



# Atria Institute of Technology

ASKB Campus, 1st Main Rd, Ags Colony, Anandnagar, Hebbal, Bengaluru,  
Karnataka 560024, India

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

## Research Lab Activities

| Sl. No. | Name of the Lab             | Co-ordinator                     | Existing since | Activities                           |
|---------|-----------------------------|----------------------------------|----------------|--------------------------------------|
| 1.      | IoT Lab                     | Sufian Kaki Aslam                | 2018           | SDP-03<br>FDP-02<br>Mini Projects-10 |
| 2.      | VGST Sponsored Research Lab | Sundari Tribhuvanam              | 2015           | SDP-03<br>FDP-03<br>Mini Projects-10 |
| 3.      | VLSI Lab                    | Dr. Ipsita Mahapatra/Prof. Rakhi | 2018           | SDP-2<br>FDP                         |

### Summary of Activities in the Research Laboratories

#### Faculty Development Activities

##### 1. IoT Lab

| 2020-21 |  |          |                               |                         |   |
|---------|--|----------|-------------------------------|-------------------------|---|
| S. No.  | Activity   | Duration | Date                          | Target Audience         | Resource person/s   |
| 1       | National level FDP on “Role of IoT and Wireless Sensor Network in Knowledge Engineering” | 3 days   | 14-19 <sup>th</sup> Sept 2020 | Faculty (inter college) | Prof. Sufian K Aslam<br>Dr. Pramod M S<br>Dr. Prasuna VNP |
| 2018-19 |  |          |                               |                         |   |

|    |  |        |   |                            |   |
|----|--|--------|---|----------------------------|---|
| 2. | Workshop on IoT, Python and Data Analytics                   | 5-Days | 18-24 July 2018   | Faculty (inter college)    | Prof. Sufian Kaki Aslam   |
| 3. | RTOS and Machine Learning in the Edge Devices                | 5-Days | 14 <sup>th</sup> Jan-19 <sup>th</sup> Jan 2019                    | Faculty (across bangalore) | Prof. Sufian Kaki Aslam   |
| 4  | Analog and Digital IC Design flow using Mentor Graphics Tool | 3-Days | 19 <sup>th</sup> 20 <sup>th</sup> Sept., 3 <sup>rd</sup> Oct 2018 | Faculty (inter college)    | Dr. Ipshita/ Prof. Rakhi<br>Mr. Vijendra from CorEl Technologies Ltd. |

## 2. VGST sponsored Research Lab

| 2020-21 |  |          |  |                         |   |
|---------|--|----------|--|-------------------------|---|
|         | Activity   | Duration | Date                                       | Target Audience         | Resource person   |
| 1       | 5-Day FDP on “Advanceement in Signal and Image Processing” | 5 Days   | 8 <sup>th</sup> -12 <sup>th</sup> Feb 2021 | Faculty (inter college) | Dr. Nishant Jain<br>Dr. Arun Balodi,<br>Dr. Yogesh Saria,<br>Md. Rizwan Jaffar<br>Dr. Ambar Bajpai<br>Dr. Arvind K Yadav,<br>Dr. Anjali Gautham,<br>Dr. Shalabh K Mishra<br>Prof. Sufian Kaki Aslam<br>Prof. Ramesh N |

|                |  |        |   |                       |   |
|----------------|--|--------|---|-----------------------|---|
|                |  |        |   |                       | Prof. Sundari T   |
| <b>2019-20</b> |  |        |   |                       |   |
| 1              | 5-Day FDP on Research Writing in High Quality International Journal/Conferences” | 5 Days | 10-14 Aug 2020  | Faculty(across India) | Dr. Arun Balodi,<br>Dr. Ambar Bajpai,<br>Dr. Kishore K Padapenki<br>Dr. Arvind K Yadav,<br>Dr.Gaurav Saini  |
| 2              | Sequential FDP for equipment’s of VGST sponsored Lab                             | 5 Days | 30 <sup>th</sup> July, 16 <sup>th</sup> Aug, 23 Aug, 27 Sept, 15 Oct 2019 | Faculty(in house)     | Mr. Mohammed Hussain<br>StarComm Information Technology Ltd.<br>Raghuveer Etronics,<br>Chetan Prasad and Pallavi Altilogic Technologies.<br>Rakshit from CorEl Technologies |

