

## 5.7 Research and Development:

### 5.7.1 Academic Research:

#### A. List of Faculty Publications during the Recognized Period

Sl. No.	Academic Year	International Journals			International Conference		Total
		SCI	Scopus	Google Scholar	Scopus	Non-Scopus	
1	2021-2022	8	-	06	03	43	60
2	2020-2021	8	1	18	-	-	27
3	2019-2020	03	05	31	01	-	40

#### B. Faculty Ph.D Pursuing & Completed

S.No	Academic Year	Faculty Pursuing Ph.D	Internal Supervisor	Ph.D Completed
1	2021-2022	11	2	0
2	2020-2021	22	2	2
3	2019-2020	21	2	1

### 5.7.2. Sponsored Research:

S.No	Assessment Year	Number of Projects	Total fund Received
1	2018-2019	2	11,71,663
2	2019-2020	2	4,66,000
3	2020-2021	3	4,84,667
4	2022-2023	2	45,45,020
Total		9	66,67,350

#### 2018-2019

Project Title	PI & Co -PI	Funding Agency	Amount	Duration
Design and development of interactive off line software for analysis of automotive Trail Data	Dr.E.A.Mary Anitha	CVRDE	Rs.11,56,663	Sep 17 to Dec 18
National Level Seminar on Role of Big data in cyber Security	Dr.R.Geetha	TNSCST	Rs.15,000	1 Day 07.02.2019

**2019-2020**

<b>Project Title</b>	<b>PI &amp; Co -PI</b>	<b>Funding Agency</b>	<b>Amount</b>	<b>Duration</b>
Seminar on Cyber Security and Ethical Hacking	<b>Dr.R.Geetha</b>	<b>ISTE</b>	<b>Rs.5000</b>	<b>1 day</b>
AICTE Sponsored 2 weeks Faculty Development Programme on Artificial Intelligence & Advanced Machine Learning Using Data Science	<b>Dr.M.Subramanian</b>	<b>AICTE</b>	<b>Rs.4,61,000</b>	<b>2 Weeks</b>

**2020-2021**

<b>Project Title</b>	<b>PI &amp; Co -PI</b>	<b>Funding Agency</b>	<b>Amount</b>	<b>Duration</b>
3 Weeks STTP on Demystifying Block chain Technology and Cyber Security Threats: Issues and Challenges	<b>Dr.R.Geetha</b>	<b>AICTE</b>	<b>Rs.3,34,667</b>	<b>3 Weeks</b> <b>Phase 1:</b> <b>16.11.2020 to 21.11.2020</b> <b>Phase 2:</b> <b>30.11.2020 to 05.12.2020</b> <b>Phase 3:</b> <b>14.12.2020 to 19.12.2020</b>
Conduct conference under the scheme Grant for Organizing Conference (GOC)	<b>Dr.R.Geetha (PI)</b> <b>Prof.V.Sujitha (Co-PI)</b>	<b>AICTE</b>	<b>Rs.50,000</b>	<b>20.10.2021 &amp; 21.10.2021</b>
Support to Student Club Activities/ Chapter/Society under the scheme for promoting Interests, Creativity and Ethics among students.	<b>Dr.R.Geetha (PI)</b> <b>Prof.V.Sujitha (Co-PI)</b>	<b>SPICES</b>	<b>Rs.1,00,000</b>	<b>05.06.2021, 6.6.2021, 22.12.2021, 4.03.2022, 08.03.2022, 09.03.2022, 10.03.2022, 25.4.2022</b>

**2022-2023**

<b>Project Title</b>	<b>PI &amp; Co -PI</b>	<b>Funding Agency</b>	<b>Amount</b>	<b>Duration</b>
An ontology based 3D digital documentation of Masilamaniswara Temple integrating techniques of terrestrial laser scanning and unmanned aerial vehicle digital photogrammetry	<b>Dr.P.Sevvel (PI)</b> <b>Dr.R.Geetha (Co-PI)</b>	<b>Science and Heritage Research Initiative (SHRI) – DST, Technology</b>	<b>Rs.33,70,020</b>	<b>Ongoing</b>
Solar Powered virtual climatology information system for Modern Airports	<b>Dr.Hemanand (PI)</b> <b>Dr.Chitra Devi D (Co-PI)</b>	<b>Electro Solar Solutions</b>	<b>Rs.11,75,000/-</b>	<b>Ongoing</b>
<b>Total</b>			<b>Rs.66,67,350</b>	

