

10 YEARS  
OF UNIVERSITY  
RECOGNITION  
20 YEARS OF  
ACADEMIC  
EXCELLENCE



REVA  
UNIVERSITY

Bengaluru, India



# Collaborative research Activities

Rukmini Knowledge Park,  
Kattigenahalli, Yelahanka, Bengaluru - 560 064

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## **Report on “Entrepreneurship Awareness Camp” conducted by UIIC**

**School:** University Industry Interaction Center (UIIC)

**Venue:** C.N.R Rao Seminar Hall, C.V Raman Block

**Date:** 29<sup>th</sup> to 31<sup>st</sup> August 2018

**Year:** 2018

Innovation & Entrepreneurship Development Cell of UIIC, REVA University successfully organized **Entrepreneurship Awareness Camp-1** from 29<sup>th</sup> to 31<sup>st</sup> Aug 2018. The programme was funded by National Science and Technology Entrepreneurship Development Board (NSTEDB), under DST-NIMAT project of Department of Science and Technology, Government of India supported by Entrepreneurship Development Institute of India (EDII).

The camp was formally inaugurated by our Hon’ble Chancellor Dr. P. Shyamaraju, REVA University on 29<sup>th</sup> August 2018 by lighting the lamp. Resource persons Mr. Srinivasulu Reddy G, Founder & CEO of SkyKrafts Aerospace Pvt Ltd and Mr. Subramanian, International Sales trainer and author of book “Anybody Can Sell” were welcomed by Prof. Manjunath on behalf of REVA family. Dr. Kiran Kumari Patil, Director UIIC and Dr. S.K Prasad, Professor & IEDC Mentor, REVA University and Directors of School of EEE & ECE were present during the Inaugural function. Mr. Praveen H.J, Assistant Manager, UIIC introduced the guests to the participants.

The main objective of this Entrepreneurship Awareness Camp (EAC) is to create awareness among students of Engineering and Science courses about various facets of entrepreneurship as an alternative career option. The idea of organizing this workshop is to inculcate the fundamentals, key concepts of Entrepreneurship in the Science and Technology among students. The Three day camp concluded with a valedictory session and a humble vote of thanks.

The main attractions of the camp were as follows:

- Successful Entrepreneurs were invited for expert lecture.
- Practicing entrepreneur's success stories - common problems faced by entrepreneurs was discussed.
- Grant, funding and loaning from banks, agencies was discussed.
- Improving communication skills (interacting with people) for better results was discussed.



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Approximately about 100 students from School of ECE and School of EEE have successfully participated in the camp and each participant is awarded a certificate. The camp was successfully coordinated by Mr. Praveen H.J, Assistant Manager, UIIC and Prof. Manjunath V.S, School of Management Studies, REVA University under the leadership and direction of Dr. Kiran Kumari Patil, Director, UIIC and Dr. S.K Prasad, IEDC Mentor, REVA University. IEDC Coordinators Prof. Mahesh, Prof. Ravishankar, Prof. Amaranath Reddy and UIIC team also contributed towards conducting the event successfully.

### **Day 1: 29th Aug 2018**

#### Session 1:

The Camp was inaugurated by Hon'ble Chancellor Dr. P. Shyamaraju, REVA University. Objectives of the camp were presented by Dr. Kiran Kumari Patil, Director UIIC and the speaker of first session Mr. Srinivasulu Reddy shared his entrepreneurship journey and emphasized the Importance of Innovation and Entrepreneurship. The speaker also provided insights on entrepreneurship, who is an entrepreneur, qualities of entrepreneur, entrepreneurial success. He also spoke about startups with real time examples. He also cited the examples of successful entrepreneurs. The session was highly interactive.

#### Session 2:

Mr. Subramanian, Entrepreneur, International sales trainer and Author of best-selling book "Anybody Can Sell" addressed the participants on topic "Creativity in Entrepreneurship". The session was filled with energy filled activities to make participants understand the importance of creativity and innovation. The students were exposed to points on developing the passion towards entrepreneurship and also gained insights on the skills they need to develop to become an effective entrepreneur.

#### Session 3:

Mr. Dharani, Founder of Dexterous Labs addressed the students and spoke about why to startup, trend of startup in India, incubation centers in universities and colleges, role of Government in promoting startups, technology support and success and failure stories during his startup journey. He also shared his upcoming e-commerce startup "Daily-Santhe". The students interacted well and open positions for internship opportunities at Dexterous Labs was shared.

#### Session 4:

Mr. Harsha Kuntur, Managing Director of EcoSoch Pvt Ltd addressed the students. He spoke about how big is renewable energy industry and available opportunities for Startups. He shared details about technological advancements that they have made in their domain and what is their future plan. He also shared some of the recent projects done for their clients in Bangalore. The students asked questions related to the innovation in renewable energy field.

  
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## **Day 2: 30th Aug 2018**

### Session 1 and 2

Mr. Yeshaswi Nag, Entrepreneur and former Project Officer, EDII addressed the participants on financial support available for entrepreneurs from Government bodies and funding agencies specifically for Technology based startups. In his session he shared useful links for knowing about startups, registering startup. The session was highly interactive and the speaker clarified various questions on availing funding support.

### Session 3:

Mr. Ravinder Koushik, Founder of AI Tron Tech addressed the students on how to estimate project cost and how to source funds. He also shared his entrepreneurial journey with the participants and he encouraged students to start working on their business ideas.

### Session 4:

Mr. Srinivasulu Reddy, founder of SkyKrafts Aerospace spoke about importance of understanding problem before arriving at solutions. He elaborated nine important components of a business model starting from value proposition to cost structure. The speaker presented a precise outline on how to prepare a project report.

## **Day 3: 31st Aug 2018**

### Session 1 and 2 - Industry Visits:

The third day of the camp was dedicated for Industry Visit. The participants were divided into two batches and one batch was taken to Legend Technologies, a medium scale engineering industry located in Mahadevapura Industrial estate, which offers end to end, cost effective solutions for the design and fabrication of aerospace assembly jigs, aerospace structures, and high precision sliprings. Another batch of participants visited AI Tron Tech Pvt Ltd located at K.R Puram which is into providing IT and IT enabled products & services.

### Session 3

Brain Storming Session: An internal brainstorming activity session was conducted after returning from the factory by Mr. Praveen H J, Assistant Manager, UIIC, REVA University. The discussion was about Elevator Pitch, campus startups and Incubation support available for the startups at REVA University.

### Session 4:

Feedback was collected from students about the Entrepreneurship Awareness Camp followed by Valedictory of the camp. Mr. Raman Gujral, Regional Head, EDII, Bangalore was the chief guest of the Valedictory session and our Hon'ble Vice Chancellor Dr. S.Y Kulkarni gave the presidential address to the gathering.

**Photographs of the event:**



  
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*Deepali*  
Director

*Dr. S. S. Srinivas*  
Registrar  
Registrar  
REVA University  
Bengaluru - 560 064

Sl.No.	Name
1	HARSH M PILLAY
2	SUNIL SUBRAMANIAM P S
3	ABIRAMI T
4	AISHWARYA RAJESH
5	AMIT
6	ARPITA KARANJE
7	ASHWIN KUMAR A
8	B K UJWAL
9	BHAVISHYA TOMAR
10	DRISHYA P NALLOOR
11	FARAH KHAN
12	G R PRAJVALA
13	GITANJALI MANJUNATH
14	GREESHITHA P M
15	H Y DAIVIK
16	HUZAIF G DHARWAD
17	INDUMATHI.K
18	ISHITA S SUTHAR
19	BHOOMIKA PRASAD
20	CHAITRA V BANNIHATTI
21	CHALASANI SRAVANTH
22	CHANDAN BABU Y S
23	DEEPAK CHANNAPPA AVATAGI
24	DINESH KUMAR J
25	NUKALA SUDHARSHAN SASANK
26	PRANAV BHIMESH REDDY KARRI
27	RITHIN SAM IMMANUEL
28	SHARATH B V
29	UTHRA UDAY
30	KONATHALA SASHANK
31	ISHWARJEET ASABE
32	JAHNAVI BHAT
33	JOSAIAH SYIEM
34	K.SELVA PRIYA
35	SATAKSHI GUPTA
36	SHAIK ASHMATH BASHA
37	SWARNALEKHA V
38	SYEDA NIKHAT FATIMA
39	SYEDA SAFA RASHEED
40	TANUSHREE VINAY MENON
41	VAISHNAVI V
42	KUSHAL S
43	AEMAN SHEZAN
44	AISHWARYA BHOVER

  
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45	ALEN JOSEPH MARTIN
46	DIVYA T
47	KEVIN S JEREMY
48	KOMMI MOHAN SAI
49	PACHAVA SRI VARSHA
50	PIYUSH M PADWALE
51	RAGHAV K BHARADWAJ
52	RAJEEV SINGH
53	RAKSHITHA H
54	ROHITH S
55	S POTHAN KRISHNA
56	SAGAR D K
57	VANISHREE A
58	VINAY C
59	YASH PANWAR
60	P LIKITH NAIDU
61	RAKSHITH VIJAY
62	LAKSHMI PRIYA A
63	MELANIE ROSEANT BASTIAN
64	NAVANEETH S K
65	P BHARAT KUMAR
66	SOUMYA B
67	N SURYA TEJASWI
68	DEVIKA S
69	NAMAN TIWARI
70	SHALINI G
71	RAMYA M
72	RAKESH BR
73	P SONU
74	NISHIKA
75	SHUKTHIJA BS
76	RAFI SK
77	SAIKUMAR S
78	DHEERAJ
79	MONISH MD
80	MANOJ JL
81	GIRISH KC
82	BHARATH KS
83	YOGRAJ KR
84	VENKATESH MH
85	BHARGAVI S
86	ARPITA KARANJI
87	CHAITRA BANNIHATTI
88	GR PRAJVALA
89	DRISHYA P NALLOOR
90	B NAGA HARSHITHA
91	J MONICA MANJUSHA

  
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92	SURAJ A
93	YATISH GOWDA V
94	N HARI PRASAD
95	DEEKSHITHA HS
96	VISMAYA S
97	SHUBHAM KUMAR
98	M SHARON FAITH
99	BHARATH HV
100	SUHAS REDDY BR
101	SUNIL SEERVI
102	VIDYA SUMAN RP
103	HARSHITHA GL
104	NAMRATHA TM
105	TEJASWINI NT
106	VARSHITHA

  
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## **Report on Autodesk REVIT Architecture software workshop**

**SDC Workshop:** *Autodesk Revit Architecture*

**Resource person:** REVA NEST \_ CADCENTER

**Venue:** Room No 431\_ School of Architecture

**Semester:** 6 th Semester

**No. of Students:** 64

**Dates:** 3<sup>rd</sup> March to 6<sup>th</sup> March, 2022.

As a part of the **Autodesk Revit Architecture** course, the School of Architecture conducted a workshop for the 6th-semester students on **Autodesk Revit Architecture software**. The purpose was to introduce the basics of REVIT from the introduction of REVIT to Sheet composition with a design and completed the 32 Hours of the workshop.

The curriculum was structured as a framework for learning software through project-based content based on engaging real-world industry projects that build gradually in difficulty, offering students a chance to achieve small successes as they build their technical skills. The concept of computation in design can enhance a student-level approach to perceive 3D form and directs them towards exploring new ideas from starting a project, how to use the Revit with Step by step process, Plans, levelling, massing, presentation, and rendering for any kind of commercial or studio project. Students achieve to develop a model of their architectural design project with a detailed furniture layout that can perceive sectional, Elevation, and rendered views.

The Contents that covered in this SDC are an introduction, creating a project, creating walls, creating floors, creating Terrain, adding an exterior wall, modifying the materials, adding the curtain walls, Attaching the walls to the roof, Adding the stairs and Railings, Documenting the projects, Adding Sloped Roof, and Creating a sheet. Students learned the basic application of Revit like how to start a plan, give the level, use of families, putting furniture components, rendering, and Composition of the sheets on residence project.



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School of Architecture in Collaboration with REVA Nest and UIIC offering 4 Days Skill Development course for 6th Semester student.

#### Objective

Autodesk Revit Architecture is specifically for empowering design to develop ideas from concept to construction with a coordinated and consistent model-based approach.

#### Learning Outcomes

- Introduction to REVIT and its importance.
- Step-By-Step Process for any kind of commercial or studio project.
- Fast, accurate modelling throughout the whole design process gives confidence in designs from concept to completion.
- Applications of REVIT in Academic Projects for premium jobs in future.

