCA and

Histogram of Oriented Gradient

based Pedestrian Classific

ation

Mohd Haris Lye Abdulla

h

Multimedia University

Exploring

Nearest-Neighbor Distanc

e for Histogram-based

Fruit Ripenes s Identific

ation

Fatma Susilawati Mohama

d

Universi ti Teknolo gi

Malaysia

A Novel Algorith

m for Finding Critical Points

of Online Jawi/Persian/Ara

bic Handwritten Charact

er using in Feature Extracti

on

Majid Harouni

Universi ti Teknolo gi

Malaysia

Color Image

Indexing And Retrieval Of

Documents Captured From

Consumer Handheld

Devices

Danial Md Nor

Universiti Tun Hussein Onn

Malaysia (UTHM)

IMAGE ANALYS

IS TALKS AT UTP

DATE:

3

DECEM

BER

2010 (FRIDAY)

VENUE

:

UNIVERSITI

TEKNOLOGI petronas, perak

TOPICS (SPEAK

ERS):

Disease Detection Using Artificial

Neural Network

Assoc. Prof. Dr. R.Logeswaran

N.Rajasv aran

Multimedia University

Statistical

Multivariate Technique for

Some Image Analysis Problems

Assoc. Prof. Dr.

Omar Mohd Rijal

Universiti Malaya

Blind System Identification

(Deconv olution) For Thermo

couple Sensors - A Researc

h Area Involves Signal Process

ing For Sensor Applicat ion

Dr. Seán McLoone

(National University of

Ireland Maynooth)

Date:

28 June 2010 (Monday)

Venue: Faculty of Electrica

I Enginee ring, Universi

ti Teknologi Malaysia

, Skudai, Johor.

Abstract:

In

conventional automotive

vehicle applications, only the

measure ment of low frequenc

y

temperat

ure

variation

s is usually required, and

standard robust sensors such as

thermocouples, resistance

temperature detectors (RTD)

and thermistors suffice.

However, recent advances in

engine design have resulted

in the need for robust temperat

ure

sensors

that have

fast

response characteristics. An important

example where such sensors

are now required for control

and diagnostics would include

on-board diagnosis (OBD) of catalyst

malfunction.

In many sensors,

the smaller the sensing

elements

, the

faster will

be the

response but at the expense of

durability and ease of manufact

ure.

Therefor

e, most

sensors

involve a compromise between

performance and the conflictin

g

requirem

ents for

ruggedne

ss and

low cost.

Experime

ntal work

on exhaust systems by the

Internal Combustion Engines

Research Group at QUB showed

that during transient operation

,

conventi

onal

thermoco

uple sensors gave errors of

up to 200°C. A reduction in wire

diameter

dramatic

ally

improved

the

accuracy

, but in

the harsh

environment of an exhaust system,

a lower limit to the diameter

is quickly reached, below which

sensor failure occurs.

We are researchi

ng a complete ly novel discrete-t

ime linear identification

framework, which allows insitu

dual sensor character istation.

This eliminates the major

shortcoming of other approach

es which require that the dual

sensor

character

istics are

known a

priori.

Extensive

simulatio

n studies

have

shown

that the

new methods reduce the

sensitivity to noise on the

inputs. Much of our recent

theoretic

al work is

concerne

d with

the evaluation of alternativ

e identification schemes

. Regular Least Squares (LS) has

proved unsatisfactory as it

produces biased parameter

estimate

s while

more

powerful

techniques such as Generali

sed Total Least Squares, which

accomm

odate

coloured

input and

output noises, have been

shown to provide bias-free estimate

S.

Advances in Biomedical

Engineering

Date:

22nd

April

2010

(Thursday)

Venue: AIMST University,

Kedah

Topics (Speakers):

ANN Detection

for Liver Disease

Assoc. Prof. Dr. R.Logeswaran

N.Rajasv aran

Multimedia University

Technology &

Application of Micro CT scan

Ms.Caterine Ong

Hi-Tech Instrume

nts

Sdn.Bhd.

