



# AKSHAYA INSTITUTE OF TECHNOLOGY

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NBA Accredited (CSE)

Obalapura Post, Lingapura, Koratagere Road, Tumkur- 572 106, Karnataka



## Report on Technical Talk

**Title:** Digital Signal Processing and its Applications for Biomedical Signals

**Date:** 09.09.2025

**Time:** 11.00am to 1.00pm

**Venue:** Seminar Hall, Akshaya Institute of Technology, Tumakuru, Karnataka

**Speaker:** Mr. Udaykumar S., Assistant Professor, Department of Electronics and Communication Engineering, East Point College of Engineering, Bengaluru

**Target Audience:** 5th Semester ECE Students

Poster designed for the programme:

Akhshaya Education Society (R.)

**Akshaya  
Institute of Technology**

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Obalapura Post, Lingapura, Koratagere Road, Tumkur-572106

**Department of Electronics and  
Communication Engineering**

*Welcomes you all for the Technical Talk*

**"Digital Signal Processing & Its applications  
for Biomedical signals"**

09.09.2025 September 2025, 11.00am      Venue : **Seminar Hall**

**Resource Person**  
**Mr. Uday Kumar S.**  
East Point College of Engineering and Technology

**Patrons**  
**Dr. Shivakumar K.S.**  
Hon. Chairman, AIT, Tumkur.  
**Dr. Shobha S.**  
Hon. Secretary, AIT, Tumkur.  
**Dr. Yathisha L.**  
Principal, AIT, Tumkur.

**Convenor**  
**Dr. Somshekar G.C.**  
Prof. & HOD, Dept. of ECE

**Coordinators**  
**Prof. K.V. Siddamal**  
**Prof. Arshiya Ruheen**



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Ref: AIT/2025-26/1240

Date: 23/08/2025

To  
Prof. Udaya Kumar. S  
Assistant Professor  
East Point College of Engineering & Technology,  
Bangalore

Respected Sir

Subject: Invitation to Deliver a Technical Talk on **Digital signal Processing & its Applications for biomedical signals.**

Greetings from Akshaya Institute of Technology

We are pleased to inform you that the Department of Electronics and communication Engineering, Akshaya Institute of Technology, is organizing a **Technical Talk Session** for our engineering students as part of our academic enrichment activities.

In this regard, we would be honoured to invite you to deliver a technical talk on the topic "**Digital signal Processing & its Applications for biomedical signals.**" to our undergraduate students. Your experience and expertise in this field would be immensely valuable and inspiring for our students.

We propose to schedule the session on **9<sup>TH</sup> September 2025** at **seminar hall** the session is expected to last about **90-120 minutes**, followed by an interactive Q&A session with the students.

We would deeply appreciate your acceptance of our invitation. Kindly let us know your availability and any specific requirements you may have.

Looking forward to a positive response.

Thank you.

Warm regards,

Dr Somashekhar G C  
Prof and Head  
Department of Electronics and communication Engineering  
Akshaya Institute of Technology  
Tumuru, Karnataka  
somashekhargcait@gmail.com  
Ph. no: 9964144520

Obalapura Post, Lingapura, Tumkur - Koratagere Road,  
TUMKUR - 572106. Karnataka, India.

### Event Flow:

The talk started at 11:00 am.

- Mrs. Arshiya Ruheen Assistant professor and coordinator delivered the welcome speech.
- Mrs. Suguna G H, Assistant professor briefed the profile of Speaker.
- Dr Somashekhar G C, HOD addressed the gathering.
- The resource person began the talk with preamble of DSP and ITS APPLICATIONS.
- Students raised few doubts and the resource person clarified their doubts.
- The session ended at 1.00 pm.



## Introduction

A technical talk on "Digital Signal Processing and its Applications for Biomedical Signals" was organized for the 5th-semester students of the Electronics and Communication Engineering department at Akshaya Institute of Technology. The lecture was delivered by Mr. Udaykumar S., an Assistant Professor from East Point College of Engineering. The objective of the talk was to provide students with an understanding of the fundamental concepts of Digital Signal Processing (DSP) and showcase its practical applications in the biomedical domain, aligning with their current curriculum and future career prospects.