Venue:  
School of  
Architecture

Dates:  
3<sup>rd</sup> to 6<sup>th</sup> March, 2022.  
4 Days (30 hours)

Time:  
8:30 AM – 4:30 PM

Tutors:  
REVA NEST \_ CADCENTER

  
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The following are the few photographs from the Session:



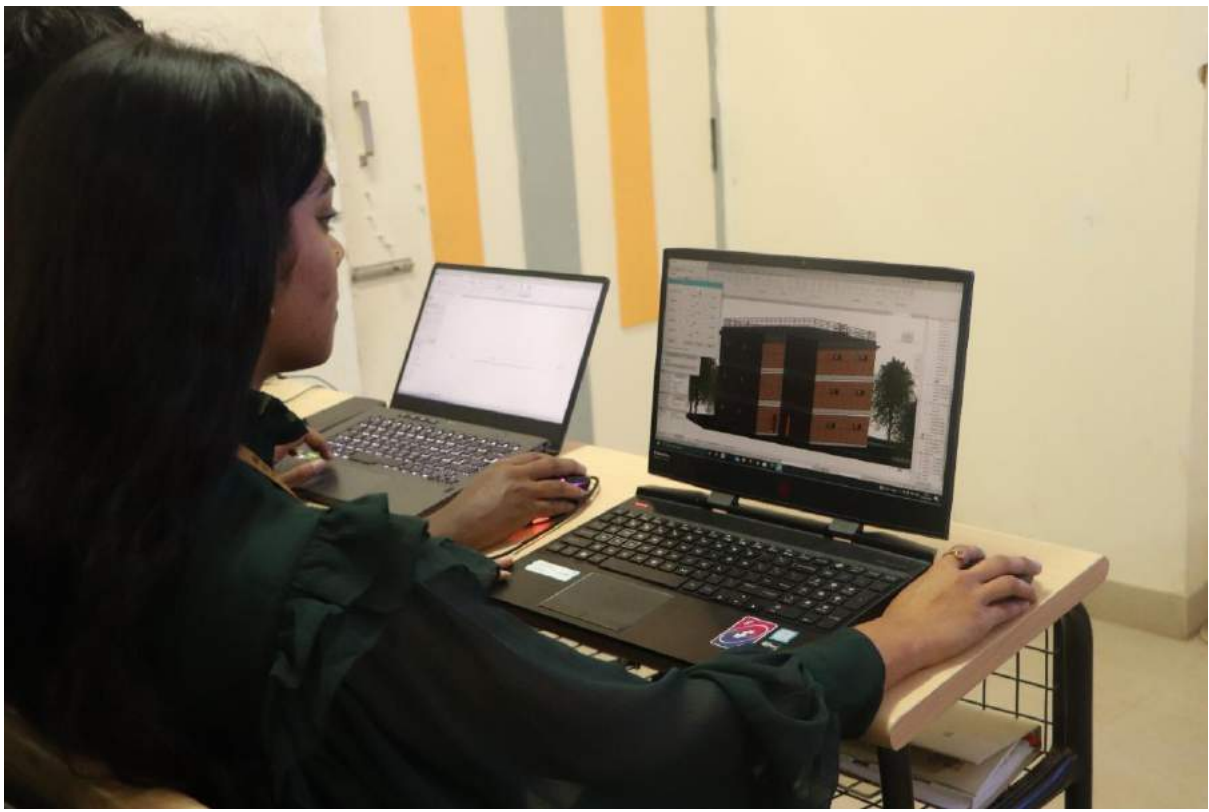
  
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## Student List as per attendance:

Semester: VI Sem A Section		
Sl No	SRN	Student name
1	R18AR066	HARSH M PILLAY
2	R18AR078	SUNIL SUBRAMANIAM P S
3	R19AR001	ABIRAMI T
4	R19AR004	AISHWARYA RAJESH
5	R19AR006	AMIT
6	R19AR007	ARPITA KARANJE
7	R19AR008	ASHWIN KUMAR A
8	R19AR009	B K UJWAL
9	R19AR010	BHAVISHYA TOMAR
10	R19AR011	BHOOMIKA PRASAD
11	R19AR012	CHAITRA V BANNIHATTI
12	R19AR013	CHALASANI SRAVANTH
13	R19AR014	CHANDAN BABU Y S
14	R19AR015	DEEPAK CHANNAPPA AVATAGI
15	R19AR016	DINESH KUMAR J
16	R19AR018	DRISHYA P NALLOOR
17	R19AR019	FARAH KHAN
18	R19AR020	G R PRAJVALA
19	R19AR021	GITANJALI MANJUNATH
20	R19AR022	GREESHITHA P M
21	R19AR023	H Y DAIVIK
22	R19AR024	HUZAIF G DHARWAD
23	R19AR025	INDUMATHI.K
24	R19AR026	ISHITA S SUTHAR
25	R19AR027	ISHWARJEET ASABE
26	R19AR028	JAHNAVI BHAT
27	R19AR030	JOSIAH SYIEM
28	R19AR031	K.SELVA PRIYA
29	R19AR041	NUKALA SUDHARSHAN SASANK
30	R19AR045	PRANAV BHIMESH REDDY KARRI
31	R19AR050	RITHIN SAM IMMANUEL
32	R19AR058	SHARATH B V
33	R19AR065	UTHRA UDAY
34	R19AR034	KONATHALA SASHANK

  
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<b>Semester: VI Sem B Section</b>		
<b>Sl No</b>	<b>SRN</b>	<b>Student name</b>
1	R19AR002	AEMAN SHEZAN
2	R19AR003	AISHWARYA BHOVER
3	R19AR005	ALEN JOSEPH MARTIN
4	R19AR017	DIVYA T
5	R19AR032	KEVIN S JEREMY
6	R19AR033	KOMMI MOHAN SAI
7	R19AR035	KUSHAL S
8	R19AR036	LAKSHMI PRIYA A
9	R19AR037	MELANIE ROSEANT BASTIAN
10	R19AR039	NAVANEETH S K
11	R19AR042	P BHARAT KUMAR
12	R19AR043	PACHAVA SRI VARSHA
13	R19AR044	PIYUSH M PADWALE
14	R19AR047	RAGHAV K BHARADWAJ
15	R19AR048	RAJEEV SINGH
16	R19AR049	RAKSHITHA H
17	R19AR051	ROHITH S
18	R19AR052	S POTHAN KRISHNA
19	R19AR053	SAGAR D K
20	R19AR056	SATAKSHI GUPTA
21	R19AR057	SHAIK ASHMATH BASHA
22	R19AR060	SWARNALEKHA V
23	R19AR061	SYEDA NIKHAT FATIMA
24	R19AR062	SYEDA SAFA RASHEED
25	R19AR063	TANUSHREE VINAY MENON
26	R19AR066	VAISHNAVI V
27	R19AR067	VANISHREE A
28	R19AR068	VINAY C
29	R19AR069	YASH PANWAR
30	R19AR070	P LIKITH NAIDU
31	R19AR071	RAKSHITH VIJAY



**Director**

**REVA ASPIRING YOUTH FOUNDATION**  
**REVA NEST**  
 C.V. Raman Block, REVA University Campus  
 Rukmini Knowledge Park, Kattigenahalli  
 Yelahanka, Bangalore - 560 064



**Vice - Chancellor**

**Vice-Chancellor**  
 REVA University, Rukmini Knowledge Park  
 Kattigenahalli, Yelahanka, Bengaluru-560 064

## **Entrepreneurships and Incubation Program (EIP)**

Powered by LG Soft India Private Limited

### **Final Report**

**April to March 2022-23**

The MoU signed between LG soft and RAY foundation the program was planned and submitted to LG Soft. With reference to the program plan, we have started the activities to achieve the motto of the program.

#### **Milestones of the program submitted to LG Soft:**

1. Mile Stone - 1: April – July 2022-23
  - ✓ List of Ideas selected for Stage 1
  - ✓ Stage 1 Completion Report
  - ✓ List of ideas moved to Stage 2
  - ✓ Upcoming Activities detail
  
2. Mile Stone 2: August –November 2022-23
  - ✓ Complete report of Stage 2
  - ✓ List of Ideas moved to Stage 3
  - ✓ Stage 3 Activities detail
  
3. Mile Stone 2: December –March 2022-23
  - ✓ Complete report of Stage 3
  - ✓ Outcomes of the program
  - ✓ Final Program report
  - ✓ Reviews and feedback from Beneficiaries.
  - ✓ Testimonies



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1. **Awareness Program:** Ray has conducted multiple Awareness camp to induct students about the program. Vision and mission of the program as shared with the students to build their idea accordingly. Students got motivated to take up challenging projects.



2. **Ideathon:** Post Completion of awareness program, multiple Ideathon was conducted to get the aspiring Ideas. We have circulated the enrolment form for the Ideathon among the interested students. The students with the innovative idea have been registered for the program and we have received multiple ideas in the following sector. We have also conducted Women Ideathon to encourage Women Entrepreneurship.

- Smart City, Transportation & People.
- Protect the Mother Earth.
- Rural Education & Livelihood Improvement.
- Technology in Agriculture.
- Health, Hygiene & Food Security System.
- Innovation in Space, Defense, Robotics & Cloud Computing.

  
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**TECHNOLOGY BUSINESS INCUBATOR**

### About Us

REVA NEST is a Technology Business Incubator established at REVA University campus that aims to build an entrepreneurial ecosystem by empowering and nurturing student start-ups and incubating innovative technology-based start-ups.

### Why REVA NEST ?

We provide an innovative platform that enables startups to grow from idea to go-to-market, by providing them with world-class incubation facilities, with experienced industry professionals as mentors, fund support and subsidised costs.

### We are on a Mission

We aim to provide conducive support system that helps in nurturing technology based innovative start-ups towards sustainability and scalability.

**Our Impact** 38+ Incubatees  
50+ Partners  
20+ Mentors



# Have an Idea ?

## Apply to REVA NEST

### Scan To Register



**Or Visit :**

<https://forms.office.com/r/VVARsmWmny>

**Make your Entrepreneurial Dreams a Reality !**

### Facilities

- ▶ Co working space and private cabins
- ▶ Business Labs
- ▶ Ambitious students community
- ▶ Expert Mentoring Support
- ▶ Seed funding for the potential projects
- ▶ Legal Advisors
- ▶ Meeting rooms and Board Rooms
- ▶ Seminar halls & Auditoriums
- ▶ FAB Lab
- ▶ 3D Printing
- ▶ State of the art R & D Centres

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🌐 [www.revanest.com](http://www.revanest.com)  
✉ [info@revanest.com](mailto:info@revanest.com)

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**METHODOLOGY:**

- We can design the app neatly and offer a user-friendly interface and will provide information on current weather and also the forecast for the next week.
- The app will also provide the market prices of commodities in the nearest town.
- The option of using the app in different languages will make it more accessible.
- The users can access a variety of informative modules including agricultural advisory and agriculture information libraries in the form of text, imagery, audio, and videos in the selected language.
- Most importantly, it will provide agricultural advice and information regarding the government's agricultural policies and schemes.
- The last but the most important feature will be crop insurance.
- This app will help farmers to calculate insurance premiums for notified crops and provides information on cut-off dates and company contacts for their crop locations.

It will also offer helpline numbers to get in touch with Kisan call center services.  
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**3. Preliminary Training:** We have conducted Series of training to the selected candidates. Training was conducted by industry expert or by SME to build the solid foundation of entrepreneurship. Training included following topics:

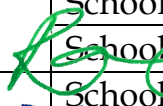
- ✓ Current Industry Demand
- ✓ Market Survey
- ✓ Understanding your customer
- ✓ Business competitor
- ✓ Sustainability
- ✓ Soft Skill



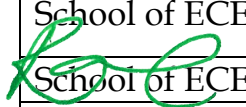
**4. List of Ideas Selected:**

The List of Ideas shortlisted from the multiple Ideathon and allotted mentors to guide the students in the entrepreneur journey.

