

Dr. K. ALDRIN KARUNAHARAN

DEPARTMENT OF PROCESS ENGINEERING, INTERNATIONAL MARITIME COLLEGE OMAN
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OBJECTIVE

To pursue a profound and prospective career in world-class teaching and integrative research

TOTAL TEACHING EXPERIENCE – 25 YEARS [15 YEARS IN OMAN]

HIGHLIGHTS

1. Hold Ph.D. in medical image processing, M.E[Master of Engineering] in Applied electronics and B.E [Bachelor of engineering] in Electronics and communication engineering
2. A total of 25 years of teaching experience in higher colleges/university
 - 12 years in IMCO
 - 3 years in Caledonian College of Engineering, Oman
 - 10 years as Assistant Professor at Karunya University, Coimbatore, India
3. Five publications in referred Scopus-indexed journals and two book chapters [Taylor and Francis book and Elsevier
4. Involved in corporate training [trained Orpic, SMC, and OPP trainees in the instrumentation and control field]
5. Involved in academic administrative and quality assurance roles such as year coordinator, ABET champions, OAA committees, safety committees etc.

CURRENT POSITION

2010- Till now March 2022 Lecturer [12 years]
Department of Process Engineering

International Maritime College, Oman (Sohar)

Module leader/tutor

Process Instrumentation

Process Control

Process system safety

Process instrumentation and control

Heaths Safety environment

CONTRIBUTIONS TO INTERNATIONAL MARITIME COLLEGE

- Received excellent feedback on my teaching and assessments tools from line managers and
- from the academic development office.
- Represented PE as a member to interact with OAAA stage 1 and 2 audit team and actively involved in the writing of chapter 2 by collecting evidence, analyzing and reviewing the practices 'Students learning by coursework'.
- Assisted HOD/PE by taking over the absence of HOD as deputy for the past 8 years.
- Been an active member of various committees such as the department curriculum committee, safety committee, OAAA self-study portfolio committee, students learning by course work committee, and so on.
- Developed study materials for more than 6 modules and inducted new PE faculty members as mentors.

PAST POSITIONS

2007- 2009 Lecturer (3 years)

**Department of Electronics and Computer Engineering
Caledonian Engineering College, Muscat, Oman
(Affiliated to Glasgow Caledonian University, UK)**

Administrative roles held

SPMS (Students performance mentoring coordinator)
Admissions Tutor (credit transfer /study plan coordinator)

Module leader/ tutor for

Analog electronics
Digital electronics
Telecom applications I
Electronic communication
Electromechanical condition monitoring

1997-2007 Assistant Professor (10 years)

**School of Electrical Sciences
Karunya University, India**

Administrative roles held:

- Academic Coordinator for Electronics and Instrumentation Engineering Department (4 years)
- P.G. in-charge for M.E. Applied Electronics (3 years)

- Head, Department of Electronics and Instrumentation Engineering (4 years)

OVERSEAS ASSIGNMENT

2004 Visiting Faculty
All Nations University, Koforidua, Ghana

EDUCATION

2016-2020 Ph.D. (Engineering) Investigation of hematological disorders from blood cells using soft computing methods - Electronics and communication Engineering

Shri Jagadhishprasad Jhabarmal Tibrewala University, Rajasthan, India

1999-2001 M.E. (Applied Electronics), First Class with Distinction

Karunya Institute of Technology (Affiliated to Bharathiar University), Coimbatore, India
Thesis: Modelling and Simulation of Universal Serial Bus using Verilog HDL

1986-1990 B.E. (Electronics and Communication Engineering), First Class

National Institute of Technology (Affiliated to Madurai Kamaraj University), Kovilpatti, In

INDUSTRIAL EXPERIENCE

1995-1996 Bio-Medical (Electronics Engineer) (2 years)

Oman National Electric Company, Muthrah

Installed Ciba Corning Express Plus Auto Analysis and Renal Analyzers, Blood gas analyzers and served in Customer Support services in the Ministry of Health Hospitals

1990-1994 Bio-Medical (Electronics) Engineer (4 years)

St. Luke's Hospital, Nazareth, South India

Led the Maintenance Team in the complete establishment of the Bio-Medical Department

TEACHING EXPERIENCE

Subjects taught at under-graduate level:

