Report of the

One day Workshop
On

Expert talk on Startup & Entrepreneurship
(18th January, 2021)

Organised by
Under the aegis of Institution's Innovation Council (IIC)

Rao Pahlad Singh Group of Institutions
Mahendergarh
Background

The Institution Innovation Council (IIC) of Rao Pahlad Singh Group of Institutions organized a one day workshop on Jan 18, 2021 titled “Expert talk on Startup & Entrepreneurship”. The workshop was conducted live through Zoom meeting app and also live on facebook.

Objectives

The objectives of this workshop are to:
1. Make students aware of the importance of Startups and Entrepreneurship in coming future.
2. Make them understand that How their unique ideas will help them to be a job creator and also the importance of their participation to make India a “Atmanirbhar Bharat”.
3. Identification of opportunities in entrepreneurship.

Participants

It was well received by more than 200 students from various Dept. of Engineering and Dept. of Management.

Brief of the Program

The workshop was held on January 18th, 2021, Monday, at 12.30 PM. Dr. Mahesh Kumar Yadav, Director of RPSGOI started the session with a warm welcome of all the attendees and also introduced the guest speaker. The session was taken over by the guest speaker Ms. Sunanda Yadav who is currently working as Retail Sales and Marketing Manager in Intel Technology India Pvt. Ltd.

She initially started off by defining the Word ‘Entrepreneurship’ and gave the clear idea about the same. She mentioned all the essential factors to become a entrepreneurship. Along with knowledge, An individual needs to put lots of time patience and dedication to become a successful entrepreneur.

Further, She stressed the time factor that how a good idea at right time opens up the path to become a successful entrepreneur. She gave so many examples of startups that had arrived at wrong time and didn’t work well in the market.

She also emphasized on TOYCATHON 2021(A step by Government of India to challenge India’s Innovative minds) and explained how the participation of youth will impact the cultural & traditional development of country.

The entire session was extremely interactive session. The workshop ended with question and answer session in which students get their doubts solved.

Principal

R.P.S College of Engg. & Tech
Balana Mohindergarh (H.R.)
Feedback from the Participants

The participants were highly satisfied with the workshop, and they found all the useful. Some of the Participants also get themselves registered in TOYCATHON 2021. The participants were thankful to the IIC, RPSGOI for conducting this workshop.

Glimpse of Session
1. **Resource Persons**

Ms. Sunanda Yadav, Retail Sales and Marketing Manager, Intel Tech. Pvt. Ltd.

2. **Coordinators:**

Prof. R.S. Yadav, Dean Academic Affairs, RPSGOI
Ms. Paridhi Tutlani, Asst. Prof., RPSGOI
A Report on

“From your Ph.D/ Master’s Thesis to a start-up”
23 April 2021 (Friday)

Organized by
MHRD’s Innovation Cell (MIC)

Rao Pahlad Singh Group of Institutions
Mahendergarh
Background:
The MHRD's Innovation Cell (MIC) organized a Session on “From your Ph.D/ Master's Thesis to a start-up” on 23 April 2021 (Friday). The expert talk was conducted live on youtube.

Participants:
It was attended by 20 plus faculty members from various Dept. of Engineering and Dept. of Management of the RPS institute.

Objective:
How one can convert Ph.D/ Master's Thesis to a start-up.

Brief of the Program:
The keynote speaker of the session was Dr. Anand Deshpande, Founder and CMD, Persistent Systems and the session chaired Prof Anil D. Sahasrabuddhe, Chairman, AICTE. Guest of Honour of the program were Dr. M.P. Poonia, Vice-Chairman, AICTE. Prof. Rajive Kumar, Member Secretary, AICTE. Dr. Abhay Jere, Chief Innovation Officer, MoE's Innovation Cell.