S.N	Candidate Name	Project Name	School Name
1	Poojitha S	Down Welling	School of EEE
2	Shrihari Nayaka	Anti-Missile Tank Deploy System, Mind Machine Interface & My pets	School of EEE
3	Shreshtha Anand	Drone Delivery	School of Management Studies
4	Adharsh R	Techvestors	School of CSA
5	Radhika G	DATD (Dignity Assistive Technology and Design Services)	School of Architecture
6	Deepika B G	FST	School of CIT
7	Manoj Gowda V	Quod Vox	School of CIT
	Megha Darshini S		School of CIT
8	Sanjay BT	Project Safety and Attendx	School of Commerce

  
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	Spandana M		School of EEE
9	K Sai Deep	Stationary Kart	School of ECE
10	Chandresh Chittibabu	Payment Gateway	School of EEE
11	Tejas S Dodla	HCI (Human Computer Interface)	School of ME
	Mohammed Imad		School of ME
	Mohammed Habeebulla Hafiz		School of ME
	Mohammed Faroud Adamon		School of CIT
	Guru Preeth		School of ME
12	Naresh S	Metaverse (NSZ)	School of ECE
	Jeevan Singh G		School of Civil Engineering
13	Ume Salma Khan	Cooking machine	School of MS
14	Vivian Williams	Swift Ride - Ride Pooling App for the student community	School of ECE
	Ajin Frank J		School of ECE
	Madeeha Afreen		School of ECE
15	Mithun Rock	Multiomics/MuGeneDataSolutions	School of Applied Science
16	Thipperudra Swamy	Self-Healing Mortar	School of CE
17	Faroud ADAMON	GIT	School of CIT
19	Ranjan	Agricultural Autonomas Tractor	School of ECE
20	Varun Saini	Game Development	School of ECE
21	Dr. Manjula R. Bharamagoudra	Design of Robotic System for Diverse Applications	School of ECE
	Mithun S		School of ECE
	Niharika Palem		School of ECE
22	Vishwas Ananthram	Hospital Networking	School of EEE
	Vijay Kumar M		School of EEE
	Dessy Merlin		School of EEE
	Vinayak K Angadi		School of EEE
	Chinmaye D.R		School of EEE
	Nanditha Varshini E		School of EEE
23	Sahana S R	Cozey-A Virtual CareTaker	School of EEE
	Dr. Manjula R. Bharamagoudra		School of ECE
	Keerthana H V		School of ECE
	Lavanyashree S		School of ECE

  
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	Malavika S		School of ECE
	K. Sai Keerthika		School of ECE
24	Ajmal Khan	Efficient document verification and communication system	School of ECE
	Abhiram B R		School of ECE
	Abhishek Dubey		School of ECE
	Dineth Varnenthiran		School of ECE
25	Ravi Shankar D.	Design & Development of an Application for early deduction on Skin Dieases	School of ECE
	Mohith Kumar K		School of ECE
	Manoj Kumar B S		School of ECE
26	Ravi Shankar D.	Design & Development of Urine related Dieases-SMART Toilet	School of ECE
	Mohith Kumar K		School of ECE
	K Dhaneswara Reddy		School of ECE
27	Lokesh Kumar	Development Women CAB Services	School of CSE
28	Venkat Vivek Choudary	ADV/2	School of Management Studies
29	Karthik K Pagnis	Virato	School of CIT
30	Shreevallabha	Multilingual & AI based placed training app for college going students	School of ECE
31	Arbaazkhan R Soudagar	Chat board with artificial Intellegent using python	School of CSE
32	Ayan Kumar Mal	RFID & GSM Best Smart Door Lock	School of ECE
	Debarun Ghosh		School of ECE
33	Muttu Handigund	For Locker Security Using IP Address	School of CSE
34	Pankaj Itagi	Exelearn	School of EEE
	Ps Rohit		School of EEE
	Pavan Kumar		School of ECE
35	L Indira	Artificial Intelligence	School of EEE
36	Prajwal J	Clean Go	School of EEE
	Jayanth K G		School of EEE
	Pawan Kumar N		School of EEE
37	Sakshi Bankar	VIRYA-live classes without internet	School of Applied Science
38	Supriya R	Batter- the food item	School of Life Sciences
39	Kaushik S	Virtual Augment Smart Helmet	School of ECE
	Gurudeep S Jadhav		School of ECE

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## 5. Pre incubation program:

To encourage young entrepreneurs, we have floated **RAY - LG Pre-Incubation Program** among the aspiring students. More than 100 students registered for the program with their innovative idea. Mentors from the respective sector scrutinized ideas and shortlisted the innovative minds to go further in the program.

With the multiple round of counselling and expert analyzation we have shortlisted listed of students who are eligible for RAY - LG Pre Incubation Program. The 40hours program is designed in such that the budding entrepreneurs will understand the ecosystem of Startup and feel hand hold to go further to reach their goal. We have identified Multiple subject matter expert to deliver the program to build the strong foundation to our budding entrepreneurs.



### PRE Incubation Program (PREi) Session Plan

Day	Session Title	Hours
1	Success Stories of Students Entrepreneurs.	4
2	Business Plans, Market Research, Product Research	6
3	Founders Talk	2
4	Patenting and Copyrights	8
5	Session on Technical Guidance and Development	2
6	Session On Financial Plans	6
7	Session on Design Thinking	2
8	Session Product Development	6
9	Session by Successful Alumni Entrepreneurs.	4
10	Session on Human Resource Management.	6
11	Session on Company Registration Process & Legal Aspects	4
12	Funding Opportunities for Startups	4
13	Session on Pitch Deck Preparation	6

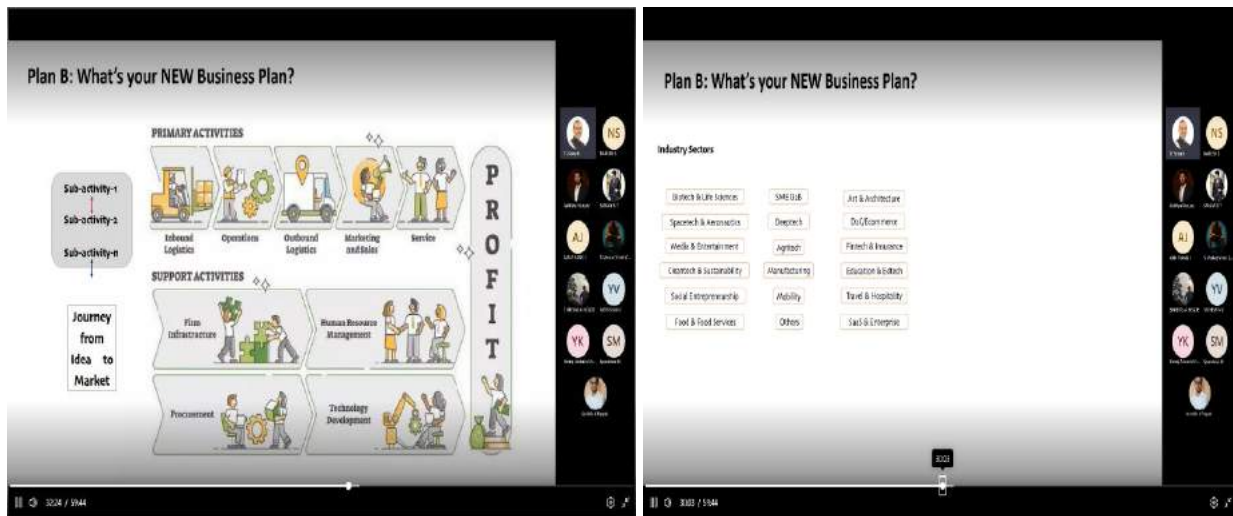
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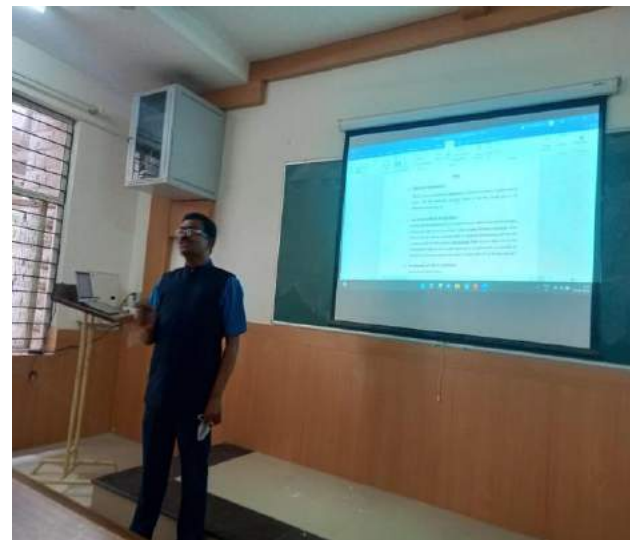
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6. **Expert Talk:** We have organized multiple expert talk for Ray incubates to understand the different angles and experience of entrepreneurship. Few program glimpse are shared below:

a. Session conducted on **'Know Your Business'** by Dr. T L Srinath Founder, GenoPhe Biotech Pvt Ltd



b. Workshop by Dr. Shivanna D M, IPR Head on **Patent Specification Drafting**





- c. Seminar on **How to start Consulting and Freelancing Business** is to encouraging students to start their own business with confidence and to tips to succeed in it by Mr. Akshya Rajashekaran.



- d. On the occasion of **National Innovation Day** we have organized event for our budding entrepreneurs. Mr. Arnab Sarkar delivered talk on, “The customer relationship, and possibly involve them in future product or service enhancements and innovations”.



  
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e. Session on, “Entrepreneurship for Engineers”, was conducted to motivate the students towards Startup. The session was delivered by Prof. Ravi Shankar D.



f. Talk organized on Strategies for Improving Small Scale Enterprises by Dr. Shathala Devi Patil for the innovative minds.



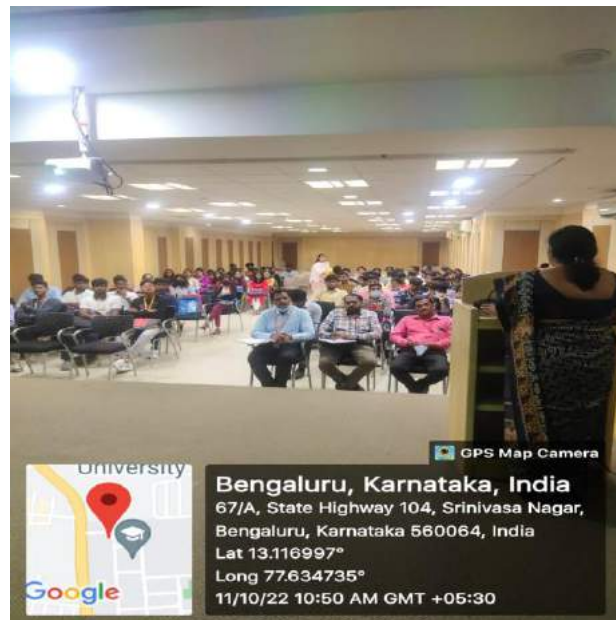
  
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g. We have organized IPR awareness program for the students to secure their idea by patenting the same on suitable time with valid documents. Session was conducted by Ms. Arshiya Ambreen for the incubate students.



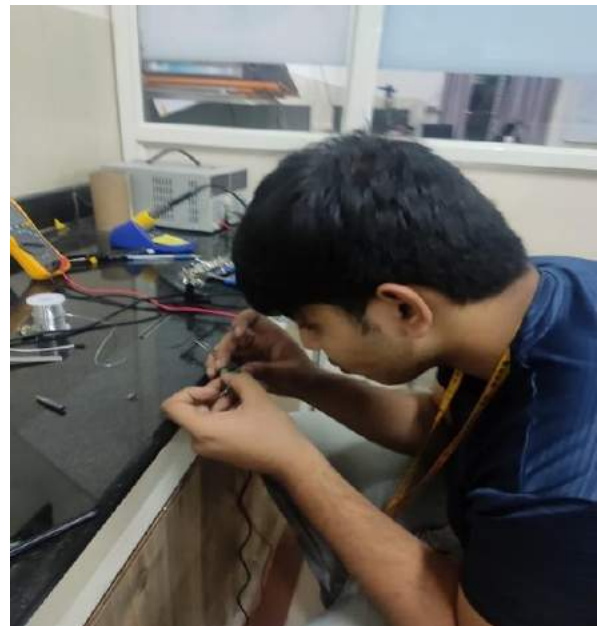
h. Agri Business incubation program was organized to encourage the students to think technology in agriculture sector. Mr. Koushik AV delivered the session effectively.



  
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**7. Research and Development:** Students working on Research and Development of mini innovative projects. Students from all discipline participate form team and work together. Few prototypes are in the progress of development.



  
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**8. Training and Mentoring:** Training and mentoring will be the continuous requirement during incubation period. Students will be mentored by subject experts and the industry experts in their required sector. We have created Academic and the industry mentoring bodies to support the students on their need.



**9. Visit to startup ecosystem- GKVK to explore and understand other sectors:** Students and the faculty team visited Agri expo organized by GKVK to understand the multiple sector. Students also understood the use of technology in the agriculture sector can enhance the productivity and also support the farmer considerably.