Time-Frequency

Signal Processing in Bio-Medi

cal Applications

Mr. Mahendr

a

V.Chiluk

uri

Multimedia

University

Recent Advance

s in Biomaterials

Profesor Hj. Zainal

Arifin b. Ahmad

Universiti Sains Malaysia

Abstract: Biomedic

al

engineeri

ng

involves

the

applicatio

n of the

principles

and scientific techniques of

engineering to the enhancement of

medical science as applied

to

humans

or

animals.

It

involves

an

interdisci

plinary approach which combine

s the engineering sciences,

mechanics, design, modellin

g and problem-solving skills

employe
d in
engineeri
ng with

medical and biological sciences

so as to improve the health,

lifestyle and quality-of-life of

individuals. Biomedical

engineering is a relatively new field,

and involves a whole spectrum

of

disciplines

covering:

medical imaging, image processi

ng,

artificial

intelligen

ce,

neural network, physiological

signal processing, biomech

anics,

biomateri

als,

bioinform

atics and bioengin eering, systems

analysis, 3-D modelling, etc.

Combining these disciplines,

systematically and synergistically

yields

total

benefits

which

are much greater than the sum of

the individual components.

Prime example s of the successf

ul

applicatio

n of

biomedic

al

engineeri

ng

include

the

develop

ment and

manufact

ure of biocompatible prosthes

es,

medical

devices,

diagnosti

c devices and imaging equipme

nt and pharmac eutical drugs.

Deploy ing Textual Mathem

atics on Real-Time Embedd

ed Hardware with LabVIE

W MathScriptRT Module

KEN NG, MARKE TING

ENGINEER, NATIONAL

INSTRUMENTS

Date: 24th

FEBRUARY 2010

Venue:

MULTIM

EDIA UNIVERSITY, CYBERJ

AYA, SELANGOR

Abstract: Using textual mathema

tical software for signal processi

ng and analysis has become

increasingly important in

research and development for

many engineers and scientists

▪

However, the challeng

e most engineers and scientists

face is to impleme nt their textual

mathematical algorithms into the

real-world on embedded

hardware

. In this

technical

talk, the

deployment of textual mathema

tics on real-time embedded

hardware using the new LabVIEW

MathScriptRT Module will be

explored and real-world

engineering applications will be

discussed.

2009

Music Tracking in Audio

Streams

Prof. SERGIOS

THEODORIDIS, UNIVERSITY OF

ATHENS

,

GREEC

E

Date:

11th

DECEMBER

2009

Venue:

UNIVERSITI

TUNKU ABDUL RAHMAN,

KUALA LUMPUR

Abstract: The problem of music

tracking in audio streams has

recently attracted a lot of attention,

mainly in the context of audio

content

character

ization

applicatio

ns.

Intelligen

t

browsing

of audio streams, automatic audio

content annotation/indexing,

querying audio streams by audio

example and copyright manage

ment are some of the tasks that can

benefit from efficient music

tracking algorithms.

In this talk wee will present

some recent advances in

music tracking systems in a) the

context of music/speech

discrimin ation in radio recording

s and b) in the context of music

detection in audio sound tracks in

films and video recordings. The

latter is a harder task, since,

besides speech, a diversity

of sound sources are involved.

Adapti ve Learnin g in a

World of Projections

Prof.

SERGIOS THEODORIDIS,

UNIVERSITY OF ATHENS

,

GREEC

E

Date:

11th

DECEMBER 2009

Venue:

UNIVERSITI TUNKU ABDUL

RAHMA

N,

KUALA

LUMPU

R

Abstract:

The task of parameter/function

estimation has been at the

center of scientific attention for a long

time and it comes under different

names such as filtering, predictio

n,

beamfor

ming,

curve

fitting, classification, regressio

n.

In this talk, the estimation task is

treated in the context of set

theoretic estimation argument

s.

Instead

of a

single

optimal point, we are searchin

g for a set of solutions that are

in

agreeme

nt with

the

available

informati

on, which

is

provided to us in the form of a set

of

training

points

and a set

of constraints. Each point in

the training data set, as well

as each one of the constrain

ts, is associated with a convex

set,

construct

ed

accordin

g to a (convex) loss function

(differentiable or not).