Outcome:
Dr. Anand Deshpande highlighted the skills of entrepreneurship that a research scholar should possess during his course. He explained the process of Lean start-up by giving an example of Toyota Production. He also explained how Lean start-up helps. Further in his talk, Dr. Deshpande explained about Minimum Viable Product (MVP). Further he explained business proportion citing the example of Airbnb and enlightened about 9 different areas that are required for value proportion. He said that mission plays a role to make a business successful. The core idea of business was given a thrust during discussion. A financial calculation was explained in the presentation. A business matrix was also explained. Dr. Deshpande presented the chart of cash flow. The talks delivered were full of information and knowledge and RPS group of institutions presents its sincere thanks to the key note speaker and the organizers.
A Report on

Expert talk on Intellectual Property Rights (IPRs)
(25th February, 2021)

Organized by
Under the aegis of Institution’s Innovation Council (IIC)

Rao Pahlad Singh Group of Institutions
Mahendergarh
Background:
The Institution Innovation Council (IIC) of Rao Pahlad Singh Group of Institutions organized an Expert talk on Intellectual Property Rights on Feb 25, 2021. The expert talk was conducted live through Zoom meeting app and also stream lived on Facebook.

Objectives:
The objectives of this expert talk were as follows:
1. The main aim was to impart greater awareness about the issue of IPRs, which gained a special importance for all the domains of socio-economic development.
2. Make students and faculties aware of the importance of IPRs.
3. Make them understand that how their unique ideas can be get patented.

Participants:
It was attended by faculty members and 200 students from various Dept. of Engineering and Dept. of Management of the institute.

Brief of the Program:
The expert talk was held on January 25th Feb. 2021, Thursday, at 12.30 PM. Mr. Manish Kaushik, Assistant Professor of RPSGOI started the session with a warm welcome from all the attendees and also introduced the guest speaker. The session was taken over by the guest speaker Mr. Rutwik Rao who is currently working as a Patent Agent, Trademark attorney, and practices before the Bombay High Court, NCLT, and IPAB.

He started by defining the Word ‘Intellectual’ and gave a clear idea about the same. He mentioned all the essential factors related to IPRs. Then in detail, he covers up the terms patent, copyright, and trademark, how these differ from each other, what are their main specifications, how these can be filed in their relevant areas.

Further, with the help of a flow chart, he talked about how a patent can be filed and what are the stages one has to go through while filling a patent.

The entire session was full of good examples and was very interactive. The workshop ended with a question and answer session in which students get their doubts solved. At the end Dr. JK Gothwal, Vice-principal RPSGOI thanked our keynote speaker and the entire IIC team for conducting the expert talk on the topic of great interest for all.

RPS College of Engg. & Tech
Balana Mohindergarh (HR.)

Appends
Principal
Feedback from the Participants:
A feedback from the faculty members and students were taken, the participants were thankful to the IIC, RPSGOI for conducting this expert talk.

Banner:

Glimpse of Session:
Resource Persons:
Mr. Rutwik Rao Patent Agent, Trademark attorney, and practices before the Bombay High Court, NCLT, and IPAB.

Coordinator:
Mr. Manish Kaushik, Asst. Prof. & member IIC cell RPSGOI.
A Report on

KAPILA: Kalam Program for IP Literacy and Awareness
15-23 October 2020

Organized by
MHRD's Innovation Cell (MIC)

Rao Pahlad Singh Group of Institutions
Mahendergarh
Background:
The MHRD's Innovation Cell (MIC) organized a National Intellectual Property Literacy Week 15-23 October 2020 on KAPILA: Kalam Program for IP Literacy and Awareness.

Participants:
It was attended by 20 plus faculty members and students from various Dept. of Engineering and Dept. of Management of the RPS institute.

Objective:
Knowing in detail about Intellectual Property filing, mechanism and methodology.