  
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### 10. Hardware procurement for prototype:

S.N	NAME	QTY
1	3M 1621 Polycarbonate Safety Goggles for Chemical Splash	10
2	SS & WW MAKE Cut Resistant Hand Gloves ( CUT LEVEL -3 ) Pack Of 1 Pair	12
3	3M MAKE 1436 Foldebal Ear Muff	2
4	Sheyas Fire ABC Type Fire Extinguisher 2 kg	1
5	GSK Corporation 2 inch Paint Brush	10
6	GSK Corporation 1 inch Paint Brush	20
7	Bosch X-Line Drill and Screwdriver Set 38Pcs Set	1
8	Bosch 11 Pcs Hole Cutter	1
9	Taparia Wood Working Chisels Set WCBS 5	1
10	Oem Professional Cutting Wheel 355 mm 14 Inch	1
11	REAL Stf 236 ml Steel Oil Can	1
12	RPES Leather Heat Resistance/Cut Resistance/Welding Gloves	2
13	Arcon 3 Rows Stainless Steel Wire Brush	1
14	Pros Kit 8S005 Solder Paste50g	1
15	Automatic Center Punch	1
16	Stainless Steel Filler Gauge	1
17	Invento 8 Pin DIL DIP IC Socket PCB mount	1
18	Invento 18 Pin DIL DIP IC Socket PCB mount	1
19	Invento 20 Pin DIL DIP IC Socket PCB mount	1
20	Tin Cutter	1
21	Hacksaw blade	1
22	Anvil	1
23	Noel FLUX soldering paste-10g-1Pc	1
24	PLA+ 1.75mm 3D Printing Filament white	1
25	PLA+ 1.75mm 3D Printing Filament red	1
26	PLA+ 1.75mm 3D Printing Filament blue	1
27	PETG 1.75mm 3D Printing Filament yellow	1
28	PLA+ 1.75mm 3D Printing Filament BLACK	1
29	HEATSHRINK Insulation Assorted kit	1
30	Noel Solder Wire	1
31	30AWG Wire Wrapping Wire-RED	1
32	30AWG Wire Wrapping Wire-BLUE	1
33	30AWG Wire Wrapping Wire-BLACK	1
34	30AWG Wire Wrapping Wire-GREEN	1

  
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35	Self-adjusting Wire Cutter	1
36	Glue Sticks	5
37	SanDisk Micro SD/SDHC 32GB	2
38	Micro SD Card Reader	2
39	40 Pin Dupont Cable Male/Male, Male/Female, Female/Female Cable Combo	1 Set
40	Soldering cleaning sponge 7	10
41	Soldering Iron Tip	1
42	Screw Extractor	1
43	Component Organizer	2
44	First Aid Kit	1
45	Jigsaw Blades 5pcs	1 Set
46	Sanding Discs	1 Set
47	Air Blower	1
48	Router Bit Set	1
49	Round File	1
50	Combo Wheel	1
51	Cleaning Kit	1
52	Screwdriver Set	1
53	Digital Detection Tester	1
54	Weighing Scale	1
55	Side Cutting Plier	1
56	Wood Cutting Blade	1
57	Insulation Electrical Tape	1 Set
58	Isopropyl Alcohol (300ml)	1
59	Rivet Gun	1
60	De soldering Pump	1 Set
61	Air Blow Gun Kit	1
62	HP - 11th Gen lap top	2
63	HP Printer	1
64	Hard Disk	2
65	Camera	1
66	Key board	3
67	Pen drive	2
68	Microphone	1

**11. Prototype Developed in REVA Lab with the use of above mentioned materials:**

✚ Project Title: Seed-dropping drone by the students from school of CSE



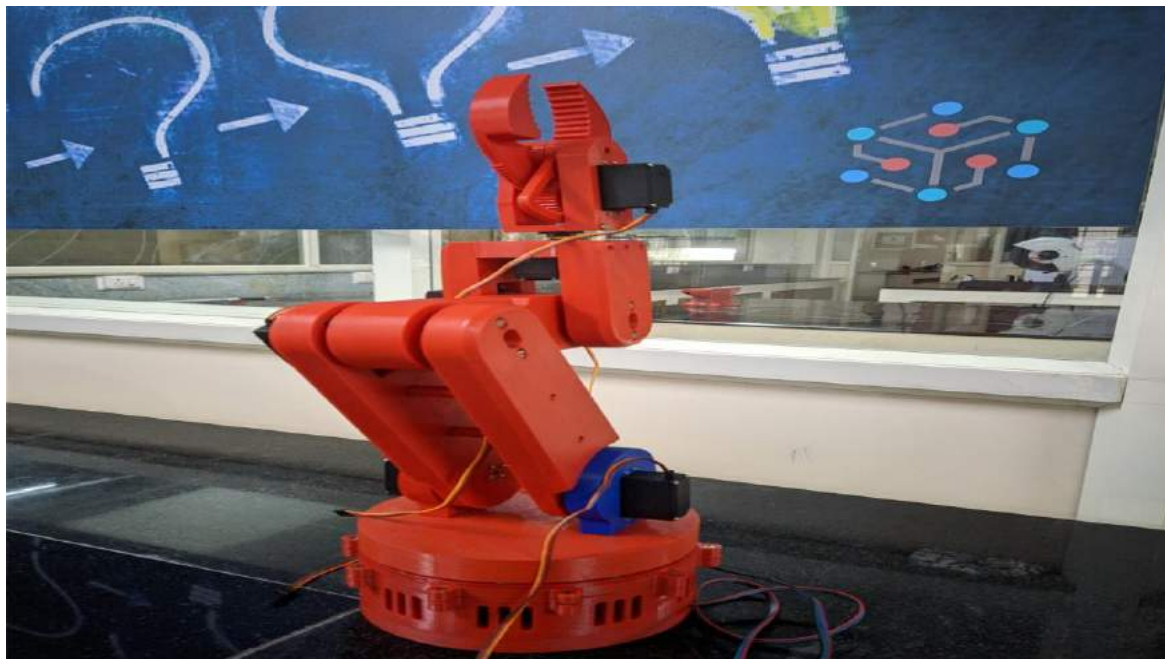
✚ Smart Home Automation by students from school of Bioelectronics



- ✚ Sparc Rocketry developed by students from the school of mechatronics for testing rocket motors, measuring rocket thrust, also launch pad



- ✚ Robotic arm to pick and place the objects, developed by students from school of Mechatronics

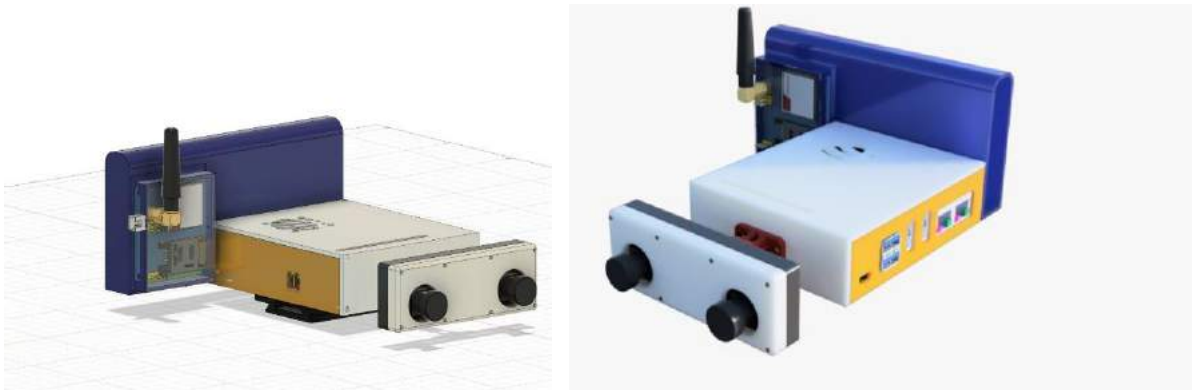




- ✚ Big Booty, students from the school of Mechatronics developed an updated version of the soccer robot



- ✚ Pothole Detection Device by the students from school of CIT



- ✚ Snake Robot by students of EEE



## 12. Training on Law and taxation:

All the innovative students will interact with Mr. Vinay Kumar and Dr. Suhas Nimbalkar from eitimo Ventures LLP to understand the concept of company registration, Legal, Accounting, taxation etc.



13. Pitch Day: We have created the platform to the students to pitch in front of the investors and funding partners. Students have presented their ideas and received valuable feedbacks and suggestion.





#### 14. Company registration/ Funding support connect:

REVA nest collaborating with multiple companies and experts to create the platform for the innovative minds to find exposure, funds and industry experts to build their idea as per the market demand. Few of such collaborations are mentioned below:

14.1 thingQbator program: the program is in associating with Cisco and NASSCOM to train the students in the entrepreneur sector followed by fund support to selected students



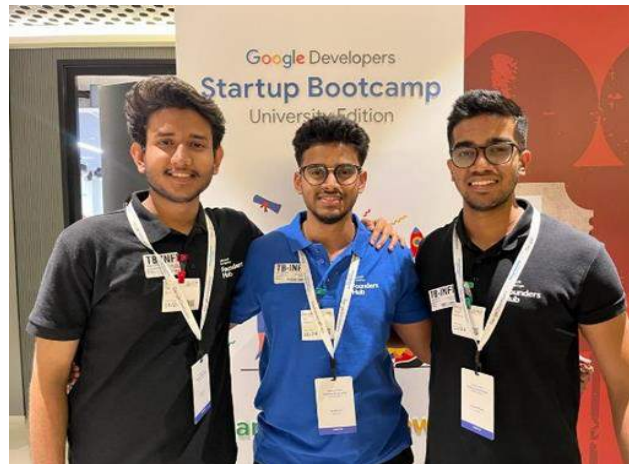
  
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## 14.2 Google Startup Boot camp:

Google Developers has opened applications for the Startup Boot camp, University Edition a 3-day in-person Boot camp to support promising student entrepreneurs from India with training and mentorship around different areas to help Start, Build and grow the startup project with the best of Google. In addition to the training, mentorship, and Boot camp content, the program offers

- ✓ All expenses covered a 3-day in-person boot camp at the Google office
- ✓ Google Cloud credits and reimbursement for the Google Play Console.
- ✓ Vouchers for Google Cloud Certification to up skills on Cloud technologies.
- ✓ The top 10 teams will have access to investors and VCs through Demo Day.



**Ms. Malathi. R**  
**Project Manager**

**Dr. Kiran Kumari Patil**  
**Project Director**

**Dr. M Dhanamjaya**  
**Vice - Chancellor**

**REVA ASPIRING YOUTH FOUNDATION**  
**REVA NEST**  
C.V. Raman Block, REVA University Campus  
Rukmini Knowledge Park, Kattigenahalli  
Yelahanka, Bangalore - 560 064

**Vice-Chancellor**  
**REVA University, Rukmini Knowledge Park**  
**Kattigenahalli, Yelahanka, Bengaluru-560 064**

**Talk on “GAIP-Global Academic Internship Programme”  
A Brief Report**



About the SDPs	The <b>School of Computing and Information Technology</b> organized a talk on “ <b>GAIP-Global Academic Internship Programme in Singapore</b> ”. The talk was by resource persons from Corporate Gurukul which conducts this Summer Internship in association with and certified by Strategic Technology Management Institute at National University of Singapore (NUS) and Hewlett Packard Enterprise Education. It enables the engineering undergraduates from Universities in Asia to pursue their passion and interest through Internships and projects in Big Data, Machine Learning, Deep Learning, Blockchain and IoT. The GAIP will be delivered in NUS, Singapore campus. The Students were given awareness on the contents of the Internship programme.
Organized By	School of Computing & IT
Date of Workshop	11-02-2019
Faculty Coordinators	Dr. Ashwinkumar U. M. Prof. Nikhil. S. Tengli
Student Coordinators	Mr. Ranjith Ms. Manaswini
Targeted Audience	All semester students from School of C& IT
Resource Person(s)	Mr. Rajesh Gopal – President, Corporate Gurukul Pvt. Ltd., Bangalore Office, Mr. Manjunath Rodagi – Associate Director, Corporate Gurukul Pvt. Ltd., Bangalore Office, Mr. Venkataramanan, GAIP Coordinator, Corporate Gurukul
No. of Participants	115
Feedback from Participants	All the participant students expressed their view that they are very much satisfied with the directions given by all resource persons.