The goal of this

talk is to present a general tool for

parameter/function estimation, under

a set of convex constraints, both

for classification as well as

regressio

n tasks,

in a time

adaptive

setting in (infinite dimensional)

Reproducing Kernel Hilbert

spaces (RKHS).

The algorithmic scheme

consists of a sequence of

projectio

ns, of

linear

complexit

y with respect to the number

of unknown parameters. Our

theory

proves

that such

a

scheme converges to the intersecti

on of all (with the possible exceptio

n of a finite number of) the

convex sets, where the

required solution lies. The performa

nce of the methodology is

demonstrated in the context

of

nonlinear

classifica

tion and

robust beamforming in communi

cation

systems.

The work has been carried out in

cooperation with Kostas Slavakis

and Isao Yamada.

Smart Space with Signal

Processing for Human Behavio

r Monitoring ASSOC

. Prof. WEE SER, Nanyan

g Technological University

ty, SINGAPORE

Date:

18th November 2009

Venue:

CITITEL HOTEL, KUALA LUMPU

R

Abstract:

Imagine a physical space

filled with “experts” whose role is to

provide personalized services

to a targeted group of human

subjects in that space. With the

“experts”, such a space will be

smart enough to take care of

the

needs of

the

targeted

human subjects in that space.

The question is: “can we do it

without involving real human

experts (e.g. nurses)” as the

later are valuable and may be put to

better use. This talk will present a

vision for such a futuristic smart

space. Basically, the idea is to

equip the space with sensors

and a signal processing

system,

that

perform

the

functions of “eyes”, “ears”, other

“sensors”, and “brain”. Findings

of some ongoing projects that

attempt to enable such a smart

space will be used to illustrate

some of the concepts. The

example used for the space in

this talk is a home, and the

personalized service enabled

is the monitoring of the daily

living activities for the elderly

for healthcare purposes

. The talk will discuss the

possible system requirements as

well as research challenges. Video

clips will also be shown on some

preliminary results obtained on the

detection and recognition of the

behavior s of human subjects

in a closed room setting.

2008

Recent Advances in Neural

and Cognitive Enginee

ring Prof. Daniel J. Strauss,

Saarland University

Hospital , Germany

Date: 4th November 2008

Venue: Universiti Teknolo

gi Malaysia, KUALA LUMPU

R

Abstract:

In this talk we will present

recent modeling and analysis

techniques used in neural and

cognitive engineering as emerging

fields of biomedical engineeri

ng. The neurodynamics of the brain

function covers spatio-temporal

scales from the level of synaptic

activity to the level of surface

electroen cephalog raphic correlate

s. A variety of multiscale

computational methods have

been

developed in

different

scientific discipline s with a large

impact in the modeling and

analysis of the brain dynamics

, e.g., to disclose multiscale

phenomena underlying the

electroen
cephalog
raphic
generatio

n or to improve the noninvasi

ve

medical

neurodia

gnostics

and therapy using electroen

cephalog raphic methods. This talk

will focus on recent developments in

neurophysiological and neuropsy

chological

multiscale

electroen cephalog raphic modeling

and analysis using neural

fields, corticoth alamic feedback

dynamics , and multiscale

wavefor m decompo sition

techniques. In particular, we

preset the application of

these concepts to current problems

related to auditory processing and

perceptio

n.

The Particle Filtering Method

ology in Signal Process ing

Prof. Petar M. Djuric, Stony

Brook Universi ty, USA Date: 1

st

August 2008

Venue:

Multimedia University,

Cyberjaya, Selangor.

Abstract: Particle

filtering is a Monte Carlo – based

methodology for sequential signal

processing. It is designed for

estimation of hidden processe

s that are dynamic and that can

exhibit

most

severe

nonlinear

ities.

Also, it

can be

applied

with

equal

ease to

problems

that

involve

any type

of

probability distributions.

Therefore, it is not surprisin

g that particle filtering has

gained immense popularity. In this

talk, first, the basics of particle

filtering will be provided with

descripti
on of its
essential
steps.