Brief of the Program:
On day 1 The program was inaugurated by Shri Ramesh Pokhriyal 'Nishank', Hon'ble Education, Minister, MoE. On day 2 Dr. Abhay Jere Chief Innovation Officer, MIC highlighted on Importance of Maharshi Bharadwaj IP Literacy Initiative and Dr. Mohit Gambhir Director, MIC on Importance and scope of IPR in Academic Researches. Day 3 started by Mr. Varun Chamadiya Founder, Proactive delivering talks on Lateral Thinking - How to generate revolutionary ideas, later on institutes are asked to encourage student/ faculty/ staffs to write case studies/articles regarding Innovation & Intellectual Property, entrepreneurial culture. On day 4 Shri. Prabuddha Ganguli CEO Vision – IPR delivered a talk on Seeding Ideas to Harvesting Innovation for Social Good: Role of Intellectual Property Rights and Shri. Sameer Kumar Swaroop, Deputy Controller of Patents & Designs on IP Clinic. The day ended with an activity- Create a short video on best innovative practices/innovation and incubation facilities existing in campus to support student regarding innovation, Intellectual Property and entrepreneurship. On day 5 Dr. Unnat Pandit Program Director Atal Innovation Mission highlighted on Building IP, Innovation Ecosystem in Academic Institutions and Shri. Saroj Kumar Deputy Controller of Patents & Designs on IP Clinic. The day was involving student music clubs or bands to create a song on “Innovation, Intellectual Property & entrepreneurship”. Day 6 started with a talk on Prior Art Search & Patent drafting – Key Insights by Dr Sheetal Chopra India Lead - IPR Advocacy, Ericsson India Ltd. And on - IP Clinic by Dr. Nilanjana Mukherjee Deputy Controller of Patents & Designs. The activity of the day was Place / Share a banner in Institute / WhatsApp / Facebook for awareness among students regarding the campaign. And on final day 7, Dr Sheetal Chopra India Lead - IPR Advocacy, Ericsson India described about Patent Filing Process and Dr. Mohit Gambhir, Director. MIC carried out Feedback and Suggestion of One week Program. The day ended with an activity identifying existing Product ready of applying for patent.

Outcome:
This 7 day program gave in depth detailing about intellectual property rights and need of IP filing, mechanism and methodology involved in filing IP in India and globally, especially among students and faculty of higher education institutions.
A Report on
National Webinar on Research, Innovation and Ranking
(11th August 2021 Wednesday)

Organized by
Institution’s Innovation Council (IIC)

Rao Pahlad Singh Group of Institutions
Mahendergarh
Background:
On account of “One Year of National Education Policy 2020”, Institution Innovation Council (IIC) organized a National Webinar on Research, Innovation, and Ranking on 11th August 2021 Wednesday. Dr. Rajkumar Ranjan Singh, Hon’ble Minister of State for Education and External Affairs, Govt. of India was the ‘Chief Guest’ for the program while Prof. K. VijayRaghavan, Principal Scientific Advisor, Govt. of India was the ‘Guest of Honor’. The webinar was conducted live on YouTube app.

Participants:
It was attended by 25 plus faculty members from various Dept. of Engineering and Dept. of Management of the RPS institute.

Objective:
Collaborating multi-discipline areas research, innovation and ranking.

Brief of the Program:
The program started with a welcome address by Shri Rakesh Ranjan, Additional Secretary(TE) and opening remarks by Shri Amit Khare, Secretary, HE. Dr. K. VijayRaghavan, Principal Scientific Advisor delivered the Keynote Address, followed by an Inaugural address by Dr. Rajkumar Ranjan Singh, Hon’ble Minister of State for Education and External Affairs, Govt. of India and vote of thanks by Dr. Abhay Jere, Chief Innovation Officer (CIO), Ministry of Education.
The webinar was comprised of three modes of panel discussion including 1) Ensuring Excellence and Relevance in Research 2) Building Innovation & Entrepreneurial Ecosystem and 3) Strategy for HEIs for excelling in Global Rankings. Each panel discussion was taken care by three separate experts.
The talks delivered by all the higher dignitaries were full of information and knowledge and On account of completing one year of national education policy, RPS group of institutions presents its sincere greetings.