  
Director  
DIRECTOR

School of Computing and Information Technology  
REVA University Rukmini Knowledge Park  
Kattigenahalli, Yelahanka, Bengaluru-5600054

  
Vice - Chancellor  
Vice-Chancellor

REVA University, Rukmini Knowledge Park  
Kattigenahalli, Yelahanka, Bengaluru-560 064





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Vice - Chancellor

Vice-Chancellor

REVA University, Rukmini Knowledge Park  
Kattigenahalli, Yelahanka, Bengaluru-560 064



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Bengaluru - 560 064



**REVA**  
UNIVERSITY  
Bengaluru, India

**Proceedings of International Conference on**  
**Computing, Communication and**  
**Cyber Physical Systems**  
**IC3CPS 2021**

**18<sup>th</sup> and 19<sup>th</sup> November, 2021**

**Hosted by**  
**School of Computing and**  
**Information Technology**

**In Association with**



**UNIVERSITY**  
**OF MALAYA**

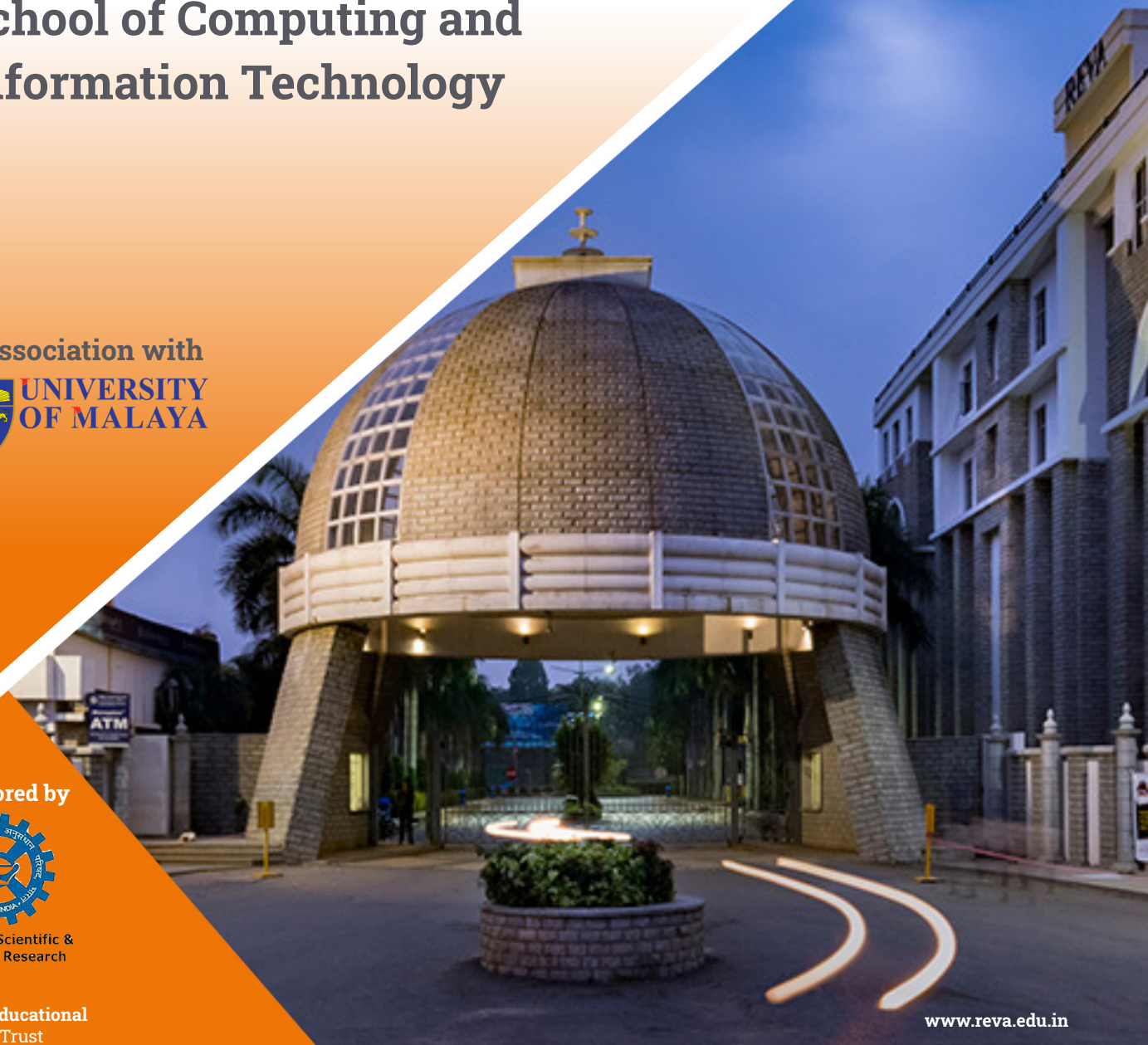
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## Message from the Chancellor



I am delighted that REVA University is organising the International Conference on Computing, Communication, and Cyber Physical Systems (IC3CPS), on the 18th and 19th of November 2021. Research, experiments, and innovation are an integral part of the pedagogy at REVA University. The staff and students are engaged vigorously in innovative research activities all through the year. In this interconnected world, it is evident that the role of research in an academic institution is significant for its sustainability and development, and it is imperative to have knowledge-driven growth, based on innovation.

The key goal of the conference is to foster the culture of knowledge sharing, exchange of ideas, thoughts, and feedback on developing trends in technology that will ultimately boost innovation and lead to ground-breaking studies.

Keeping with our practical approach, the conference will bring the manifesto to share everyone's experiences. I am confident that the conference will be an engaging platform for all researchers, students, and industrialists to collaborate and exchange ideas. This initiative will strengthen innovation in the field of Science and Technology.

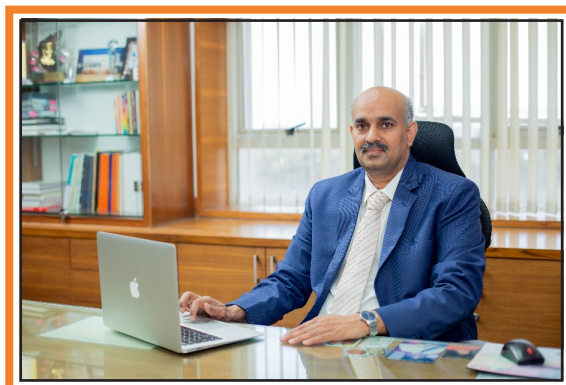
I wholeheartedly congratulate the team of REVA University for their endeavour and wish them all the success.

**Dr. P. Shyama Raju**  
Chancellor  
REVA University





## Message from the Vice-Chancellor



I am extremely happy to note that REVA University is organizing the International Conference on Computing, Communication and Cyber Physical Systems (IC3CPS), on 18th and 19<sup>th</sup> of November, 2021. The research conducted in academic institutions, industry, R & D laboratories and elsewhere plays a critical role in raising our standard of living, creating jobs, improving health and providing national security. In a globalized world, the role of research in an academic institution is significant for its sustainability and development, and it is imperative to have knowledge driven growth based on innovation. The quest for knowledge is the basic principle behind research. The quality of research work directly translates to the quality of teaching and learning in the classroom, thereby benefiting the students, the society and the country. The promotion of research in a huge and diverse country like India will help the nation evolve as a knowledge reservoir in the international arena. I congratulate all the team members for taking initiative to conduct this Conference during this pandemic to bring all researchers on to a common platform. I wish the International Conference a grand success.

**Dr. M. Dhanamjaya**  
Vice Chancellor  
REVA University



## Message from the Registrar



The key goal of the conference is to encourage and facilitate the exchange of knowledge and practices, resulting in the generation of innovative ideas. In keeping with our very practical and applied approach, the conference will bring a manifesto to share everyone's experiences. I am glad to note that the REVA University in association with university of Malaya and School of computing and Information Technology is organizing this International Conference on Computing, Communication and Cyber Physical Systems (IC3CPS), on 18<sup>th</sup> and 19<sup>th</sup> of November 2021. This Conference provides a platform to bring together not only researchers, postgraduate students but also industry professionals. I hope that this Conference offers an opportunity for networking among the participants and Subject-matter experts (SMEs) across multiple disciplines.

I hope that you will find the conference greatly beneficial and savor each and every activity that you would come across. Wishing you all the very best.

Stay safe, stay healthy

**Dr. N Ramesh**  
Registrar  
REVA University



## Message from the Dean Engineering and Technology



Education is the main factor which determines the nation's development. The quality of education can be improved by the excellence in research and other scientific activities so that better research and discoveries can be made. It gives me an immense pleasure that REVA University is organizing an International Conference on Computing, Communication And Cyber Physical System (IC3CPS), on 18th and 19<sup>th</sup> of November 2021. The purpose of this conference is to provide an opportunity to all the participants to interact with each other and to exchange their innovative ideas. The conference aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses in current technological trends. I wholeheartedly welcome all the delegates to this conference and have faith that this will be a professionally rewarding experience.

**Dr. Sunilkumar S. Manvi**  
Dean Engineering and Technology  
REVA University





## Message from the Dean Planning and Development



It is indeed my delight and honour to invite all the participants on behalf of REVA University to attend the International Conference on Computing, Communication And Cyber Physical Systems (IC3CPS), to be held on 18<sup>th</sup> and 19<sup>th</sup> of November 2021. The world is transforming at a pace faster than anyone could imagine. The credit for this transformation goes to education and education alone. The development index of a country largely depends upon the researches carried out in a Nation. Research discovers, elucidates and evaluates new knowledge, ideas and the technologies essential in driving the future of society and humanity. This Conference provides an excellent opportunity for academicians, young researchers, scholars and students to present and exchange their ideas. On behalf of the organizing committee, once again I would like to extend a warm invitation to all the delegates to join the Conference and make it a grand success.

**Dr. D V S Bhagavanulu**  
Dean- Planning & Development  
REVA University



## Message from the Dean R&I Council



REVA University provides a conducive environment for research where senior experts mentor young researchers. Dedicated faculty members and enthusiastic researchers are actively involved in interdisciplinary and collaborative research leading to publishing of quality research articles and patents. REVA University is organizing its International Conference on Computing, Communication and Cyber Physical Systems (IC3CPS), on 18th and 19<sup>th</sup> of November 2021. The conference is aimed at providing a platform for scholars to interact with experts from industry and academia to seek guidance. I congratulate the school of C & IT for organizing this International conference on computing, communication and cyber security systems, as monitoring of various events in various fields by computer based algorithms has become very relevant today. On behalf of REVA University it is my pleasure to welcome all the dignitaries and the participants.

**Dr. B. P. Divakar**  
Dean Research & Innovation Council  
REVA University



## Message from the Dean Computer Science



It is my pleasure to welcome you all for the International Conference on Computing, Communication and Cyber Physical Systems (IC3CPS), on 18th and 19<sup>th</sup> of November 2021. Conferences are great opportunities, not only for researchers and scientists, but also for experts, policy makers, stakeholders and students. New knowledge and findings cannot be generated without any Research and Development (R&D) activities. This conference provides a forum for the dissemination of new ideas, original research results, and practical development experiences. I am sure this gathering will help the delegates to establish research association as well as to the find international links for future collaborations in their research path.

I extend my heartfelt compliments to the team of REVA University for organizing and conducting the Conference and wish them all the success in their endeavour.

**Dr. Sanjay Chitnis**  
Dean, Computer Science  
REVA University





## Message from the Deputy Director, C&IT



The International Conference “Computing, Communication and Cyber physical systems” IC3CPS2021 is an important platform to bring together all researchers, professors and scientists to exchange their ideas and new contributions in the areas of computing, communication and cyber physical systems. Active participation and high quality deliberations create inspiring learning environment resulting into innovative ideas and collaborative works. Keynote sessions will help researchers to enlighten on new findings and future research avenues.

IC3CPS is jointly organized by University of Malaya (UM), Kuala Lumpur, Malaysia and School of Computing and Information Technology, REVA University, Bangalore, India, to be held on November 18th and 19th 2021. The focus of the conference is to provide a unique platform for exchange of ideas and synergy among researchers, academicians, industrial experts and entrepreneurs across the globe in a gamut of divergent engineering and technology disciplines. Articles on state of the art innovations in computing, communication and Cyber physical technologies including latest research trends and developments in emerging areas are invited. All the accepted and registered papers will be recommended to SCOPUS indexed Journals for publication.

I congratulate the organisers and wish the IC3PS-2021 a great success.

**Dr. Mallikarjun M. Kodabagi**  
Deputy Director  
School of Computing and Information Technology  
REVA University



**Message from the  
Dy. Director  
R&I Council**



IC3PS-2021 brings together people of varied experiences and provides an opportunity to everyone to share their thoughts. Mutual participation and high quality deliberations create inspiring learning environment resulting into innovative ideas. Today's industry expects such inputs to bring home new innovations and inventions. The IC3PS 2021 organised by school of C&IT, REVA University with a focus on "Computing, Communication and Cyber physical systems" provides an open forum for scientists, researchers and engineers to discuss recent advancements in diverse disciplines. It will be a great forum and wonderful opportunity for delegates to gain quality input useful for their future research in this knowledge based society.

I congratulate the organisers and wish the IC3PS-2021 a great success.