## 2. Event Summary

The talk commenced with a formal welcome and introduction of the speaker by a faculty member from the ECE department. Mr. Udaykumar began his session by setting the context, highlighting the transition from analog to digital technology and emphasizing the crucial role of DSP in modern engineering.

### Key topics covered during the talk included:

- **Fundamentals of DSP:** The speaker explained the core concepts of DSP, including the process of analog-to-digital conversion (ADC), digital processing, and digital-to-analog conversion (DAC). He elaborated on why digital processing offers advantages like precision, reliability, and programming flexibility over its analog counterpart.
- **Nature of Biomedical Signals:** The presentation delved into the characteristics of various biomedical signals, such as Electrocardiogram (ECG), Electroencephalogram (EEG), and Electromyogram (EMG). The speaker explained that these signals are often noisy, non-stationary, and prone to artifacts, making DSP techniques essential for their analysis.
- **DSP in Biomedical Applications:** The talk focused on specific applications, illustrating how DSP is used to enhance the quality of biomedical data. Techniques discussed included:
  - **Noise Reduction:** Using digital filters to remove unwanted frequencies, such as the 50 Hz power-line interference, from signals.
  - **Feature Extraction:** Extracting meaningful parameters from processed signals, such as identifying P, QRS, and T waves from an ECG for diagnostic purposes.
  - **Signal Enhancement:** Improving the signal-to-noise ratio (SNR) to make crucial features more visible to clinicians.
- **Case Study on ECG Analysis:** Mr. Udaykumar provided a detailed case study on ECG analysis, outlining the step-by-step DSP workflow. This included preprocessing the signal to remove baseline wander, detecting the QRS complex using specialized algorithms, analyzing heart rate variability, and automatically detecting arrhythmias.
- **Career Opportunities:** The speaker concluded the session by highlighting the immense career potential at the intersection of ECE and biomedical engineering. He stressed that expertise in DSP is



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highly sought after in the medical device industry, healthcare technology, and research, offering students a path to contribute to advancements in human health.

## Moments of the Event:





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3.



## Outcomes

The technical talk was highly engaging and informative. The students showed keen interest, participating actively in the question-and-answer session at the end. The session was successful in achieving the following outcomes:

- **Knowledge Enhancement:** Students gained a clearer understanding of how theoretical DSP concepts are applied in real-world biomedical applications.
- **Practical Relevance:** The practical examples and the ECG case study effectively demonstrated the clinical significance of DSP techniques, moving the subject from a theoretical course to a relevant, applied field.
- **Career Guidance:** The talk inspired students to consider interdisciplinary career paths and motivated them to explore advanced topics in biomedical signal processing.
- **Industry-Academia Interaction:** The event fostered a valuable interaction between academia and the industry, bridging the gap between classroom learning and practical application.



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### Department of Electronics & Communication Engineering



#### One Day Technical Talk on Biomedical image Processing AY-2025-26

##### Attendance list 5<sup>th</sup> sem students

S.No.	USN	Student Name	Signature
1	1AK22EC023	MANOJ H G	Manoj.H.G
2	1AK22EC037	RAKESHA S S	Rakesha S S
3	1AK22EC043	SACHIN MALLIKARJUN	Sachin
4	1AK23EC001	AJEYA S T	Ajeya
5	1AK23EC002	AKASH G G	Akash
6	1AK23EC003	AKASH R	Akash
7	1AK23EC004	AKSHAY RAM R	Akshay
8	1AK23EC008	CHAITRA	Chaitra
9	1AK23EC009	CHANDANA C N	Chandana
10	1AK23EC010	CHEZHAN C	Chethan C
11	1AK23EC011	D S VARSHITHA	Varshitha
12	1AK23EC012	DAKSHAYINI A V	Dakshayini
13	1AK23EC014	DHARANESH N S	Dharanesh
14	1AK23EC015	HARISH K	Harish K
15	1AK23EC016	HARSHITHA M M	Harshitha
16	1AK23EC017	HARSHITHA N	Harshitha N
17	1AK23EC018	HEMA G S	Hema G S
18	1AK23EC019	KIRAN B N	Kiran B N
19	1AK23EC020	KOMAL GOWDA A	Komal
20	1AK23EC021	LAKSHMI VARAPRASAD REDDY G	Lakshmi
21	1AK23EC023	MANJULA MALLAPPA UPPAR	Manjula
22	1AK23EC024	MANJULA S B	Manjula