1. Digital Instrumentation Electronic Instruments and Measurement
2. Sensors and Transducers
3. Data Acquisition Micro-Processor based Instrumentation System
4. Bio-Medical Instrumentation
5. Electron Devices Electronic Circuits
6. Communication Theory and Systems
7. Measurements and instrumentation
8. Process instrumentation
9. Process control
10. Process system safety
11. Basic electrical and electronic engineering
12. Computer application
13. Process technology systems

Subjects taught at post-graduate level:

1. Advanced Bio-Medical Instrumentation Virtual Instrumentation
2. Medical Electronics Medical Systems and Bio-Signal Processing
3. Digital Communication

RESEARCH

My principal research interests lie in the field of medical image processing and soft computing. I am currently investigating the haematological disorders from blood cell images using soft computing techniques. My future research plans are to build on the foundations of my PhD to further develop models and tools for medical diagnosis for blood cancer. I have a particular expertise and interest in the image processing tools using MATLAB and basic instrumentation design using LabVIEW. I completed Ph.D. from Shri Jagadhishprasad Jhabarmal Tibrewala University. I have published five refereed Scopus indexed journals and three journal publications are in pipeline which shall be published before august 2020.

JOURNAL PUBLICATIONS

1. Aldrin Karunaharan & Om Prakash, “*Investigation of hematological disorders from blood cells using soft computing techniques: A review*” International journal of pure and applied Maths, Volume 118 No. 20 2018, 3731-3737 ISSN: 1314-3395.

<https://acadpubl.eu/hub/2018-118-21/articles/21e/1.pdf>

2. Aldrin Karunaharan & Om Prakash “**Automatic segmentation of leukocytes for the detection of leukemia using a new computing algorithm**” International Journal of Advancements in Technology, Vol 9(2) :204 published date May 07, 2018. ISSN: 0976-4860

<https://www.longdom.org/open-access/automatic-segmentation-of-leukocytes-for-the-detection-of-leukemiausing-a-new-computing-algorithm-0976-4860-1000204.pdf>

3. Aldrin Karunaharan & Om Prakash, “Automatic Preprocessing of blood cells using edge detectors for the detection of leukemia” International Journal of Pharmaceutical Research (June - 2019). ISSN: 0975-2366

<http://ijpronline.com/ViewArticleDetail.aspx?ID=7494>

4. Aldrin Karunaharan & Om Prakash, “*Enhancing blood cell images using denoising filters for the detection of hematological disorders*”, Indian Journal of Public Health Research & Development (IJPHRD) July 2019, Vol.10, No. 7 p 12-16 ISSN:0976-0245E

<http://www.indianjournals.com/ijor.aspx?target=ijor:ijphrd&volume=10&issue=7&article=245>

5. Aldrin Karunaharan, Lina Rose & Anitha Mary, “Case Studies on Medical Diagnosis Using Soft Computing Techniques”, Taylor & Francis Book, Chapter 9 “Advances in Computerized Analysis in Clinical and Medical Imaging”, CRC Press 978-1-138-33329-1, Year 2019

<https://www.taylorfrancis.com/books/e/9780429446030>

6. Aldrin Karunaharan , Lina Rose & Anitha Mary, “FPGA-Based Detection and Tracking System for Surveillance Camera”, Chapter 12, The Cognitive Approach in Cloud Computing and Internet of Things Technologies for Surveillance Tracking Systems, Pages 173-180, Intelligent Data-Centric Systems, Elsevier Book, Academic Press, 978-0-12- 816385-6, Year 2020

<https://doi.org/10.1016/B978-0-12-816385-6.00012-X>

7. Aldrin Karunaharan & Anitha Mary, “Automatic Detection of Malarial Parasites from Blood Cells Using Soft Computing Techniques” International Journal of Pharmaceutical Research, Vol 13, Issue 1 (June - 2020). ISSN: 0975-2366

<http://ijpronline.com/ViewArticleDetail.aspx?ID=17060>

8. Aldrin Karunaharan. K and Anitha Mary. X “Automatic detection of leukemia from blood cells using soft computing techniques” Springer series book chapter, Vol 356,2022 “Ambient communications and computer systems” PP 537 – 647 ISBN 978-981-16-7951-3

[Ambient Communications and Computer Systems | SpringerLink](#)

9. Aldrin Karunaharan. K and Anitha Mary. X “Automatic detection of pectoral muscle from mammograms using soft computing techniques” International Journal computer science of mechatronics IJCSM; Vol.7.Issue.4.2021.ISSN: 2455-1910

<https://www.ijcsm.in/archives/v7i42021>

10. Aldrin Karunaharan. K and Abdul Hameed. K “Enhanced Detection of Diabetic Retinopathy from Fundus Images Using Novel Computing Techniques” International Journal of Pharmaceutical negative results; IJPNR Volume 13. Special Issue. 3. Pp 343-350 September 2022 ISSN 09769234.