**Dr. Vishwanath R Hulipalled**  
Deputy Director  
Research & Innovation Council  
REVA University



## About REVA University

REVA University has been established under the REVA University Act, 2012. The University is located in Bengaluru on a sprawling green campus, spread over 45 acres of land, built with state-of-the-art infrastructure creating an environment conducive to higher learning and research. The founder of REVA University believe in the motto ' Knowledge is Power' . Driven with a philanthropic vision and a missionary zeal, the campus is built to transform students into outstanding citizens. The University prides itself in contributing to the holistic development of every student. The University currently offers 33 Undergraduate Programmes, 24 full-time Postgraduate Programmes, 2 part-time Postgraduate Programmes, Ph.D. Programmes in various disciplines and several Certificate/Diploma and Postgraduate Diploma Programmes in Engineering, Architecture, Science and Technology, Commerce, Management Studies, Law, Arts & Humanities, and Performing Arts.

## About School

The School has a rich blend of experienced and committed faculty who are well-qualified in various aspects of computing and information technology apart from the numerous state-of-the-art digital classrooms and laboratories having modern computing equipment. The School offers five full-time undergraduate programs, B Tech in Computer Science and Engineering, B Tech in Computer Science and Engineering (Artificial Intelligence and Machine Learning), B Tech in Computer Science and Information Technology, B Tech in Computer Science and Systems Engineering, B Tech in Information Science and Engineering and three postgraduate programs: M Tech in Data Engineering and Cloud Computing & M.Tech in Cyber Security. In addition, the school has a unique academic collaboration with the University of Alabama in Huntsville to jointly offer an MS program in Computer Science. In addition, the school has a research center in which students can conduct cutting edge research leading to a PhD degree.

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## About University of Malaya

The University of Malaya (UM) is a public research university located in Kuala Lumpur, Malaysia. It is one of the top 100 universities in the world. It is also the oldest university in Malaysia and is the highest ranking Malaysian institution of higher education according to several international ranking agencies. The university has graduated two prime ministers of Malaysia, and other political, business, and cultural figures of national prominence. The predecessor of the university, King Edward VII College of Medicine, was established on 28 September 1905 in Singapore, then a territory of the British Empire. In October 1949, the merger of the King Edward VII College of Medicine and Raffles College created the university. Rapid growth during its first decade caused the university to organize as two autonomous divisions on 15 January 1959, one located in Singapore and the other in Kuala Lumpur. In 1960, the government of Malaysia indicated that these two divisions should become autonomous and separate national universities. One branch was located in Singapore, later becoming the National University of Singapore after the independence of Singapore from Malaysia, and the other branch was located in Kuala Lumpur, retaining the name University of Malaya. Legislation was passed in 1961 and the University of Malaya was established on 1 January 1962. In 2012, UM was granted autonomy by the Ministry of Higher Education

## About the Conference

ICC3PS is jointly organized by University of Malaya (UM), Kuala Lumpur, Malaysia and School of Computing and Information Technology, REVA University, Bangalore, India, to be held from 26th and 27th October 2021. The focus of the conference is to provide a unique platform for exchange of ideas and synergy among researchers, academicians, industrial experts and entrepreneurs across the globe in a gamut of divergent engineering and technology disciplines. State of the art innovations in computing, communication and Cyber physical technologies including latest research trends and developments in emerging areas

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Deputy Director & Professor, School of  
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18<sup>th</sup> – 19<sup>th</sup> November 2021

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**PROGRAM SCHEDULE**

Program	Time	Paper ID and Title
<b>Day 1</b> <b>18/11/2021</b>		
		<b>Chief Patron – Dr. P Shyama Raju</b> Hon'ble Chancellor REVA University
<b>Inauguration</b>	9:00 -10:00 am	<b>Chief Guest – Dr. Mohd Yamani Idna Bin Idris</b> Faculty of Computer Science and Information Technology University of Malaya, Malaysia  (Online in MS Teams)



**SESSION – 1****IoT, Computer Networking, Cloud Computing**

<b>Keynote Address</b> <b>Dr. Ali Reza Alaei</b> <b>Southern Cross</b> <b>University , Australia.</b>	10:00 – 10:45 am	<b>Topic:</b> “SENTIMENT MINING CAPITALIZING ON BIG DATA: APPLICATION TO TOURISM SATISFACTION”.
	11:00-11:10 am	IC3CPS124: A SURVEY ON CLOUD COMPUTING SECURITY THREATS, ATTACKS AND COUNTERMEASURES: A REVIEW
	11:10-11:20 am	IC3CPS115: EFFICACY AND SECURITY EFFECTIVENESS: KEY PARAMETERS IN EVALUATION OF NETWORK SECURITY
<b>External Session</b> <b>Chair</b> <b>Dr. Hatture</b> <b>BEC, Bagalkot</b>	11:20-11:30 am	IC3CPS117: IOT AND CLOUD ENABLED TABLES
	11:30-11:40 am	IC3CPS113: SECURITY FRAMEWORK OF KCABE IN SAAS MODEL
<b>Internal Session Chair</b> <b>Dr. Geeta C Mara</b> <b>REVA University</b>	11:40-11:50 am	IC3CPS141:IMPROVING QOS IN THE DOWNLINK OF OFDMA NETWORKS
	11:50 -12.00 pm	IC3CPS444: AUTO CONFIGURATION PROTOCOL FOR IOT BASED SMART HOME SYSTEM

**SESSION – 2****(Track – 1)****Machine Learning**

<b>Keynote Address</b> <b>Dr. Shivakumara P</b> <b>University of Malaya,</b> <b>Malaysia.</b>	1:30-2:15 pm	<b>Topic:</b> “INTRA AND INTER DISCIPLINARY SOLUTIONS FOR OPEN CHALLENGES OF IMAGE PROCESSING”.
	2:30-2:40 pm	IC3CPS140: AN UNSUPERVISED MALWARE DETECTION SYSTEM FOR WINDOWS BASED SYSTEM CALL SEQUENCES
<b>External Session</b> <b>Chair</b> <b>Dr. Bharathi M A</b> <b>BMSITM</b> <b>Bangalore</b>	2:40-2:50 pm	IC3CPS118: CLUSTERING TIME SERIES FOR AUTOMATIC SIMILARITY MEASUREMENT SELECTION OF DATABASE
	2:50-3:00 pm	IC3CPS119: EFFICIENT MODEL FOR FRUITS CLASSIFICATION BY HYBRID FEATURE EXTRACTION METHOD
<b>Internal Session Chair</b> <b>Dr. Thillaiarsu</b> <b>REVA University</b>	3:00-3:10 pm	IC3CPS123: CANCER CLASSIFICATION USING SIMULATED ANNEALING AND PARTIAL LEAST SQUARES REGRESSION
	3:10-3:20 pm	IC3CPS443: SPAM DRIFT AWARE CLASSIFICATION MODEL USING IMPROVED L-NEAREST NEIGHBOR ALGORITHM

3:20-3:30 pm

IC3CPS133: FEATURE ENGINEERING WITH SENTENCE SIMILARITY USING LONGEST COMMON SUBSEQUENCE FOR EMAIL CLASSIFICATION

**Day 2**

**19/11/2021**

**SESSION – 3**

**(Track – 2)**

**Machine Learning**

**Keynote Address -3 by  
Sushma Venkatesh  
NTNU, Norway**

10:00 – 10:45 am

**External Session  
Chair  
Dr. Suma  
Sri, MVIT  
Bangalore**

11:00-11:10 am

IC3CPS111: STOCHASTIC COST OPTIMIZATION OF 2-STAGE RESOURCE PROVISIONING

11:10-11:20 am

IC3CPS110: LOGISTIC REGRESSION TECHNIQUE TO IDENTIFY THE LEAFY & NON-LEAFY VEGETABLES

11:20-11:30 am

IC3CPS142: COPY-MOVE AND SPLICING FORGERY DETECTION USING PNN

11:30-11:40 am

IC3CPS139: DETECTION AND CLASSIFICATION OF MALWARE

**Internal Session Chair  
Dr. Ragaventhiran J  
REVA University**

11:40-11:50 am

IC3CPS138: AN EFFICIENT FRAMEWORK FOR EXTRACTING THE ALGORITHMS AND METADATA FROM SCHOLARLY DATA USING ENSEMBLE MACHINE LEARNING TECHNIQUE

11:50-12:00 pm

IC3CPS102: CONNECTING USER PROFILES OF SOCIAL NETWORKS USING PROXIMITY MEASURE

**SESSION – 4**

**Deep Learning & Machine Learning**

**Keynote Address -4 by  
Dr. Ankur Shukla  
NTNU, Norway**

1:30-2:15 pm

**Topic:** “SECURITY ASSURANCE FRAME WORK FOR CLOUD COMPUTING”.

**External Session  
Chair  
Dr. Vilas Naik  
BEC, Bagalkot**

2:30-2:40 pm

IC3CPS126: A STUDY ON FISH CLASSIFICATION TECHNIQUES USING CONVOLUTIONAL NEURAL NETWORKS ON HIGHLY CHALLENGED UNDERWATER IMAGE DATASETS

**Internal Session Chair  
Dr. Parthasarathy  
REVA University**

2:40-2:50 pm

IC3CPS121: EXTRACTION AND RECOVERING OF FINGER-VEIN VERIFICATION BASED ON DEEP ATTRIBUTE REPRESENTATION

2:50-3:00 pm

IC3CPS114: PRIOR DETECTION OF ALZHEIMER’S DISEASE WITH THE AID OF

MRI IMAGES AND DEEP NEURAL NETWORKS

3:00-3:10 pm	IC3CPS137: AN INTELLIGENT DEEP LEARNING LSTM-DM TOOL FOR FINGER VEIN RECOGNITION MODEL USING DSAE CLASSIFIER
3:10-3:20 pm	IC3CPS132: IMPROVING MEDICAL IMAGE PIXEL QUALITY USING MICQ UNSUPERVISED MACHINE LEARNING TECHNIQUE
3:20-3:30 pm	IC3CPS122: MOBILE PHONE RECOMMENDER USING MULTI CRITERIA DECISION MAKING ALGORITHM

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# SESSION – 1

## Internet of Things [IoT], Computer Networking and Cloud Computing

### **Session Key-note Address**

*Dr. Ali Reza Alaei*

Southern Cross University  
Australia

### **Session Chair**

*Dr. Hatture*

Basaveshwar Engg. College  
Bagalkot

# A Survey on Cloud Computing Security Threats, Attacks and Countermeasures: A Review

*Arunkumar .M, K. Ashokkumar*

Department of Computer Science and Engineering  
Sathyabama Institute of Science and Technology  
( Deemed to be University) Chennai, Tamilnadu, India

The security challenges are more in the area of Cloud computing platform. The On-demand service of Cloud Computing secures a vital role in the industrial development and other IT sectors. This paper will try to provide the information based on the current threats and attacks on Cloud Computing and the solution to those attacks. Cloud Computing provides various set of service models like Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS) and Infrastructure-as-a-Service (IaaS) respectively. The cloud security measures are still a challenging task for organizations and other IT Sectors to handle the external attacks. Concluding that this survey will leads to give an overview of threats, attacks and vulnerabilities in the era of Cloud platform as well as some of the countermeasures to protect the cloud

## Efficacy and Security Effectiveness: Key Parameters in evaluation of Network Security

*S. Guru Prasad, M.K. Badrinarayanan, V. Ceronmani Sharmila*

School of Management  
Hindustan Institute of Technology & Science (Deemed to be University)  
Chennai, India.

Information is the most critical asset of modern-day Organizations. Organizations use various Information technology tools, products and solutions to store, disseminate the information. Because of its importance to Organizations, the Organizations tend to protect them using various information protection tools, that would include computer or network hardware



and software. This article aims to give the Organizations and its Chief Information Security officers a template for technical evaluation of the various network security solutions with Security effectiveness as a key element in their decision making

## IoT and Cloud Enabled Tables

*Meesala Shobha Rani, Nikitha Gajjala, Prathamesh Dasari, Ronit Chatterjee*

MVJ College of Engineering, Bengaluru, India

The main objective of this paper is to build a hassle free experience for the customer by providing them with service of ordering food with the help of an QR Code. Managing all information related to the menu, orders, customer support and provides with a customer freedom experience and also avoids all kinds of human errors and misunderstandings between the customer and the management. The paper proposes a novel notation of being a smart restaurant which shows us the reduction of human work with the least possible human error and thus increases the work efficiency with a user-friendly approach. The work is made at an administrative end where there is a guaranteed administrative access only. The work is completed with the help of both software and hardware parts. Software of this work deals with JavaScript, Html, CSS as for the frontend and the backend deals with Mongo Db. Hardware part of the work deals with a printer to print the selected menus by the customer and technology used here is Raspberry Pi

## Security Framework of KCABE in SAAS Model

*M.Sangeetha, Neela V*

School of Computing and Information Technology  
REVA University  
Bangalore, India

Cloud computing extends its usage to the public in enormous ways. Basically cloud computing is manufactured by three service models. Each model provides its application based on user requirements. This is the cause of reaching cloud computing to the public in short period. Especially to provide data security is used as main aspect. It assures to provide security in IT sectors, business, hospital, administration etc. in this paper we focus and rectify security issues of SAAS model by applying KCABE algorithm. The main security threat of SAAS are data access, authorization and authentication. these security threads are overcome by KCABE because of associating set of user attributes with access tree structure. By this concept, client does not depend on providers security measures during data access.