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23	1AK23EC025	MANORAME H S	manorame
24	1AK23EC026	MANUSHREE J	manushree
25	1AK23EC027	MANUSHREE P S	manushree
26	1AK23EC028	MUTHURAJ M	muthuraj
27	1AK23EC029	NAYANA P N	nayana
28	1AK23EC031	NISCHITHA C C	nischitha
29	1AK23EC032	POORNIMA M Y	poornima
30	1AK23EC033	PRAJWAL BHEEMANAGOWDA PATIL	Prajwal
31	1AK23EC035	PRAKASH S MALLI	Prakash
32	1AK23EC036	PRIYA	Priya
33	1AK23EC038	PUSHPALATHA B	Pushpalatha B
34	1AK23EC039	RAGHUNANDANBHATT	Raghunandan
35	1AK23EC040	RAKSHITHA IKAL	Rakshitha
36	1AK23EC041	RAKSHITHA K Y	Rakshitha
37	1AK23EC042	RAKSHITHA N	Rakshitha
38	1AK23EC043	RAMANADRI M	Ramanadri
39	1AK23EC044	SANGAMESHWAR ANGADI	Sangameshwar
40	1AK23EC046	SHRAVANI S	Shravani
41	1AK23EC047	SINDHU B V	Sindhu
42	1AK23EC049	SRUJAN SHIVANAND KAMBLE	Srujan
43	1AK23EC050	SUMIT ANILSINGH RAJPUT	Sumit
44	1AK23EC051	SUNIL HANAMAPPA UDDAR	Sunil H.U.
45	1AK23EC052	SURESH MALLAPPA KOODAGI	Suresh
46	1AK23EC053	TEJAS B G	Tejas
47	1AK23EC054	THIPPESWAMY D	Thippeswamy D
48	1AK23EC056	VARSHINI M	Varshini



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49	1AK23EC057	VASUNDHARADEVI G	<i>Vasundhara</i>
50	1AK23EC058	VIJAYALAKSHMI ANKASADADDI	<i>Vijayalakshmi</i>
51	1AK23EC060	VIKAS N	<i>Vikas</i>
52	1AK24EC400	ARBIYA BANU	<i>Arbiya</i>
53	1AK24EC401	CHANDANA H C	<i>Chandana</i>
54	1AK24EC402	DARSHAN V S	<i>Darshan</i>
55	1AK24EC403	POORNACHANDRA P R	<i>Poornachandra</i>
56	1AK24EC404	PRATHIBHA	<i>Prathibha</i>
57	1AK24EC405	SHAHID	<i>Shahid</i>

Coordinator

*K V Siddamal*  
Prof. K V Siddamal, Assot. professor

*Arshiya*  
Prof. Arshiya Ruheen Asst. Professor

HOD/ECE

*Somashekar G C*  
Dr. Somashekar G C



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## 4. Conclusion

The technical talk delivered by Mr. Udaykumar S. was a great success. The session provided a comprehensive overview of Digital Signal Processing and its critical role in processing biomedical signals. It successfully captured the interest of the 5th-semester ECE students, inspiring them to explore the vast potential of this field. The department expresses its sincere gratitude to Mr. Udaykumar for his insightful and motivating presentation.

### Coordinators

1. Prof.Siddamal K V

2. Prof Arshiya Ruheen

### HOD

Dr Somashekhar G C