### **Student Development Activities**

#### **IoT Lab**

| S. No. | Activity             | Duration | Date                   | Target Audience | Task completed  |
|--------|----------------------|----------|------------------------|-----------------|---|
| 1      | Flutter JAM - WeWork | 1        | 06/07/2019 - SATURDAY  | 1               | Building flutter apps                                       |
| 2.     | Cloud Study Jam      | 1        | 03/08/2019 - SATURDAY  | 35              | Hands-on lab on getting started with google cloud platform  |
| 3      | DSC Viewing Party    | 1        | 24/08/2019 - SATURDAY  | 1               | Exposure to sessions on ML, Web, Cloud and more by googlers |
| 4      | Django Session       | 1        | 28/08/2019 - WEDNESDAY | 30              | Basic hands-on and application building with Django.        |

|    |   |   |                        |    |   |
|----|---|---|------------------------|----|---|
| 5  | Hyperloop - Kiran                         | 1 | 05/09/2019 - THURSDAY  | 65 | Session and exposure to tech at hyperloop and engineering competitions  |
| 6  | Paul - Google                             | 1 | 07/09/2019 - SATURDAY  | 1  | Exposure to tech mindset at Google and life lessons from a googler  |
| 7  | Cloud Orientation                         | 1 | 26/09/2019 - THURSDAY  | 1  | Getting started with GCP cloud readiness program  |
| 8  | Tensorflow Roadshow                       | 1 | 01/10/2019 – TUESDAY   | 1  | Interaction and feedback session with the Google Tensorflow Team  |
| 9  | Explore ML                                | 1 | 24/10/2019 - THURSDAY  | 15 | Getting started with ML   |
| 10 | Placement Myth - Alumni - Akshay          | 1 | 25/10/2019 – FRIDAY    | 15 | Mindset to get best placements and life lessons from an alumni who is in IISC.                                      |
| 11 | MakerFaire                                | 1 | 28/10/2019 – MONDAY    | 10 | Our first successful project  |
| 12 | Explore ML                                | 1 | 07/11/2019 - THURSDAY  | 10 | Demo and continuation of ML series  |
| 13 | Makeathon                                 | 1 | 14/11/2019 - THURSDAY  | 5  | mentors and advisors  |
| 14 | MLH - Local Hack Day                      | 1 | 07/12/2019 - SATURDAY  | 35 | Sessions on conversational AI and github  |
| 15 | TinkerCAD- Electronic Simulation & design | 1 | 18/02/2020 - SATURDAY  | 35 | 50+ participants learnt how to use TinkerCAD and also a primer on IoT projects                                      |
| 16 | HashCode - CIA Hub                        | 1 | 20/02/2019 - THURSDAY  | 20 | Participated in hashcode  |
| 17 | Introduction to Quantum Computing         | 1 | 28/02/2019 - FRIDAY    | 6  | Learned the basics of Quantum Computing and also what are the future scope of computation                           |
| 18 | Community chat on Embedded Systems        | 1 | 18/09/2018 – TUESDAY   | 30 | Community interaction initiated. IOT oriented talks   |
| 19 | Android User Interfaces (UI)              | 1 | 19/09/2018 - WEDNESDAY | 18 | Community members realized the importance of User Interfaces. Got a glimpse of how UI is used in Android Ecosystem. |
| 20 | WebDev Lab                                | 1 | 20/09/2018 - THURSDAY  | 30 | Juniors were excited to know about the upcoming trends and technologies in web.                                     |