# Improving QoS in the Downlink of OFDMA Networks

*S.Gayathri, S.Narayanan*

Hindustan Institute of Technology and Science  
Padur, Chennai - 603103, India  
Dr. MGR Educational and Research Institute,  
Adayalampattu, Chennai – 600095, India

In wireless cellular networks using Orthogonal Frequency Division Multiple Access scheme, the bandwidth, power, QoS have to be optimized to improve the network throughput. There are several resource allocation algorithms available to optimize the bandwidth, power, QoS and provide fairness among the users of the network. The channel quality information is shared between the various users in the network and the base station for the resource allocation purposes. The resource allocation is optimized as per the average channel quality and the user's bandwidth needs in existing algorithms. They maximize the bandwidth allocated for the users with good channel conditions and attempts to provide reasonable bandwidth to the users with poor channel conditions. In the proposed method, we provide a resource allocation algorithm which will try to allocate resources based upon the QoS requirements. By handling different set of QoS requirements differently, the algorithm tries to optimize the network performance. The algorithm results are collected and compared with the existing solutions to evaluate the algorithm performance under different network traffic and channel conditions. The algorithm improves the performance as well as ensures the fairness among the different types of users

# Auto Configuration Protocol for IoT Based Smart Home System

*Markandeshwar Jerabandi<sup>1</sup>, Malikarjun M Kodabagi<sup>2</sup>*

<sup>1</sup>Rural Engineering College, Hulkoti, India

<sup>2</sup>School of Computing and Information Technology  
REVA University, Bangalore, India

Internet of Things (IoT) based smart home system is a technology that connects all home objects/devices and enables them to communicate, control and exchange data. The smart home system will help every individual to remotely monitor and control home appliances using smart gadgets connected to the internet. The development of smart home system requires technological solutions for various processing tasks such as: auto-configuration, communication protocol, data gathering, monitoring & control and prediction. Many research works are being taken up in order to develop technological solution to each of the tasks listed above. However, the auto configuration of devices is a challenging problem that enables different vendor devices to be connected automatically to the smart home system for further operations. Hence, in this paper, an auto configuration protocol for IOT based smart home system is presented. The protocol comprises of various processing steps such as: connection establishment, enumeration and configuration. In connection establishment phase, the available Wi-Fi enabled devices are scanned using ESP-12E module and connected to the smart home system with a default password. Further, the device specific information is enumerated and stored in the database of smart home system. Later, the devices are configured with various parameters such as: Wi-Fi SSID of router, password, reporting unified resource locator (URL) and 128-bit encryption key. The application programming interface (APIs) are developed for interconnecting smart home server, scanner and the target devices. The experimental results show that the time required for any device to connect to the smart home system is 7.00444 seconds. The auto configuration protocol facilitates secured data transmission using AES (Advanced Encryption Standard) 128-bit Encryption with Cypher-Block-Chain (CBC) coding technique. The system is found to be reliable, robust and takes care of various issues such as scalability, extensibility, heterogeneity/device adaptability and security.

# **SESSION – 2**

## **(Track – 1)**

### Machine Learning

#### **Session Key-note Address**

*Dr. Shivakumar P*

University of Malaya

Malaysia

#### **Session Chair**

*Dr. Bharathi M A*

B M S Institute of Technology & Management

Bengaluru, India



# An Unsupervised Malware Detection System for Windows Based System Call Sequences

*Ragaventhiran J<sup>1</sup>, Vigneshwaran P<sup>2</sup>, Prabu Ramadoss<sup>3</sup>, Prisma Megantoro<sup>4</sup>*

<sup>1</sup>School of Computing and Information Technology REVA University, Bengaluru, India.

<sup>2</sup>Department of Networking and Communications

SRM Institute of Science & Technology, Kattankulathur, Chennai – 603 203, India.

<sup>3</sup>Dassault Systemes Austrila Pty Ltd, West Perth, WA, Austrila 6005.

<sup>4</sup>Faculty of Advanced Technology and Multidiscipline, Universitas Airlangga, Indonesia

Malware attacks have grown in prominence in recent years, posing severe security risks and resulting in significant financial losses. The ability to rapidly and reliably classify malware is vital to cybersecurity due to the exponential growth of malware variants. The role of artificial intelligence plays a significant role in cybersecurity industry. Recently, in the field of malware detection deep learning technique seeks more attention than the machine learning techniques due to the complexity of its behavior. Because the deep learning technique performs well than the machine learning techniques in terms of accuracy and it is well suited for large amount of data. The input attribute for the proposed model is windows-based system call sequence which is collected from NT mal detect project. In this work, the unsupervised deep learning technique used for text classification namely LSTM autoencoder and the performance of proposed model compares with existing DL techniques such as CNN, RNN and LSTM in terms of accuracy, precision, recall and F1-measure.

## Clustering time series for automatic similarity measurement selection of Database

*M.Thurai Pandian<sup>1</sup>, P.Damodharan<sup>2\*</sup>, K.R.Bhavya<sup>3</sup>, Sanjay Singh<sup>4</sup>, K.Anitha<sup>5</sup>  
Ankur Kumar Aggarwal<sup>6</sup>*

<sup>1, 3, 5</sup> School of Computing and Information Technology  
REVA University, Bangalore.

<sup>2\*</sup>Department of Computer Engineering

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Marwadi University, Rajkot.  
<sup>4,6</sup> Department of Computer Science and Technology  
Manav Rachna University, Faridabad.

Clustering has turned into a famous undertaking related with time series. The decision of an appropriate measurement of distance is pivotal of the clustered system and, the immense number of measurable distance of time series accessible in the writing and their different attributes, this choice isn't clear. With the target of working on this errand, we propose a multi-name arrangement structure that gives the resources to consequently choose the most reasonable measurable distance of cluster: a period series data set. This is classified depends on an original assortment of attributes that depict the fundamental elements of the time series data sets and give the prescient data important to separate between clusters measurement of distance. To test the legitimacy of this classifier, we direct a total arrangement of investigations utilizing both engineered and constant series data sets and a cluster of 5 normal distance measures. The positive outcomes got by the planned grouping structure for different execution measures show that, the proposed theory is helpful to improve on the course of distance choice in time series clustering undertakings.

## Efficient Model for Fruits Classification by Hybrid Feature Extraction Method

*Bhavya K R, Pravinth Raja*

Department of Computer Science and Engineering  
Presidency University  
Bengaluru, Karnataka, India

Fruits production is increasing all over the world in a greater extent. In which the identifying the fruit, checking the quality and grading of fruit is a troublesome work, where it leads to lack of man power, inaccurate results. In order to identify and classify the fruits correctly. A hybrid model is proposed that differentiate among different types of fruits and analyses the quality of the fruits for grading. Firstly, the input image is reshaped in 256X256 resolution. Next, the background of the image was removed using split and merge method. Later, Using Gaussian filter a pre-processing is performed for enhancing the image quality to reduce the noise. Next, Feature Extraction is carried by extracting the textural (6), statistical (7 features), geometrical (12) features and to defeat the curse of dimensionality from the feature

space PCA analysis is used. Finally, four different classifiers k-Nearest Neighbor (k-NN), Sparse Representative classifier (SRC) Artificial Neural Network (ANN) and Multiclass SVM are used to identify and classify the fruits accordingly. The classifier examined with four different types of fruits having 90483 images. The proposed system used k fold cross validation to check the System performance by taking different values of k. Maximum accuracy of 77.24%,82.75%,88.27%, 95.72% and 96.34% for k-NN, SRC, ANN and MSVM with k=10 is achieved by the system

# Cancer Classification using Simulated Annealing and Partial Least Squares Regression

*Nimrita Koul, Sunilkumar S Manvi*

School of Computer Science and Engineering  
REVA University  
Bangalore, India

Accurate characterization of the molecular nature of a tumour is important for its effective treatment. Therefore, the classification of tumours is an important research problem, both clinically and computationally. High throughput gene sequencing platforms have generated gene expression data for entire genomes. The application of data science and machine learning techniques to this data has enabled computational researchers to separate the gene expression profiles into different classes based on the difference in patterns of gene expression. This has also facilitated the discovery of new classes and new biomarkers of diseases. However, gene expression data is very high dimensional. The number of features is very high in comparison to the number of samples. Data is noisy. The classes in the data are often imbalanced. Out of thousands of genes, only a few are relevant to the disease which is being investigated. The machine learning approaches for the classification of gene expression data need to address all these issues to obtain reliable performance. In this paper, we have proposed a method using simulated annealing and partial least squares regression for gene selection from six publicly available microarray cancer gene expression data sets. The selected subset of genes is such that these few genes are sufficient to accurately classify the gene expression profiles into correct classes. Selected genes were used to train support vector

machines, random forest, voting classifiers, and multilayer perceptron classifiers to evaluate their classification performance. A comparison with existing methods shows the superior performance of the proposed method.

## Stochastic Cost Optimization of 2-Stage Resource Provisioning

*Konatham Sumalatha, Anbarasi M S*

Computer Science and Engineering  
Pondicherry Engineering College,  
Puducherry, India

As Cloud Computing is a pay-as-you-go model, it offers huge computational resources available for users. Due to uncertainty of demand price in future. Cloud Consumer-facing difficulty to get these resources in a cost-effective & robust manner. In addition to that, heterogeneity in pricing plans is another complexity. Hence, to address this problem we are considering two-stage stochastic programming with 3 pricing models, viz Reservation, On-demand & Spot pricing. This model gives optimal solutions compared to other existing models.

## Spam Drift Aware Classification Model using Improved L-Nearest Neighbor Algorithm

Lalitha L A, Vishwanath R Hulipalled

School of Computing and Information Technology  
REVA University, Bengaluru, India

In recent times Twitter Spam has become major issue and number of Machine Learning (*ML*) algorithm for Spam Detection using Statistical Features of Tweets has been presented. The state-of-art *KNN* (K-Nearest Neighbor) algorithm considers the test set in the overall train set. Thus, inducing higher computation overhead when train set is very large. This work presents Improved *KNN* (*IKNN*) model, that selects K-Nearest Neighbors of test set using train



sets, the test sets are described; this is because  $K$  will be much smaller when compared to overall training sets size. Further, *IKNN* can address scenarios where testing set is sparsely described using training set that are part of test set but far away within it, aiding classification outcomes. However, classification algorithm performance in learning stream data, that can be significantly impacted by concept drift. This is because twitter spam with unauthorized link may vary with respect to time for deceiving spam filter systems, resulting huge losses to both Social Media Network as well as its users. For addressing concept drift problem this paper employs Spam Drift Aware Classification (*SDAC*) model using Kullback-Leibler (*KL*) divergence. Experiment outcome shows proposed Spam Drift Aware Classification model archives much better Accuracy, F-measure and Detection Rate performance when compared with Lfun scheme.

# **SESSION – 3**

## **(Track – 2)**

# Machine Learning

## **Session Key-note Address**

*Dr. Sushma Venkatesh*

Norwegian University  
of Science and Technology, Norway

## **Session Chair**

*Dr. Suma*

Sri M Visveswaraya Institute of Technology  
Bengaluru, India

# Feature Engineering with Sentence Similarity using Longest Common Subsequence for Email Classification

*Aruna Kumara B, Mallikarjun M Kodabagi*

School of Computing and Information Technology  
REVA University, Bangalore, India

Feature selection plays a prominent role in the field of classification because the selection of most relevant features enhances the accuracy and performance of learning classifier. Due to the exponential increase ratio in the usage of emails, the classification of such emails posed over fitting problem. Therefore, there is an immediate requirement for proper classification system. Such email classification system requires efficient feature selection method for accurate classification with most relevant features. In this paper, a novel feature selection method sentence similarity using longest common subsequence is proposed for email classification. The proposed method works in two main phases: First it builds a longest common subsequence vector of features by comparing each email with all other emails in the dataset. Later, a template is constructed for each class using closest features of the emails of a particular class. Further email classification is tested for unseen emails using these templates. The performance of the proposed method compared with traditional feature selection methods. The experimental results showed that the proposed method dominates the TF-IDF, Information Gain, and Chi-square feature selection methods and also the proposed method is evaluated using different learning classifiers.

