

Laboratories At Information Technology

The Computer Science and Engineering Program at KPR Institute of Engineering and Technology emphasize hands-on-experiences of students in laboratories. Here we have, Computer Practices Lab, Learning and Intelligent Systems Lab, Graphics Vision Lab, Networking and Mobile application Lab, Software Systems Lab, Python Lab, Data structures Lab, Oracle Lab, Information Security Lab and Hardware Lab which are aligned with their regular curriculum. In addition, the department is committed to develop and maintain state-of-the-art labs like Cloud Computing Lab, Intelligent Computing Lab, Data Science Lab, Machine Learning Lab, App Development Centre, and Augmented Reality & Virtual Reality Lab for students and faculty members to up-skill talent to industry standards.

Description of the Laboratories

Regular Labs:

1. High-Performance Computing Laboratory

Objective of HPC laboratory is to facilitate the students with softwares for carrying out numerical computations and analyses using MATLAB and tools necessary for professional 2D drawing, drafting and designing using AutoCAD. This Laboratory is equipped with Dell OptiPlex 7080 MT, i9 Processor 10th Gen, 16Gb RAM/512 Gb PCIe Nvme SSD, Dell wireless keyboard and Mouse, 22" Profession Monitor P2219H. There are 70 i9 systems and two i7 systems and one i3 system which is connected with the LCD projector. Operating Systems available are Windows 10 and Ubuntu 20. Other Softwares available are Microsoft Office, Turbo C4, JDK, Python, Anaconda, Net Beans, MATLAB, Ansys, AutoCAD and seqrte endpoint security

2. Learning and Intelligent System Laboratory

The objective of Learning and Intelligent Systems Laboratory (LIS) is to impart knowledge on Operating systems, designing principles of Operating Systems and implementation procedure of operating systems. The software tools available in this lab are Fusion 360 software, CAD, CAM and CAE tool, SolidWorks is a solid modeling computer-aided design (CAD) and computer-aided engineering (CAE) programs. This lab contains thirty six systems with configuration of Dell OptiPlex- 7060 MT Intel Core i7 Processor, 8GB RAM ,1TB HDD, GT710 GraCrd, Dell Wired Keyboard & Mouse, 19.5" Monitor.

3. Graphics and Visions Laboratory

Main Objective of this Graphics and Vision lab is to make students aware of the concepts underlying modern Computer Graphics and Machine Vision. This Lab works on a wide range of projects in computer graphics, vision, and multimedia. Our current focuses are on multimedia visualization. This lab aimed to motivate students to gain the generic skills to design algorithms for digital image synthesis for a broad-based set of computing problems in various domains. This lab contains 35 Dell OptiPlex 3020 DT Desktop Intel core i3-4130 Processor, Intel H81 CHIPSET Motherboard,4 GB RAM DDR3,500 GB HDD machines. Software available are Argo UML, C, C++.

4. Network Mobile Application Systems Laboratory

The objective of this laboratory is to facilitate the resources required to experiment the computer network problems and to develop mobile application software designed to run on mobile and tablet devices. This Laboratory is equipped with Dell OptiPlex 7080 MT, i9 Processor 10th Gen, 16Gb RAM/512 Gb Pcie Nvme ssd, Dell wireless keyboard and Mouse,22" Profession Monitor P2219H. There are 70 number of i9 systems and two number of i7 systems and i3 system which is connected with the LCD projector.Operating Systems available are Windows 10 and Ubuntu 20. The other softwares available are Microsoft Office, Turbo C4, JDK, Python, Android Studio, and Net Beans.

5. iMAC Laboratory

The objective of the iMAC Laboratory is to give students exposure in mac Operating System and Application Development in macOS. This laboratory contains 34 Apple systems. The system details are, MXWV2HN/A - 27 - inch iMac with Retina 5K display: 3.8 GHz 8 - core 10th generation, intel core i7 processor, 8GB RAM, 512 GB HDD.