### **5.7.3 Development Activities:**

#### **A. Product Development 2019-2022**

<b>S.No</b>	<b>Name of the Product</b>
<b>1</b>	<p><b>Virtual Eye-Life Guard For Swimming Pools To Detect Active Drowning</b></p> <p>Swim eye is computer vision detection system for the prevention of drowning incidents in swimming pool. Swim eye works like an “extra lifeguard” under the water of your pool. Life guard of swimming pools to detect active drowning. In this project we will detect the drowning person using yolov3. To Evaluate the current literature on Drowning Detection Systems, including their use in indoor pool environments along with interaction with traditional lifeguarding.</p>
<b>2</b>	<p><b>AI Based Discourse for Banking Industry</b></p> <p>This project banking bot will be more efficient while it is been put into practice and it helps the customers to easily perform the user’s action of performing various banking tasks. It allows the user having various bank accounts to integrate into a single interface and he/she can add their account details into this bot account and easily perform their banking operations within seconds. Natural language processing is a vital component of intelligent Chabot systems is used. In this paper the user will definitely have accounts in various banks. It will be tedious for the user to login to the various internet banking site every time so this bot will be handy at this situation and it is interactive too. Customer expectations are growing with increasing technological development.</p>
<b>3</b>	<b>A Novel Method For Handwritten Digit Recognition</b>

	Handwritten Digit Recognition is the ability of computer systems to recognize handwritten digits from various sources, such as images, documents, and so on. This project aims to let users take advantage of machine learning to reduce manual tasks in recognizing digits.
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## B. Research Laboratories 2019-2022

S.NO	Name of the Lab	Purpose
1	<b>Internet of Things</b>	<b>IoT Lab</b> is a research platform exploring the potential of crowdsourcing and Internet of Things for multidisciplinary research with more end-user interactions. It gives the power to the crowd to be at the core of the research and innovation process. It gives you the power to change the world and the way we understand it.
2	<b>Artificial Intelligence</b>	<p>This lab is focused on the research and application of Artificial Intelligence. It aims to deploy cutting-edge methodologies in various areas of Artificial Intelligence by conducting research in both the theoretical and application aspects of it. The research focuses on following areas:</p> <ul style="list-style-type: none"> <li>• Knowledge representation and Reasoning,</li> <li>• Machine learning,</li> <li>• Common sense reasoning,</li> <li>• Cognitive vision,</li> <li>• Intelligent robotics,</li> <li>• Human computer interaction,</li> <li>• Multi-agent systems,</li> <li>• Natural language processing.</li> </ul> <p>This lab is also dedicated towards producing the highly trained students in the broad areas of Artificial Intelligence. The research produced by this lab will have a significant impact on companies working on Artificial Intelligence.</p>

### C. Instructional Materials

S.No	Topic
1	Real time database applications
2	Software Engineering
3	Cryptography & Network Security
4	Design and Analysis of Algorithms
5	Artificial intelligence
6	Computer Networks
7	Data Warehouse and Data Mining
8	Software testing
9	Supply chain management
10	Theory of Computation

### D. Working Models

2019-2020	<p>IOT Enabled Smart Mirror for Physically Challenged</p> <p>Smart mirror is one of the best ways to bridge a gap between the human and the technologies. Making the smart mirror helps the physically challenged people much by making them up to date with latest technologies and provide security to them.</p>
2021-2022	<p>COVID-19 safety screening system</p> <p>The project combines IoT and AI-based approaches to implement the Standard Operating Procedure (SOP) for preventing COVID-19 which works seamlessly in detecting faces with face masks, contactless body temperature measurement, and dispensing of sanitizer. The system can also be easily integrated with automatic doors, entry gates in public places like metro stations, government offices where less or no human intervention required.</p>
2021-2022	<p>Design and implementation of efficient street lightening using piezo electricity.</p> <p>A well designed energy efficient street light system should permit traffic and pedestrian to travel at night with great visibility in Safety and comfort while reducing energy consumption and cost. These methods would help in placing the energy harvestors as one of the best sources to power portable devices in the field of wireless technology.</p>