Then some important topics of

the

theory

will be

addresse

d

including

Rao-Blac

kwellizati

on,

smoothin

g, and

estimatio

n of constant parameters.

Finally, a presentation of most

recent advances in the theory

will be given. The talk will

contain signal processing

example s which will aid in gaining

valuable insights about the methodol

ogy.

STATISTICAL SIGNAL PROCE

SSING AND ITS APPLIC ATIONS

PROF. PETAR M. DJURIC,

STONY BROOK UNIVERSITY,

USA.

DATE:

31 ST JULY 2008

VENUE

:

MONASH

UNIVERSITY MALAYSIA,

BANDA

Y

SUNWA

Y,

SELANGOR.

Abstract: Statistical signal processi

ng is a field of signal processi

ng that applies probabilit y theory

and statistics for extractin

g

informati

on from

observed

data in

as

accurate

way as

possible. In this talk, the basics of

the field will be reviewed and

many example s if its use in

practice will be provided.

Challenges and Trends

in Biometrics Prof.

Dr. Salina Samad, Universi

ti Kebang saan Malaysia

Date:

30th June 2008

Venue: Multimedia University

ty, Cyberjaya, Selango

r.

Abstract:

Biometrics in the security industry

refers to measurable physical

characteristic or personal behavior

al trait used to recogniz e an

identity

or verify

a

claimed

identity.

Biometrics is an alternativ

e to more traditional methods

of identifying a person

since it is based on something that a

person is, not on what he owns or

has to remember, such as keys,

passwor ds or PINs. Signal

processing and pattern recogniti

on

techniqu

es along

with

sensor design make up the core

technologies for biometrics. An

overview of biometrics is

covered,

from

historical

perspecti

ve to current usage. The

trends associated with biometric

applicatio

ns

highlight

the

challenges that researchers have

to

overcom

e in order

for

biometrics to be a viable technolo

gy of the future. Accuracy ,

reliability and security issues

that arise from using biometric

s pose challenges that can be

addressed using new algorithm

s which include vitality detection

,

multi-bio

metrics

and

encryption. As the technology

matures and standards are in

place, applications using biometric

s may become ubiquitous

worldwid

e.

Acoustic Signal Processing for

Next-Generation Multichannel

Human/ Machine Interfac es

Prof. Dr. Ing Walter Kellerm

ann, Univer sity Erlange

n-Nuremberg, Germany.

Date: 3rd January 2008

Venue: Universiti Teknolo

gi Malaysia , KL

Abstract: The acoustic interface

for future multimedia and communi

cation terminals should be

hands-free and as natural as

possible, which implies that the

user should be free to move

and should not need to wear

any devices. For digital

signal processing this poses

major challenges both for signal

acquisition and reproduction,

which reach far beyond the

current state of the technolo

gy. For ideal acquisition of an

acoustic source signal in noisy

and reverberant environm

ents, we need to compensate

acoustic echoes, suppress noise

and interferences and we would

like to dereverb erate the desired

source signal. On the other

hand, for a perfect reproduction of

real or virtual acoustic scenes

we need to create desired sound

signals at the listeners ears,

while at the same time we have to

remove undesired reverber

ance and to suppress local

noise. In this talk we will briefly

analyze the fundamental

problems for signal processing in the

framework of MIMO (multiple

input - multiple output) systems

and discuss current solutions.

In accordance with ongoing

research

we

emphasi

ze

nonlinear and multichannel

acoustic echo cancellation, as

well as microphone array signal

processi ng for beamfor ming,

interference suppression, blind

source separation, and source

localization.

Tacklin g the Acousti c

Front-end for Distant-Talking

Automatic Speech Recogni

tion

Prof.

Dr. Ing

Walter

Kellermann, University

Erlangen-Nuremberg, German

y.

Date: 3rd

January

2008

Venue: Universi ti

Teknologi Malaysia, KL

Abstract: With the

ever-growing interest in

'natural' hands-free acoustic

human/machine interfaces, the

need for accordin g distant-ta

lking automatic speech recogniti

on (ASR) systems increases.