Outcome:
The talks by the experts were full of examples and present scenarios, and the webinar insights about the following points in detail:
1) How research and innovation can be of great help in solving the problems of the common man.
2) Private players can be of great help for startup eco-system, innovation, and entrepreneur apart from government support.
3) Importance of innovation starting from school.
4) Reforms in the examination pattern.
5) Reforms in the global ranking system for institutions.
6) And importance of collaboration in research, innovation, and ranking.
A Report on
Why IP is Important in Academia?
(26th April 2021 Monday)

Organized by
MHRD's Innovation Cell (MIC)

Rao Pahlad Singh Group of Institutions
Mahendergarh
Background:
The MHRD's Innovation Cell (MIC) organized a Session on “Why IP is Important in Academia?” on 26th April 2021 Monday. The expert talk was conducted live on YouTube.

Participants:
It was attended by 25 plus faculty members from various Dept. of Engineering and Dept. of Management of the RPS institute.

Objective:
Importance of Intellectual Property rights from Academic point of view.

Brief of the Program:
On account of world IP day, the MHRD's Innovation Cell (MIC) organized a Session on “Why IP is Important in Academia?” The keynote speakers of the session were Dr. Abhay Jere, Chief Innovation Officer, MOE Innovation Cell and Dr. Mohit Gambhir, Innovation Director, MOE Innovation Cell.
The talks delivered were full of information and knowledge and RPS group of institutions presents its sincere thanks to the key note speaker and the organizers.

Outcome:
Attendees of this session get to know about details and procedure related to intellectual property rights and simultaneously how IP is related to quality research. The main aim was to impart greater awareness about the issue of IPRs, which gained a special importance for all the domains of socio-economic development.
RPS COLLEGE OF ENGINEERING & TECHNOLOGY
Electronics and Communication Department
Project Reports
Project 1: Hydroponics Project
Made by Hitesh & Sanjeev in the year 2019.

A hydroponic project utilizes a soilless cultivation method where plants are grown in nutrient-rich water solutions, enabling efficient nutrient absorption directly through their roots. Typically set up in various systems like deep water culture or nutrient film technique, hydroponics involves meticulously managing pH levels, nutrient concentrations, water quality, and lighting to optimize plant growth. By harnessing artificial light sources such as LED grow lights and carefully monitoring environmental conditions, hydroponic projects offer advantages like accelerated growth rates, higher yields, water conservation, and suitability for environments with limited space or poor soil quality, ultimately providing a sustainable and efficient approach to modern agriculture.

Application: Hydroponic projects have a variety of uses across different sectors:

Agriculture and Food Production: Hydroponic systems allow for the cultivation of crops in areas with limited arable land or poor soil quality. They are particularly useful in urban environments where space is limited, enabling vertical farming and rooftop gardens. Additionally, hydroponics can extend growing seasons, providing fresh produce year-round regardless of climate conditions.
Research and Education: Hydroponic projects are valuable tools for scientific research and education. They allow researchers to study plant growth, nutrient uptake, and environmental factors in controlled settings. Educational institutions often use hydroponics to teach students about plant biology, sustainability, and agricultural practices.

Commercial Farming: Many commercial growers utilize hydroponic systems to produce high-value crops like lettuce, herbs, and tomatoes. Hydroponic farming can offer higher yields and faster growth rates compared to traditional soil-based methods, making it an attractive option for commercial agriculture.

Community and Home Gardening: Hydroponic projects can be scaled down for use in community gardens or even home settings. They provide an accessible way for individuals to grow their own fresh produce, regardless of available outdoor space or soil quality. Home hydroponic systems are becoming increasingly popular for growing herbs, vegetables, and flowers indoors.