6. Python Laboratory

The main objective of the Python Programming Laboratory is to enlighten the programming skills of students and to do variety of programming tasks. This lab provisions project development platform for students. The software tools available in this lab are Pycharm, Anaconda Navigator, pygame. Students are encouraged to develop application using pygame. This lab facilitates adequate skills in programming and will be known to understand the implementation of various applications using python. The hardware components available in this lab are AO-380DTV, Dell OptiPlex 380 Desktop (N-Series) Core 2 Duo 2.93 GHz, 4 GB RAM, 320 GB HDD, 17" Square Monitor of seventy-two systems.

7. Oracle Laboratory

The KPRIET Oracle Lab has been set up to enable students to explore their interested areas. The lab is equipped with 72 systems including i3 processor, 4 GB RAM and 500 GB HD. 24/7 internet facility has been created for the benefits of students, faculty and staff members. The lab is also harnessed with various software packages like C, C++, Java, Oracle and so on.

Special Laboratories

1. Cloud Computing Laboratory

The main objective of the Cloud Computing Laboratory is to develop fundamental, next-generation cloud and storage technologies that support a true application-driven service-oriented computing. It aimed to develop and deploy native cloud solutions to various real-time use cases at corporate standards, train the students and faculty members to enhance their technical skills related to cloud-based solutions and to facilitate consultancy services to the public. This laboratory constitutes, PowerEdge R6515 Rack Server and Dell -New OptiPlex 3070 Tower, GB, 1X8GB, DDR4 non-ECC Memory and also Dell OptiPlex 7070 ,16GB,1TB HDD, Dell OptiPlex -5020 ,8 GM RAM, 1 TB HDD. It also accelerates projects related to Computing Resource Management Techniques, Storage Management Techniques and establishment of secured private cloud environment.

List of Projects

- Cloud Based Patient Monitoring System at Hospital
- Secured Storage on Cloud Using Hybrid Cryptography
- Quality Assurance Solution for Storage as a Service of Cloud Computing
- Secured Resource Sharing in OpenStack Private Cloud
- Infrastructure as a Service (IaaS) with Dynamic Resource Allocation on OpenStack
- Containerized Application for Freelancing Marketplace

2. Intelligent Computing Laboratory

‘Can machines think?’ This question brought Alan Turing to present several opportunities for the research across the computing stack to explore energy-efficient and appropriate machine intelligence. Intelligent Computing Lab facilitates Faculty members and Students to design, create, and develop innovative IoT based applications and enhance the various domain capabilities across several verticals like Smart Health, Smart Agriculture, Smart Manufacturing, and Smart City, build an entrepreneurial system for Internet of Things by creating a start-up community with industry capable talent.

With the advent of Internet of Things (IoT) and the necessity to embed intelligence in all technology that surrounds us, this lab focuses on designing truly functional intelligent systems. Provide an ecosystem and environment for product design, creation, and testing along with validation and incubation, if required. Key areas focused in this lab are hands-on training on IoT platforms projects/prototype development for Societal Problems and enhancing projects to products. This lab contains four systems of Dell 390 i3 processor, 4GB RAM, 500GB HDD with full set configuration and five systems of Dell 7060 i7 PROCESSOR, 8GB RAM, 1TB HDD, 1GB NVIDIA Graphics.

List of Projects

- Automatic Indoor Light On/Off
- Smart Dustbin
- Secret Doorknock
- Smart Vehicle Parking System
- Smart Weather Monitoring System
- Intelligent Smart Shopping and Stock notification Kit