PAPER PRESENTATIONS AT INTERNATIONAL CONFERENCES

- a) Aldrin & Om Prakash, ***“Investigation of hematological disorders from blood cells using soft computing techniques: A review”*** International conference on engineering and advancement in technology (ICEAT 18) conducted by Shri Krishna college of technology, Coimbatore on 2018 22nd March, 2018.
- b) Aldrin & Om Prakash, ***“Preprocessing of blood cells blood cells using denoising techniques for the investigation of hematological disorders using denoising techniques”*** International conference on science, technology, engineering and management (ICSTEM 18) conducted by Kalaighar institute of technology, Coimbatore on (23-24) March 2018
- c) Aldrin & Om Prakash, ***“Automatic preprocessing of blood cells using edge detectors for the detection of leukemia”, International*** conference on emerging technics in engineering, technology and management (ICEETM 19) conducted by Rathinam Institute of Technology, Coimbatore, India on 23rd March, 2019.
- d) Aldrin & Om Prakash, ***“Enhancing blood cell images using denoising filters for the detection of hematological disorders”*** International Conference on Science and Innovative Engineering (ICSIE 19) conducted by Jawahar Engineering College, Chennai, India on March 24, 2019
- e) Aldrin & Anitha Mary, ***“Automatic detection of malarial parasites from blood cell images using soft computing techniques”*** International Conference on Science and Innovative Engineering (ICSIE 20) conducted by JAWAHER Engineering College, Chennai, India on March 29, 2020
- f) Aldrin & Anitha Mary, ***“Automatic detection of leukemia from blood cell images using soft computing techniques”*** International Conference on Recent trends in Engineering and scientific Technology (ICREST 20) conducted by Rathinam School of Architecture, Coimbatore, India on 21st March 2020.
- g) Aldrin Karunaharan. K and Anitha Mary. X ***“Automatic detection of pectoral muscle from mammograms using soft computing techniques”*** International conference on engineering and advancements in technology, July ICEAT-21

- h) Aldrin Karunaharan. K and Abdul Hameed. “**Testing Of Proton Exchange Membrane Cells Under External Conditions for the Applications In Petrochemical Industries**” International conference on robotics, Automation and intelligence systems - ICRAINS-21, conducted by Karunya institute of technology and sciences on Nov,12 and 13, 2021.
- i) Aldrin Karunaharan. K and Edwin Kumar. S. “**Automatic detection of white blood cancer from blood cells using novel computing techniques**” 8th International Conference on Advanced Computing and Communication Systems (ICACCS 2022) Conducted by Shri Eshwar college of engineering, Coimbatore, March 25-26, 2022
- j) Aldrin Karunaharan. K and Abdul Hameed. “**Enhanced detection of Diabetic retinopathy form fundus images using novel computing techniques**”, ICSIE- 2022, International Conference of Science and Innovative Engineering, conducted by Jawahar college of Engineering ,Chennai on 5th June 2022

Projects guided at post-graduate level:

1. Design of Biometrics using finger print
2. ECG Digital Classification Recognition using Wavelets
3. Vibration Control using LQG
4. Arthritis Measurement using Electrical Impedance Method
5. Simulation of real time checkout software for space applications.
6. Low power scan design using first level supply gating.
7. A new detection algorithm based on fuzzy cellular neural networks for white blood cell detection.
8. Automatic identification of the pectoral muscle in mammograms.
9. Fuzzy classification improvement by a pre-perceptual labeled segmentation algorithm.
10. Information hiding techniques for steganography.
11. Design and implementation of integrated signal generation system for gagan.
12. Processing of ECG signals using wavelets.
13. Implementation of bit plane coder of JPEG2000.
14. Design and simulation of biometric recognition system for fingerprints database management.
15. Wireless patient monitoring system.