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<b>2022-2023</b>	<p>Development Of a Web-Based Platform &amp; Mobile App For Storing &amp;Sharing Information About Accessible Buildings/Offices/Public Places/Bus Stops/Railways/Marketplace Schools Etc</p> <p>A Disabled person is unable to browse and identify nearby locations having accessibility features. This projects provides voice assistance to ease the search. This projects works both on mobile application and Web portal.</p>

#### **D. Charts**

<b>S.NO</b>	<b>TOPIC</b>
<b>1</b>	Structure of Database Management Systems
<b>2</b>	Distributed systems
<b>3</b>	Software Development Life cycle
<b>4</b>	Simplified MIPS processor architecture
<b>5</b>	Introduction to information storage
<b>6</b>	python -"LIST"
<b>7</b>	python-"TUPLES"
<b>8</b>	Deep learning project ideas
<b>9</b>	Machine Learning\ Deep learning
<b>10</b>	Machine Learning
<b>11</b>	Cyberbullying Detection In Social Media Using Deep Learning
<b>12</b>	Air Pollution Prediction Using Data Science Technique
<b>13</b>	Prediction Of Cyber-Attacks Using Data Science Technique
<b>14</b>	Location Detection On Twitter Using Machine Learning

15	Live Action And Sign Language Recognition Using Neural Network
16	Multi Lung Disease Detection Using Deep Learning
17	Game Designing To Improve Hand-Eye Co-Ordination
18	Prediction Of Heart Attack Using Machine Learning
19	Real And Fake News Detection Using Data Science
20	Covid-19 Safety Screening System

#### E. CONCEPT MAP

S.NO	NAME OF THE SUBJECTS
1	<b>CLOUD COMPUTING</b> cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet (“the cloud”) to offer faster innovation, flexible resources, and economies of scale.
2	<b>SOFTWARE ENGINEERING</b> Software engineering is a detailed study of engineering to the design, development and maintenance of software. Software engineering was introduced to address the issues of low-quality software projects. Problems arise when a software generally exceeds timelines, budgets, and reduced levels of quality.
3	<b>CYBER SECURITY</b> Cyber security focuses on protecting computer systems from unauthorised access or being otherwise damaged or made inaccessible. Information security is a broader category that protects all information assets, whether in hard copy or digital form.
4	<b>ARTIFICIAL INTELLIGENCE</b> Artificial intelligence leverages computers and machines to mimic the problem-solving and decision-making capabilities of the human mind.
5	<b>MACHINE LEARNING</b> Machine learning is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behavior. Artificial intelligence systems are used to perform complex tasks in a way that is similar to how humans solve problems.

#### 5.7.4. Consultancy Project (5):

S. N O	Year	TITLE OF THE PROJECT	NAME OF COLLABORATING INDUSTRIES / INSTITUTIONS	NAME OF THE COORDINATOR(S)	PROJECT COST(Rs.)	DURATION OF THE CONSULTANCY PROJECT
1	2021-2022	Correcting Improperly White-Balanced Image	GOX COMPANY	Dr.R.Geetha & Mr.C.Balakrishnan	Rs.3000	3 Month
2	2021-2022	Portrait Shadow Manipulation	GOX COMPANY	Dr.R.Geetha & Mr.C.Balakrishnan	Rs.3000	3 Month
3	2018-2019	HQ DQA[CV] Training Module	The Avadi DGQA[CV]	Dr.R.Geetha Mrs.T.Padmavathy	Rs.8,000	1 year
4	2022-2025	Gestation Management and Foetus Data acquiring for rural health care	Orbit Controls and Services	Dr.S.VEENA ARUMAI SHINEY S	Rs.7,50,000/-	3 years
5	2022-2024	Software Development for Embedded Controller interface with computer(GUI)	Orbit Edutech Pvt.Ltd.,	Mr.MANI A Mr.BALASUBRAMANIAN M	Rs.5,25,000/-	2 Years
6	2022-2024	Software for wind power data acquiring with IoT Interface	Electro Solar Solutions	Mrs.V.SARASWATHI Ms.ARUNA K.B	Rs.6,50,000/-	2 Years