3. Data Science Laboratory

Data Science Lab is established to practice and learn advanced technologies of Computer Science such as Machine Learning, Artificial Intelligence, Deep Learning and Data Mining. Main objective of the Data Science Lab are, to develop new algorithms for data mining, and to use them for social good and to focus on applying machine learning, data mining, and network analysis to real-world problems in society and industry. This lab facilitates to explore novel statistical and computational methods for scalable data mining, machine learning, optimization as well as statistical modelling with complex data sets. It also provides a computing platform for novel languages like Python, R, and OpenCV and other necessary for building a coherent set of ideas, fundamental of Machine Learning, Artificial Intelligence and Deep Learning models and algorithms. Data Science Lab welcomes students, researchers, interns, faculties, newbies and everyone from a broad range of disciplines who are fascinated with the possibilities of turning big and complex

data to knowledge. This lab has totally nine systems, individually Dell 390 i3 PROCESSOR, 4GB RAM, 500GB HDD with full set, five systems of Dell 7060 i7 PROCESSOR, 8GB RAM, 1TB HDD, 1GB NVIDIA Graphics and three systems of Dell 3020 i3 PROCESSOR, 4GB RAM, 500GB HDD configuration.

List of Projects

- Predict weight based on height and gender
- Predicting quality of wine using classification algorithms
- Detecting fake news using machine learning algorithms

4. Machine Learning Laboratory

Machine Learning Lab is established to develop autonomous decision-making systems, which close the perception-action-learning loop while learning from small amounts of data. The laboratory aims to promote and lead scientific advances in data-efficient machine learning, Research areas that fall into this category include probabilistic modelling, incorporation of domain or structural prior knowledge, transfer learning, semi-supervised learning, active learning, Bayesian optimization and reinforcement learning. The lab facilitates faculty members and students to enrich their knowledge in the area of Artificial Intelligence and Data Science. The lab facility is created for all branches of students to implement their projects and products related to Machine learning. Key areas with the use of ML includes training, project Implementation and events. This lab contains system five systems of DELL 7060 i7 PROCESSOR, 8GB RAM, 1TB HDD, 1GB NVIDIA Graphics, two systems of DELL 3020 i3 PROCESSOR, 4GB RAM, 500GB HDD, one system of DELL 3020 i3 PROCESSOR, 4GB RAM, 320GB HDD and one more system with DELL 3020 i3 PROCESSOR, 4GB RAM, 160GB HDD configuration.

List of projects:

- AI Assist
- Object identification and Detection

- Face Mask Detection
- Chatbot Recommender System

5. App Development Laboratory

Our mission is to provide commercial, high-quality innovative solutions for day-to-day requirements. We keep on updating the students with ongoing technologies to transfer them as professional app developers. We guide our students to acquire knowledge and experience that helps and steer them in the right direction. The Lab provides a very good platform to showcase their ideas and to be self- innovative. It bridges the gap between what students learn and what is expected from them in the highly demanding industries. Students are trained to acquire knowledge regarding the marriage of mobile communications and social networking, and begin to design the future of open-source social networking.

6. AR & VR Laboratory

The Augmented Reality and Virtual Reality Laboratory is a unique, world-class, cutting-edge virtual reality facility designed for developing augmented reality (AR) and virtual reality (VR) solutions. The lab facilitates faculty members and students to visualize designs, develop immersive VR environments, and to experiment new VR and AR technologies. The facility is created for all branches of students to design and prototype their solution. Key areas with the use of AR & VR includes training, prototyping/design, events. This lab contains one Alienware Aurora R9 Gaming Desktop system and two systems of Dell G5 Gaming Desktop Specification.

List of projects

- Deployable virtual reality application
- Simulation of the campus
- Modeling of the research facility

7. Information Security Laboratory

The Information Security Laboratory is a specialized, industry-oriented facility designed for learning, teaching, and experimentation in information and cybersecurity. The lab provides students and faculty members with a practical environment to understand security threats, implement security mechanisms, analyze network traffic, and develop solutions for protecting computer systems and networks. The facility supports hands-on learning in areas such as network security, ethical hacking, cryptography, digital forensics, vulnerability assessment, and security monitoring. The laboratory enables students to gain practical exposure to current information security tools and technologies and develop secure solutions for real-world applications.

List of projects

- Network Security Monitoring and Intrusion Detection System
- Vulnerability Assessment and Penetration Testing
- Web Application Security Testing