# Logistic Regression Technique to Identify the Leafy & Non-Leafy Vegetables

*Arun K Talawar*

Rani Channamma University  
Belagavi

Analysis of the food we humans consume is extremely critical to recognize the health benefits. Absence of the perfect measure of supplements can prompt different medical

problems like food contamination, low invulnerability and nourishing illnesses. Consequently, distinguishing such issues at the phase of utilization can help in forestalling a few Foodborne illnesses and further develop wellbeing. In any case, this perspective is given pretty much nothing significance in our nation, because of the hefty costs included also, the infeasibility of huge scope organization of existing strategies, which are principally synthetic examinations. Along these lines, the fundamental objective of this work is to give a genuine answer to tackle a predefined problem. Both green leafy vegetable, non- leafy vegetable rich foods are involved in the exploration due to their high nutritional value and extremely short life span. Due to an abundant supply of these, the time span of usability of non- leafy leaves can be reached out to a limit. Over the span of this exploration, we dissect the edibility of non- leafy leaves utilizing Picture preparing strategies and Artificial intelligent to give more straightforward arrangements that can supplant the current techniques. An informational index was made to catch the falling apart phases of the non- leafy leaves at standard time frames for ten days. Picture preparing strategies were utilized to extricate the nitrous and chlorophyll content of the vegetation. Utilizing AI, the life span qualities of the leaf can be analyzed. Later on testing was carried out to distinguish the execution of the framework. The proposed calculation is executed with an illustration of leafy images product evaluating resulted in Logistic regression accuracy- 91.00% and KNN accuracy is about 88.00% respectively

# Detection and Classification Of Malware Using. Multinomial Linked Latent Modular Double Q Learning

*K V Sheelavathy , Udaya Rani V*

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In recent times, malware has progressed by utilizing distinct machine learning techniques due to this advancement the malware detection has become complicated. Singular Value Decomposition and Profundity based malware finders can't essentially identify this new malware with minimum time and overhead. This paper proposes a Multinomial Linked Latent Dirichlet and Modular Double Q Learning (MLLD-MDQL) to efficiently detect malware based on the network behavior patterns. First, Multinomial Linked Latent Dirichlet Network Behavior Extraction (ML- LDNBE) is applied to the input network anomaly detection dataset



to extract the network behavior patterns. To the extracted behavior, grouping is performed based on path and protocol type for analyzing repeated behaviors. Finally, Modular Double Q Learning Malware Classification model is the grouped behaviors for significant malware detection. To show the viability of the proposed MLLD-MDQL strategy, examination is made with cutting edge techniques. The test outcomes show that, by joining the proposed technique with a suitable AI calculation, the malware identification time and overhead is altogether diminished notwithstanding the bogus positive rate.

## Copy-Move and Splicing Forgery Detection Using PNN

*Dayanand G. Savakar, Raju Hiremath*

Department. of Computer Science  
Rani Channamma University, Belagavi.

The image forgery is the method used to modify the original image and that can be used unethically. The proposed method is used to identify the given image is copy move or spliced tamper. In proposed method first we get the difference between input image and existing image and then we will calculate the mean. If the value of the mean is 0 then there is no forgery otherwise search the difference part in an image and mark it. The marked part will be cropped and extracted the color and entropy features from it. The input image is partitioned into blocks and from each block extract the color and entropy features and then classify the features using Probabilistic Neural Network (PNN) classifiers. If the duplicate blocks will be found it is copy move or else it is spliced forgery. The proposed method efficiently identifies the copy move and splicing tamper in an image. The proposed method gives higher accuracy compared to other methods.

## An Efficient Framework for Extracting the Algorithms and Metadata from Scholarly Data Using Ensemble Machine learning technique

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Algorithms are frequently published in peer-reviewed journals, particularly in the computational sciences and allied fields. Algorithm indexing, searching, finding, and analysis would be enabled by the ability to automatically detect and extract these algorithms in this growing corpus of scholarly digital papers. Algorithm Seer, an algorithm search engine, was recently researched as part of CiteseerX with the goal of offering a huge algorithm database. Over 350,000 algorithms have been retrieved from more than 2 million scholarly articles so far. This paper presents an Efficient Framework for Extracting the Algorithms and abstract from Scholarly Data Using Ensemble Machine learning technique for identifying and extracting algorithm representations in a heterogeneous pool of scholarly documents, as used by the proposed framework. To identify algorithm representations, mixed machine learning approaches are provided. Then, for each algorithm, techniques for extracting textual metadata are presented. Finally, the results are drawn based on the performance parameters like classification accuracy, time taken for classification, precision, recall and F-measure compared with existing Naive Bayes and Support vector machine Techniques. The proposed ensemble technique outperforms the existing techniques by 10-15% in terms of classification accuracy

## Connecting User profiles of Social Networks using Proximity Measure

*Rashmi C, Mallikarjun M. Kodabagi*

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The establishment of connection among social network users using their profiles information and forming a network graph is an important task in social network analysis. The network graph of user-profiles thus obtained is further analyzed using various techniques for opinion mining, recommendations, crime detection, tracking fraudulent events, and other important works. In this work, a proximity-based method for matching LinkedIn profiles of users to construct a network graph is presented. The proposed system matches user profiles using proximity value computed on various attributes such as: education-school-name, education-degree, education- field-of-study, industry, position-company-name, position-title,

position-summary, summary, skills, location, etc. to build a network graph of social network users. The proximity measures between user profiles are computed by analyzing unstructured data of attributes. The method is evaluated on a LinkedIn dataset comprising 200 LinkedIn profiles to form a connected graph. The strength of the proposed methodology lies in the formation of multi-layered network graphs, as it uses various attributes of the user profiles to connect them. The method addresses various issues associated with unstructured data analysis for pattern matching. The method achieves an accuracy of 99%. However, the profiles containing abbreviations of important information are not matched and the system accuracy drops down in such cases. The method can be extended to take care of the abbreviations of important information.

## **SESSION – 4**

# Deep Learning and Machine Learning Techniques

### **Session Key-note Address**

*Dr. Ankur Shukla*

Norwegian University  
of Science and Technology, Norway

### **Session Chair**

*Dr. Vilas Naik*

Basaveshwar Engg. College  
Bagalkot



# A Study on Fish Classification Techniques using Convolutional Neural Networks on Highly Challenged Underwater Images

*M. Sudhakara<sup>1</sup>, M. Janaki Meena<sup>2</sup>, Obulakonda Reddy.R<sup>3</sup>, V. Mahalakshmi<sup>4</sup>,  
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Underwater Fish Species Recognition (UFSR) has attained significance because of evolving research in underwater life. Manual techniques to distinguish fish can be tricky and tedious. They might require enormous inspecting endeavors, but they can be costly. It results in limited data and a lack of human resources, which may cause incorrect object identification. Automating the fish species detection and recognition utilizing technology would assist sea life science to evolve further. UFSR in wild natural habitats is difficult because the images open natural habitat, complex background, and low luminance. Species Visualization can assist us with deep knowledge of the movements of the species underwater. Automation systems can help to classify the fish accurately and consistently. Image classification has been emerging research with the advancement of deep learning systems. The reason is that the convolutional neural networks (CNNs) don't require explicit feature extraction methods. The vast majority of the current object detection and recognition mechanisms are based on images in the outdoor environment. This paper mainly reviews the strategies proposed in the past years for underwater fish detection and classification. Further, the paper also presents the classification of three different underwater datasets using CNN with evaluation metrics

# Prior Detection of Alzheimer's Disease with the Aid of MRI Images and Deep Neural Networks

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Alzheimer's disease is a degenerative disease in which brain cells die and deteriorate. It is the most prevalent reason for dementia, which is defined as a progressive decrease in thinking, conduct, and social skills that impairs a person's capacity to operate independently. Although it is fatal the early diagnosis of Alzheimer's can be extremely helpful. Our main aim is to help with the diagnosis of this disease in its early stages using the VGG16 classifier which is a convolutional neural network (CNN) that is 16 layers deep. The dataset consists of MRI images of the brain. Data augmentation is done to significantly increase the diversity of data available and Data pre-processing helps to enhance the overall truthfulness of the proposed approach.

## Improving Medical Image Pixel Quality Using MICQ Unsupervised Machine Learning Technique

*Syed Thouheed Ahmed<sup>1</sup>, Sreedhar Kumar S<sup>2</sup>, Naif Khalaf Al-Shammari<sup>3</sup>  
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Biomedical image processing and decision making is a growing research demand under global pandemic situation. The quality of medical images plays a vital role in streamlining remote diagnosis and processing via telemedicine platform, in providing unambiguous results and decision supports. This paper presents an improved Medical Image Content Quality (MICQ) technique and it aims to enrich the Magnetic Resonance (MR) image content or pixels based on semi supervised clustering technique for the process of deeper analysis and investigation to identify the normal and abnormal portions. The proposed (IMICQ) system is containing three stages namely pre-processing, clustering and validation respectively. In the pre-processing stage, the MICQ divides the MR image into finite number of non-overlapping blocks or vectors with size (2\*2). Next stage, the proposed MICQ system iteratively partitions the MR image dataset or vector set into optimum number of highly relative dissimilar clusters based on K-Means clustering technique. In the last stage, the proposed system measures the quality of clustering result which obtained in the previous stage based on Effective Cluster Validation Measure (ECVM). Experimental results show that the MICQ is better suitable to improve MR image content quality for telemedicine platform and to predict the normal and abnormal portions over the image with higher accuracy ratio.

# Extraction and Recovering of Finger Vein Verification Based on Deep Attribute Representation

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A finger vein authentication system is proposed in this research. Biometrics is the science of determining a person's identity based on physiological or behavioral characteristics. These characteristics include physical characteristics such as fingerprints, faces, and retinas, as well as personal actions such as signatures. Biometric features are significantly more difficult for attackers to replicate or fabricate than traditional methods, and they are extremely rare to lose. Biometric traits are used in the identification system, which increases security and dependability. However, when compared to other human characteristics, vein pattern verification is less developed. We proposed using contactless sensors to retrieve features from the hand's finger vein pattern. Vein pattern identification scans the blood for hemoglobin using an infrared light source. After the participant's palm is placed over the sensing device, an infrared region beam from the device measures the orientation of the arteries. These ultraviolet wavelengths are absorbed by liquid haemoglobin in the vasculature, resulting in dark streaks on the map. The hand's finger has more intricate

# An Intelligent Deep Learning LSTM-DM Tool for Finger Vein Recognition Model Using DSAE Classifier

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In the current scenario, Biometric authentication plays a crucial role in the security process by relying on the inimitable genetic characteristics. The process is carried over by registering and comparing the data in the database. Being a vast field it addresses various looms like fingerprints, palm prints, hand vein, finger vein, palm vein, etc. Deep Learning technique is applied for this type of approach based on the requirements. Thus this paper presents a new



intelligent Finger Vein Recognition (FVR) Model adapting the Deep Learning (DL) techniques for Biometric Authentication Systems (BAS) with a decision-making tool (LSTM-DMT). This proposed LSTM-DMT model enables recognition of Finger Vein related data by making use of a Long Short Term Memory (LSTM) model adapting the DL technique for the finger vein recognition system. Since classification of image is an essential process in this entire authentication system, a decision-making tool using a Deep Stacked Auto Encoder (DSAE) is used for the classification of different vein features that exist in big data. This entire model is designed in such a way that Finger Vein Image Acquisition (FVIA), pre-processing techniques, feature extraction technique, matching of acquired images with database images, obtaining genuine images and lastly the evaluation of accuracy is carried out. A comprehensive experimental results analysis is conceded to guarantee the betterment of the proposed model. The final experimental upshot highlights the advanced better-quality results of the proposed model in terms of diverse measures

## Mobile Phone Recommender Using Multi Criteria Decision Making Algorithm

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A study found that the depression rate is growing at an alarming rate among everyone. Many people who report symptoms of depression mostly have not been diagnosed or underwent treatments for it. If they do not get proper treatments like medication, therapy, guidance or counselling, it would be difficult for them to lead a happy and stress-free lifestyle. India is on the verge of a mental health epidemic and we are in need of a permanent solution to combat depression. A recent study found that people are more likely to open up to a talking computer than a human. Digital interfaces are emerging as viable alternatives for reducing this

gap and making psychiatric diagnosis and treatment accessible and affordable to everyone. The aim of the project is to develop a chatbot called Therapy Bot using sentiment analysis and cognitive behavioral therapy to predict the mental health status of an individual. Moreover, the chatbot can serve as a good companion to the affected by communicating with friendly manner and help them recover. To keep the conversation engaging the chatbot will personalize its replies as per user's response. The chatbots serve as a supplement to therapy, or as a form of intermediate support while on the waiting list. The advantage of such a system is that instead of reaching a phase requiring a visit to a psychiatrist, an online free service will reach many people, will mediate ill-effects of depression and contribute to the betterment of society.

  
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