## 5.8. Faculty Performance Appraisal and Development System (FPADS) (30)

The Institution has introduced Self-Appraisal report for teaching faculty members which are required to be submitted at the end of each academic year

### Performance Appraisal for teaching Faculty members:

Institute has a very transparent self-appraisal system. The appraisal system covers all the aspects of academic, administrative and research activities of the staff. The factors for appraisal are listed below:

- ❖ Teaching Assignment
- ❖ Mentoring & Guidance
- ❖ Journal Publication
- ❖ Conference Publication
- ❖ Research Project
- ❖ Award / Honors / Recognition
- ❖ Professional Membership
- ❖ Administration Support Services
- ❖ Organizing Events
- ❖ Accreditation Activities
- ❖ Consultancy

CONTRIBUTION	CRITERIA
I ACADEMICS	End Semester Exam Results
	Class Committee Meeting Feedback
II ADMINISTRATION	Committee Co-ordinator (OR) Member Of The Committee
	ISO/NBA/IQAC Files Maintenance/Audit
III RESEARCH & DEVELOPMENT	Patents/Consultancy
	Funded Research
	Publications
	FDP/Workshop/Conference/ Seminar Organized As Convener/chair or Attended
IV STUDENT RELATED ACTIVITIES	Proctor Card Entry and Completion
	Students Mentoring
	Follow up action for Slow Learners

**FACULTY PERFORMANCE APPRAISAL CADRE – PROFESSOR & HEAD**

Area Of Appraisal	Criteria	Weightage (%)	
I.ACADEMICS	University Results	20	25
	Class Committee Meeting Feedback	05	
II.ADMINSTRATION	Committee Co-ordinator (OR) Member Of The Committee	15 /10	25
	ISO/NBA/IQAC Files Maintenance/Audit	10	
III.RESEARCH & DEVELOPMENT	Funded Research	20	50
	Publications	20	
	FDP/Workshop/Conference/ Seminar Organized As Convener/Chair	05	
	Patents/Consultancy Or Specify Any Other Details	05	
Overall Performance		100	

**FACULTY PERFORMANCE APPRAISAL CADRE – ASSOC. PROFESSOR& ASST. PROFESSOR**

Area Of Appraisal	Criteria	Weightage (%)	
I.ACADEMICS	University Results	20	25
	Class Committee Meeting Feedback	05	
II.ADMINSTRATION	Committee Co-ordinator (OR) Member Of The Committee	15	25
	ISO/NBA/IQAC Files Maintenance/Audit	10	
III.RESEARCH & DEVELOPMENT	Publications	20	25
	FDP/Workshop/Conference/ Seminar Organized As Co-Convener/co-chair or Attended/Specify Any Other Activities taken	05	
IV. STUDENT RELATED ACTIVITIES	Proctor Card Entry and Completion	10	25
	Students Mentoring	10	
	Follow up action for Slow Learners	05	
Overall Performance		100	

The following Performance Appraisal record is maintaining for Every Year

HR 165A

**S.A. ENGINEERING COLLEGE, CHENNAI-77**  
(An Autonomous Institution, Affiliated to Anna University)  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**FACULTY PERFORMANCE APPRAISAL – ASST./ASSOC. PROFESSOR**      DATE: 31.08.2022

Name of the Faculty	: M. EALASUBRAMANIAM	Department	: CSE
Present Post / Designation	: ASSOCIATE PROFESSOR	Date of Joining SAEC	: 20.08.2008
Period of Performance Appraisal	: 2020-2021 (ODD/EVEN)	Experience	: (1-17-10 : 1-11-11)
		Total Experience	: (7-10)