|    |                                    |   |                        |     |  |
|----|------------------------------------|---|------------------------|-----|--|
|    |                                    |   |                        |     | Together we live coded a portfolio. Domain specific conversations like payments, back-end services and hosting   |
| 21 | Design Thinking                    | 1 | 22/09/2018 - SATURDAY  | 25  | Community members were introduced to the principles of Design Thinking. Together we applied design thinking to common problems   |
| 22 | CPU'ED - CPU Deconstructed         | 1 | 24/09/2018 – MONDAY    | 20  | We dismantled a CPU and learnt all its components. They were so excited that they took home ram sticks and other components  |
| 23 | Discussion on Android              | 1 | 26/09/2018 - WEDNESDAY | 25  | An in-depth understanding of android platform, it's boot up process, how AOSP rom is distributed and customised among the mobile vendors and also how custom roms are built and it's setup process |
| 24 | Intro to Cognitive Computing       | 1 | 27/09/2018 - THURSDAY  | 24  | Everyone were on the same page about AI/ML. We had an interactive and brainstorming session about the future of AI & an open panel discussion with some controversial topics on AI/ML              |
| 25 | Get Drone'd                        | 1 | 28/09/2018 - FRIDAY    | 20  | Theoretical basics and demonstration of drones and its accessories   |
| 26 | How to get your idea to the Market | 1 | 29/09/2018 - SATURDAY  | 24  | Founders talk of HYPERBLOOM, IICDC 2017 Winners and funded by GOI.   |
| 27 | Car in-Depth                       | 1 | 29/09/2018 - SATURDAY  | 20+ | Students from all branches were given an engineering tour of the car being built at college  |
| 28 | Actions on Google                  | 1 | 04/10/2018 - SATURDAY  | 35  | We all built a basic skill to Google Assistant using Actions on Google   |

|    |  |   |  |    |   |
|----|--|---|--|----|---|
|    |  |   |  |    | Platform  |
| 29 | Tensorflow Conference  | 1 | 05/10/2018 - SATURDAY                    | 1  | Explored upcoming features in tensorflow( ML library ), interaction with google tensorflow team   |
| 30 | AOG Hackathon - hosted by Actions on Google Team.                      | 1 | 10/10/2018 - SATURDAY                    | 20 | 4 teams represented ATRIA @ a Google hackathon held at Reva University. We had personal interaction with Googlers   |
| 31 | DevFest by Google Developer Groups and BLRDroid. (Developer Conference | 1 | 13/10/2018 - SATURDAY                    | 24 | A very interactive and informative day with a lot exploratory talks and sessions. Also, got amazing exposure on how tech communities run and how they are impacting lives |
| 32 | AMP (Conference)   | 1 | 24/10/2018 - SATURDAY                    | 8  | Interaction with Google AMP team. AMP(Accelerated Mobile Pages) is the next big way to render web pages   |
| 33 | CTF Hackathon (IOT Next)   | 1 | 26/10/2018 - 27/10/2018 – Monday&Tuesday | 4  | Exposure to hacking and security of IOT   |
| 34 | Startup Weekend (54 hrs Hackathon)                                     | 1 | 26/10/2018 - 28/10/2018 - SATURDAY       | 2  | Steep learning curve on building a tech business. Won 2nd place   |
| 35 | IOT Next Workshops/Master class  | 1 | 30/10/2018 - SATURDAY                    | 20 | Great learning across 5 Workshops/masterclasses relating to IOT and its future  |
| 36 | <u>Volunteer at IoT Next Workshops</u>                                 | 1 | 30/10/2018 - SATURDAY                    | 8  | Networking with Delegates, Exposure to future trends in IoT and interaction with industry executives  |
| 37 | Participation at <u>IoTNext's LoRaWAN Workshop</u>                     | 1 | 30/10/2018 - SATURDAY                    | 24 | Learn and understand the challenged communication channel and protocol for IoT in Smart City, by Tata Communications Limited  |

|    |                                      |   |                                  |    |  |
|----|--------------------------------------|---|----------------------------------|----|--|
| 38 | Participation in IoT Next Conference | 1 | 31/10/2018 - SATURDAY            | 8  | Exposure to future trends in IOT and interaction with industry executives  |
| 39 | Makeathon                            | 1 | 2/11/2018 - 3/11/2018 - SATURDAY | 15 | Participants got an opportunity to ideate at par with best colleges across Bangalore. Organizers facilitated around 100 students to work on real industry problems |
| 40 | Google Cloud Meetup                  | 1 | 2/11/2018 - 3/11/2018 - SATURDAY | 1  | Interaction and feedback session with the Google Cloud Team  |