PROJECTS GUIDED AT UNDER-GRADUATE LEVEL:

1. Design of Surgical Diathermy
2. Design of Radiant Neonatal Warmer
3. Microcontroller based Monitoring and Control
4. Patient Monitoring System
5. Virtual Signal Analyzer using LabVIEW
6. PC based Bio-Telemetry

7. Faradic Stimulator
8. Remote Data Acquisition
9. Design of Ultrasonic Therapy Unit and Ultrasonic Nebulizer
10. Removal of Noise from ECG Signals
11. Ultrasonic based path finding for the blind

PROJECTS GUIDED IN CCEO OMAN:

1. Segmentation of leukocytes with image processing techniques
2. Segmentation of erythrocytes with image processing techniques
3. Detection of micro calcification in mammograms by image processing techniques

25 undergraduate projects guided in International Maritime College, Oman

INVITED SEMINARS AND GUEST LECTURES

1. **“Application of Micro-Controllers in Medicine”** at the STTP conducted on Bio-Signal Processing sponsored by ISTE held at Karunya Inst. of Technology, Coimbatore on 21st May, 2000
2. **“Quantification of ECG Signals”** at the STTP conducted on Bio-Signal Processing sponsored by ISTE held at Karunya Inst. of Technology, Coimbatore on 28th May, 2000
3. **“IT in Medicine”** at the National Level Technical Symposium conducted by the Dept. of EEE, Maharaja Engineering College, Erode on 3rd Sept., 2000
4. **“Virtual Instrumentation and its Applications”** at the National Level Technical Symposium conducted by the Dept. of ECE, VLB Janakiammal College of Engineering, Coimbatore on 11 Aug 2000
5. **“Intelligent Control of Aircraft Landing”** at the STTP conducted on Intelligent and Virtual Instrumentation sponsored by ISTE at the Karunya Inst. of Technology, Coimbatore on 22nd May, 2001
6. **“Data Acquisition for LabVIEW”** at the STTP conducted on Intelligent and Virtual Instrumentation sponsored by ISTE at the Karunya Inst. of Technology, Coimbatore on 24th May, 2001
7. **“Lasers in Medicine”** at the STTP conducted at PSG College of Technology, Coimbatore, sponsored by AICTE on 11th November, 2003
8. **“Bio-Materials”** at the STTP conducted at Kumaraguru College of Technology, Coimbatore, sponsored by AICTE on 27th May, 2004
9. **“Fiber Optic Applications in Medicine”** at the Interdepartmental Faculty seminar of the school of Electrical Sciences, Karunya University on 9th August, 2006

PROFESSIONAL TRAINING

- a) **Teacher training program:** Organized academic development department IMCO 2016
- b) **Professional development program** [3 days September 2010]
- c) **Aspen HYSYS** training conducted by [ASPEN TECHNOLOGY, US] Internal maritime college of Oman, and received 2.1, June 18-20 2017.

LEADERSHIP

Conducted two Short Term Training Programme (STTP's) sponsored by AICTE/ISTE where served as:

- *CONVENOR* OF “Bio-Signal Processing – May 2000”, Karunya Institute of Technology, Coimbatore
- *CONVENOR* OF “Virtual Instrumentation – May 2001”, Karunya Institute of Technology, Coimbatore

Conducted 2 webinars in 2020 and 1n in 2021

COMPUTER PROFIECIENCY

MATLAB, LabVIEW, VHDL, HYSIS, Programming in C / C++ and Microsoft Office Packages

PROFESSIONAL MEMBERSHIPS

- Life Member, Indian Society of Technical Education
- Member, Biomedical Society of India

PERSONAL INFORMATION

Date of Birth : 9-2-1969
Nationality : Indian
Sex : Male
Marital Status : Married
Linguistics : Fluent English, Malayalam, and Tamil
Passport No. : K9688022 Exp. date 08/03/2023
Oman Civil no: 73267669

REFERENCES

1. Dr. L. Govinda rajan
Associate professor
Department of Chemical Engineering
College of Applied sciences Sohar
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GSM 00968 95689941
2. Prof S. P. Goshal,
Professor of Electrical Engineering
National Institute of Technology
Durgapur, West Bengal, 713209
Email spghoshalnitdgp@gmail.com
GSM 0091 9474778849

3. Dr Om Prakash
Professor
Department of Electronics and communication
Malla Reddy Institute of Engineering and Technology (MRIET),
om4096@gmail.com GSM 00919928080494

4. Dr. Senthil Kumar
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Dr. ALDRIN. K

SOHAR

09/03/2022