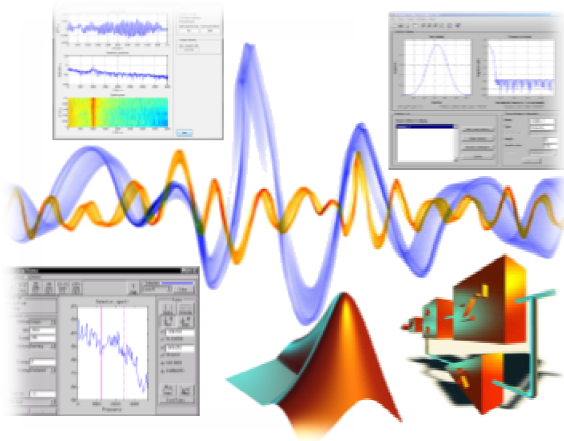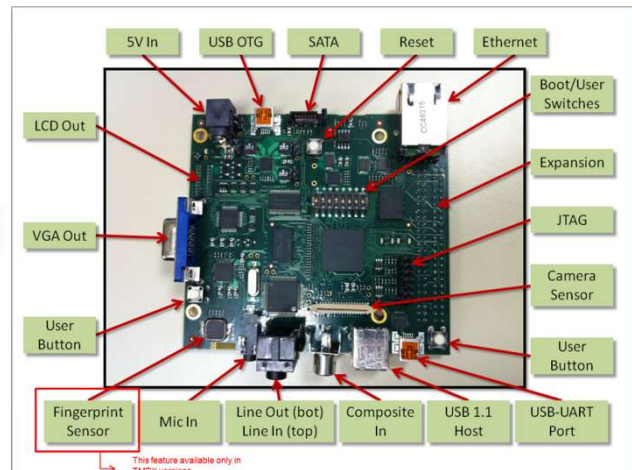# SYSTEMS AND SIGNAL PROCESSING LAB

MATLAB Environment

TMS320C6748 DSP Processor

Objective:

The objective of Systems and Signal Processing (SSP) lab is to provide a practical and hands-on learning environment for students or researchers to explore, analyze, and implement various digital signal processing techniques and algorithms. Signal Processing is a specialized field of study within electronics, electrical and communication engineering, computer science, and related disciplines that deals with the manipulation, analysis, real world applications and transformation of 1D, 2D and 3D signals that are represented in digital form by using signal processing specialized software tools like MATLAB, Python libraries (e.g., NumPy, SciPy), or specific DSP development environments to implement and simulate algorithms. Further the students learn how to design and optimize Signal Processing algorithms to meet specific requirements like low latency, low power consumption, high accuracy, or real-time processing and Signal Processing labs often include projects or skill oriented projects where students work on real-world challenges or research topics related to digital signal processing. This fosters creativity, innovation, and independent thinking.

Overall, Signal Processing lab plays a crucial role in helping students and researchers develop a strong foundation in digital signal processing and equips them with the skills necessary to tackle real-world signal processing problems and advancements in technology.

Outcomes:

✓ The Students will get acquainted with current trends and practical experience in the field of signal processing.

✓ The Students will be able to apply their skills to real-world challenges, contribute to various industries, and potentially pursue careers in signal processing, communications, audio and video processing, biomedical engineering, and other related domains.

FACILITIES @ SSP LAB

S. No.	Computers Available	Quantity	Cost
1	LENOVO DESKTOP Edge – 73–10 ASA07TIH @ Intel H81, Core i3 Processor, 4GB DDR3 RAM, 500GB HDD, 18.5" LED Monitor.	30	₹8,59,500.00
2	HP Pro Desktop - INTEL(R) COR(TM) I3-2100 CPU @3.10GHz, 3.09GHz, 17"-LED.	06	₹1,47,000.00

S. No.	Kits and Other Equipments Available	Quantity	Cost
1	DSP KITS (DSK) TMS320C6711 with Code Composer Studio.	10	₹3,01,570.00
2	DSP Starter Kit (DSK) TMS320C6713 with Code Composer Studio.	01	₹2,00,000.00
3	DSP Starter Kit (DSK) TMS320C6416 with Code Composer Studio.	01	
4	Finger Print Development Kit Based on C5515.	01	
5	Interfacing Cards For C6000 DSK	01	
6	Image Daughter Card with Camera & Accessories.	01	
7	4 Channel Audio Daughter Card	01	
8	APC ONLINE UPS 6 KVA	01	₹1,06,771.00
9	TMS320C6748 DSP Development Kit	04	₹1,24,004.00

S. No.	Software Available	No. of. Licenses	Cost
1	Matlab 9.0 – 2016a	100	₹8,08,012.00
2	Simulink 8.7	50	
3	Tool Boxes		
	Image Processing Toolbox 9.4	05	
	DSP System Toolbox 9.2	05	
	Signal Processing Toolbox 7.2	05	
	Communications System Toolbox 6.2	05	
	Fuzzy Logic Toolbox 2.2.23	05	
	Neural Network Toolbox 9.0	05	
	Control System Toolbox 10.0	05	
	Simscape 4.0	05	
	Simscape Power System 6.5	05	

Total Cost of the Lab :- ₹25,46,857.00

Area of the Lab   :-   65.78 Sqm

Utilization of Systems and Signal Processing Lab:

S. No.	Details		Academic Year		
			2022-23	**2021-22**	**2020-21**
1	Journals Published	SCI / ESCI/ IEEE	02	03	02
		Scopus / Open Access	00	01	00
2	Conferences Presented / Published		05	02	01
3	FDPs Organized		00	01	03
4	Value Added / Workshops Organized for students		02	02	00
5	Books / Book Chapters Published		03	00	01
5	Patents		01	02	01
6	Sanctioned Projects / Other Grants		00	02	01
7	Project Proposals Submitted		00	00	00
8	Research Colloquiums		04	05	05
9	Students Projects		11	12	08

Lab Mentor   :   **Dr. G L N Murthy,** Professor

Lab In-charge   :   **Mr. M K Linga Murthy**, Sr. Assistant Professor

Lab Co In-charge   :   **Mr. P James Vijay**, Assistant Professor

Lab Technician   :   **Mr. M Anji Reddy**, Technician