**VGST sponsored Research Lab (Project done by ECE faculty)**

| 2020-21 |                     |   |                                  |  |
|---------|---------------------|---|----------------------------------|--|
| S. No.  | Faculty Name        | Title of the Project  | Tools and Hardware               | Resulted in Publication                        |
| 1       | Sundari T           | GUI for ECG Interpretation  | MATLAB 2018A                     | No   |
| 2       | Ramesh Nuthakki     | Speech Enhancement based on noise constrained using binary mask techniques    | MATLAB 2018A                     | No   |
| 3       | Pushpa Y& Shobha PC | Design and Simulation of microstrip antenna for wireless application( S Band) | MATLAB 2018A, Antenna test bench | No   |
| 4       | Pavithra K S        | 2 Days Workshop on Signal processing using SciLab                             | MATLAB 2018a                     | No   |
| 5       | Pavithra K S        |   |                                  | Yes (published in IEEE Conference in Feb 2021) |
| 2019-20 |                     |   |                                  |  |

|                |                                     |  |  |    |
|----------------|-------------------------------------|--|--|----|
| 1              | Sundari T                           | ECG acquisition from paper strip data for arrhythmia detection | MATLAB<br>2018a                            | No |
| 2              | Ramesh<br>Nuthakki                  | Speech Enhancement using DD, TSNR, HSNR techniques             | MATLAB<br>2018a                            | No |
| 3.             | Shobha<br>PC &<br>Pushpa Y          | Design and Simulation of UWB microstrip antenna                | MATLAB<br>2018a &<br>Antenna test<br>bench | No |
| <b>2018-19</b> |                                     |  |  |    |
| 1              | Sundari T<br>&<br>Swati<br>Somayaji | Evaluation of Gray Scale Images using single image metrics     | MATLAB<br>2018a                            | No |
| 2              | Ramesh<br>Nuthakki                  | Speech Enhancement using spectral subtraction technique        | MATLAB<br>2018a                            | No |

### **VLSI Research Lab (Projects done by ECE faculty)**

| <b>2020-21</b> |                 |  |                     |   |
|----------------|-----------------|--|---------------------|---|
| S. No.         | Faculty Name    | Title of the Project   | Tools and Hardware  | Resulted in Publication   |
| 1              | Spoorthi<br>S P | Implementation and Comparative analysis of Full adder using 180nm,90 nm and 45nm Technology in Cadence | Virtuoso<br>Cadence | Yes (To be presented in IEEE 5Nano on 28 <sup>th</sup> 29 <sup>th</sup> April 2021) |
| <b>2019-20</b> |                 |  |                     |   |
| 2              | Spoorthi<br>S P | Low Power High Speed Comparator in 180nm CMOS Technology using Cadence                                 | Cadence<br>Tool     | No  |
| <b>2018-19</b> |                 |  |                     |   |
| 3              | P.              | IP Core Generation   | Xilinx              | No  |



|  |              |                         |  |  |
|--|--------------|-------------------------|--|--|
|  | Shalini<br>V | Wallace Tree Multiplier |  |  |
|--|--------------|-------------------------|--|--|

**IoT Research Lab (Projects done by ECE faculty)**

| 2020-21 |                 |   |                    |                         |
|---------|-----------------|---|--------------------|-------------------------|
| S. No.  | Faculty Name    | Title of the Project                                | Tools and Hardware | Resulted in Publication |
| 1       | Dr. Prasuna VNP | Precision agriculture using wireless sensor network | WSN Simulator      | No                      |
| 2019-20 |                 |   |                    |                         |
| 2       | Dr. Prasuna VNP | IoT Protocols                                       | Node MCU           | Yes                     |
| 2018-19 |                 |   |                    |                         |
| 1       | Dr. Prasuna VNP | Challenges in sensor network                        | WSN Simulator      | No                      |