Considering interactive TV as

a

challengi

ng

exemplar

y

application

scenario,

we investigate the structural

problems presented by noisy

and reverberant multi-sou

rce environments with unpredict

able interference and acoustic

echoes of loudspeaker

signals,

and

discuss

current

acoustic signal processing

techniques to enhance the input

to the actual ASR system.

Special attention is paid to reverber

ation,

which

affects

speech

recogniz

ers much

more

than

human listeners, and a recently

publishe d method incorpora ting a

reverberation model on the

feature level of ASR is discusse

d.

TITLE: FUNDAMENTALS OF

SPEECH AND AUDIO SIGNAL

PROCESSING

PROF. DR. ING

WALTE

R

KELLER

MANN,

UNIVERSITY ERLANGEN-NU

REMBERG, GERMANY.

DATE:

2ND

JANUARY 2008

VENUE

:

:

SELANGOR

RESOURCE DEVELOPMENT

CENTER , SHAH ALAM, SELANG

OR.

Abstract:

Some fundamentals, current

techniques, and perspectives for

the future will be presented for the

following topics:

- Human speech productio

n and hearing

- Repr

esentatio

n of

speech

and

audio signals

- Sour

ce coding techniques

- Speech recognition

strategies - Speech

synthesis methods

- Sign

al

enhance

ment

techniqu

es

2007

Toward s a Definitio n of a

Vascular-Health Index Using

Photoplethysmography Assoc.

Prof. Dr. Edmond Zahedl, Universi

ti

Malaya.

Date:

31st

May 2007

Venue: Universi

ti Teknologi Malaysia

, KL

Abstract:

Non-invasive, direct vascular

characterization of patients -where

the ultimate objective is "to

provide a totally non-invasive

instrument to assist the physician

in the diagnostic with reliable

estimates of the mechanical

properties of the vascular bed"-

seems to have always remained

an

elusive

target.

Although

attempts have been made to

find non-invasive, clinically

meaningful parameters since

the seventies, it is only in the

previous decade that digital

signal processing tools have

been so readily available. Owing to

this

progress,

complex

software

processing functions are put at

the dispositio n of research

ers

without

them

being

necessarily professional

program mers. On the other hand,

advances in non-invasive

instrumentation have paved

the way to indirect yet

accurate measurements of essential

parameters such as blood flow and

pressure. The Windkessel (Wk)

model is widely used for modeling

the vasculature: it elegantly

accounts for the relevant paramete

rs in vascular characterization,

namely: arterial complian ce,

resistance and blood inertance

Statistical Methods in PTB

Detection Using Digital Chest

Radiograph Assoc. Prof. Dr.

Omar Mohd Rijal (Univers

iti

Malaya)

Date:

22nd Ma

y 2007

Venue: Multimedia

University

Abstract: Two million deaths

are due to tuberculosis (TB)

every

year.

About

one

million new cases of lung

cancer

have

been

detected

annually.

Despite rapid advance

s in medical imaging technolo

gy, the conventional chest

radiograph is still an important

ingredient in the diagnosis of lung

ailments.

Further,

it is well

known

that mainly experienced

medical officers are capable

of

accuratel

y

detecting

MTB, and similarly early-sta

ge LC from chest radiograp

hs. The immediate problem

with the use of X-rays involves

the use of consider able

visual interpretation. Studies

have shown that the accuracy

of the interpretation is subject

to

varying

degrees

of

observer error. This error

includes the observer’s inability

to detect abnormal opacities and

interpret them correctly, inter-obs

erver variation (due to varying

reading ability between observer

s) and intra-obs erver variation.

This talk is about applying statistical

ideas as an alternative method

for the detection of PTB, useful for

the

lesser

experien

ced

medical staff . In particular a

graphical method involving wavelet

coefficients on the feature vector

(WFV) has been proposed for the

detection and discrimination of

Mycobacterium Tuberculosis

(MTB) and lung cancer (LC).