**I.ACADEMICS (25 MARKS)**

S.NO.	CRITERIA	CLASS	SUBJECT NAME	PASS %	MARKS	
					SA	HA
1	Odd Semester (10- Marks)*	14 CSE A/B/C	CSE601 / EDA	100%	10	10
2	Even Semester (10-Marks)*	01 CSE A	CSE552 / SLS	100%	10	10
3	Student feedback (5-Marks)**	01 CSE A	CSE1101 / RCTP	100%	5	5
		01 CSE B	CSE492 / DBMS	100%		
					25	25
					<b>TOTAL(I)</b>	

\*- 95-100 % -10 M; 85-94.9% -7 M; 84.9-80%-5 M  
 \*\*Without any remarks -5  
 If any negative remarks for odd or even sem. - 2.5  
 Negative remarks in both sem. - 0

**II.ADMINISTRATION – (25 MARKS)**  
(MAY FILL S.NO. 1 OR 2 AS APPLICABLE AND S.NO. 3 IS MANDATORY)

S.NO.	CRITERIA	NAME OF THE COMMITTEE	PROMPTNESS IN CONVENING THE MEETING(S)	WORK/ TASK COMPLETION (10)	TOTAL
1	Committee Co-ordinator (15)				
		(OR)			
S.NO.	CRITERIA	NAME OF THE COMMITTEE	PROMPTNESS IN ATTENDING THE MEETING(S)	WORK/ TASK COMPLETION (10)	TOTAL
2	Member of the Committee (15)	EXAM CELL	05	10	15
3	ISO/NBA/IQAC (10)	LIST OF FILES MAINTAINED/AUDITED	FILE MAINTENANCE (5)	AUDIT PERFORMANCE (5)	TOTAL
		ISO → MM101, 2, 2A, 2B, 2C, 3, 3A, 4, 4A, 4B, 4C, 4D, 4E, 4F, 5, 5A, 5B, 5C, 5D, 5E, 5F, 5G, 5H, 5I, 7, 7A, 7B, 7C	5	5	10
		NBA → Question 11			
		NAAC → Question 8			

HKT 102/A

(Include Rows, If required)

TOTAL (II)

III. RESEARCH AND DEVELOPMENT (25 MARKS)				
S.NO.	CRITERIA		COUNT	MARKS
				SA HA
1	Publications(20)	Number of papers published in Scopus/WoS (20 - If Minimum 1 Published) (OR) Number of Papers published in Google Scholar (10 - If Minimum 2 Published) Number of Papers published in Conferences (5 - If Minimum 3 Published)	01	20 20
2	FDP/Workshop/Conference/ Seminar Organized as Co-Convener/Chair or Attended (5)	Title: AICTE Sponsored STIP on Service Oriented App's Concepts, Technology, Design and Development		05 4
3	Specify, if any other activity undertaken	Nature of Work/Status:		25 24
			TOTAL (III)	

IV. OTHER ACTIVITIES (25 MARKS)				
S.NO.	CRITERIA	Marks Awarded		
1	Proctor Card Entry and Completion (10)	08		
2	Students Mentoring(10)	10		
3	Follow up Action for slow learners (5)	05		
TOTAL		23		

CRITERIA	MAX. MARKS	SELF APPRAISAL(SA)	HoD's APPRAISAL(HA)
I.ACADEMICS	25	25	25
II.ADMINISTRATION	25	25	22
III.RESEARCH AND DEVELOPMENT	25	25	24
IV.OTHER ACTIVITIES	25	23	22
TOTAL	100	98	93

REMARKS :  
(ANY SPECIFIC ISSUES MAY BE STATED WITH FOLLOW UP DATE)

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 FACULTY

\_\_\_\_\_  
 HOD

\_\_\_\_\_  
 PRINCIPAL

FOLLOW UP REMARKS WITH DATE:

\_\_\_\_\_  
 FACULTY

\_\_\_\_\_  
 HOD

\_\_\_\_\_  
 PRINCIPAL

## 5.9 Visiting/Adjunct/Emeritus Faculty etc. (10)

Adjunct faculty also includes Industry experts. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct/Emeritus faculty etc. for all the assessment years:

- Provision of inviting/having visiting/adjunct/emeritus faculty (1)
- Minimum 50 hours per year interaction with adjunct faculty from industry/retired professors etc.