Popular discrimination procedur

es use the Linear Discrimin

ant Function (LDF( )) and the

Quadratic Discriminant

Function (QDF()). These discrimin

ation

procedur

es do not

reconsid

er the

members

hip

status of

misclassi

fied

cases.

This

paper proposes a novel sequenti

al

discrimin

ation

procedur

e

involving

the MRA

of the

WFV (vector). The results

indicate that the proposed new

procedure, after reconsidering

misclassi fied cases, can

significantly increase the rates

of correct classification.

Monitoring PTB Disease

by Comparing Digital

Chest Radiograph

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Date:

22nd

May

2007

Venue: Multimedia Universi

ty

Abstract:

Two million deaths are due

to MTB annually. Global TB

incidence is still growing at 1% a

year. To eliminate the problem

of TB the WHO makes several

suggestions, in particular “Giving

access to quality TB diagnosis

and treatment for all”. An

important ingredient for diagnosis

of TB is the comparison of a

series of chest X-rays. If

treatment is successful, the

presence of “snowflakes” will

decrease or diminish with each

subsequent (new) image. In other

words it is important that we

have a reliable method of

comparin
g X-ray
images.
Several

problems have to be faced before

any comparison may be made.

Firstly, the diseased area or

snowflakes do not subscribe to any

fixed dimensions (shape,

size, or orientation). As such two

images may only be compare

d by their direct differenc e since

no obvious feature may be

consider ed. In particular if

treatment is successful, the

incidence of snowflakes shows

a

reduction

in the

second

image.

Any

measure

of this

reduction may be used to indicate

success of treatment. Digital

images of chest radiograph taken

at different time points

may be compared to investigat

e the effect of treatment on

mycobacterium tuberculosis

(MTB) patients. One method

of

comparis

on is that

of

visually locating “snow-flakes”

which should decrease in area or

size with each subsequent

image.

This

paper

propose

a more objective method; the

comparison of image histogra

ms

whereby

a

leftward

shift of the histogram

indicates a positive effect of treatment

. The comparison of two histogra

ms is equivalent to either

comparin
g the
correspo
nding

box-plots or the correspo nding set

of

percentil

es.

However,

before the comparison is

made the images need to be

registere
d and
resized.
The

results of this study show that the

proportion of percentiles (from

histogram) can be used as an

indicator of treatment effect (or

patient's progress). Further the

correlations are shown to be the

best similarity measure to

indicate the quality of image

registrati

on.

Finally,

this study

also shows that a combinat

ion of registration and resizing

can

improve

the

pair-wise

comparison.

Image Retrieval: Content-

and Semantics-based

Approach

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Date: 3rd April 2007

Venue: Universiti Teknolo

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Abstract: In conventional

image retrieval systems, images

are indexed by text, known as

the metadata of the image,

such as the file name, the date

it was produced, the type of the

image and a manually annotate

d

descripti

on on the

content

of the image itself. This kind

of system, known as text-base

d image retrieval (TBIR), suffers

from

some

weaknes

ses,

namely the amount of labour

required

to

manually

annotate

every single images, as well

as the differenc e in human

perceptio
n when
describin
g the

images, which might lead to

inaccura cies during the

retrieval process later. Hence,

there is a need for a better system

and content-based image

retrieval (CBIR), where the

images are described

automati

cally

based on

the

characteristics of their visual

content

is a

popular

choice.

In a CBIR system, the

image description is done

automati

cally, and

is also

consisten

t, which in theory will solve the two

drawbacks of TBIR system.

However CBIR does have its

disadvan

tages,

one of

which is

its

inability

to

provide

the semantics or the meaning

of the images, popularly known as

the semantic gap. This brings

the semantic s-based image

retrieval (SBIR) into the picture.

In SBIR, the main goal is to obtain

the semantics of the images,

by means of automatic image

annotation, before they are used as

keywords for retrieval purpose.

The SBIR and TBIR hence

use the same approach to image

retrieval, with the differenc e being

TBIR needs human assistanc

e while SBIR is fully computer

generate
d, which,
like
CBIR,

should solve the two drawbac

ks of the TBIR system.