5. Environmental Remediation: Hydroponic projects can also be used for environmental purposes, such as phytoremediation. Certain plants grown hydroponically can absorb and detoxify pollutants from water or soil, making them useful for cleaning up contaminated sites.
Project 2: Automatic Solar Panel
Made by Nakul, Parveen, Rahul, and Naveen in the year 2024

An automatic solar panel system integrates solar panels with advanced automation technology to optimize energy generation efficiency. This system typically includes features such as sun tracking, which adjusts the orientation of the panels to maximize sunlight exposure throughout the day, thereby increasing energy output. Additionally, automated cleaning mechanisms remove dust and debris from the panel surfaces, ensuring they remain clean and efficient. Remote monitoring and control capabilities enable users to monitor system performance in real-time, receive alerts for maintenance needs, and make adjustments as necessary, enhancing overall reliability and performance. By combining solar panels with automation technology, automatic solar panel systems offer a highly efficient and sustainable solution for renewable energy generation.

Application:

Residential Solar Power Systems: In homes, automatic solar panels optimize energy generation by adjusting panel orientation to track the sun's position throughout the day. This maximizes energy capture, increasing the efficiency of residential solar power systems and reducing electricity bills.

Commercial and Industrial Buildings: Automatic solar panels are used in commercial and industrial settings to power operations and reduce reliance on traditional grid electricity. By automatically adjusting panel angles and cleaning...
surfaces, these systems ensure consistent energy production, contributing to cost savings and sustainability efforts.

Off-Grid Installations: In remote areas where access to traditional electricity grids is limited, automatic solar panels provide a reliable power source. These systems can be crucial for off-grid installations such as telecommunications towers, weather stations, and rural electrification projects, ensuring continuous energy supply with minimal manual intervention.

Solar Farms and Utility-Scale Installations: Large-scale solar farms utilize automatic solar panels to optimize energy production across expansive arrays of panels. Sun-tracking technology maximizes solar exposure and energy yield, making utility-scale solar installations more efficient and economically viable for supplying power to the grid.

Mobile and Portable Applications: Automatic solar panels are employed in mobile and portable applications like RVs, boats, and outdoor events. These systems can be integrated into portable solar generators or charging stations, providing convenient and sustainable power sources for recreational activities, emergency situations, and temporary installations.

Agricultural and Irrigation Systems: In agriculture, automatic solar panels power irrigation systems, providing a sustainable solution for water management. These systems can automatically adjust panel angles to maximize energy capture for powering pumps and other equipment, facilitating efficient irrigation in remote or off-grid agricultural areas.

Space Exploration and Satellites: Automatic solar panels are used in space exploration missions and satellite deployments. Sun-tracking technology ensures optimal solar exposure for powering spacecraft and instruments, enabling extended missions and scientific exploration in space.
Project 3: 3-D Printer
Made by Keshav, Mahender, Parikshit, and Manish in the year 2022.

A 3D printer is a revolutionary manufacturing technology that creates three-dimensional objects layer by layer from digital designs. Using additive manufacturing processes, 3D printers build objects by depositing materials such as plastic, metal, or resin in successive layers, following instructions from computer-aided design (CAD) files. This technology allows for the production of complex and customized items with intricate geometries, impossible to achieve with traditional manufacturing methods. From prototypes and industrial parts to custom products and medical implants, 3D printing offers versatility, speed, and cost-effectiveness, democratizing manufacturing and unlocking endless possibilities for innovation across industries ranging from aerospace and automotive to healthcare and consumer goods.

Application:
The applications of 3D printing span across various industries and fields, including:
Prototyping and Product Development: 3D printing is widely used in product design and development to create prototypes quickly and cost-effectively. It allows designers to iterate and test their ideas before moving to mass production, reducing time to market and overall development costs.

Manufacturing: 3D printing is increasingly being used in manufacturing for producing end-use parts and components. Industries such as aerospace, automotive, and healthcare utilize 3D printing to manufacture complex and customized parts with reduced lead times and material waste.

Healthcare: In healthcare, 3D printing is used to create patient-specific medical implants, prosthetics, and anatomical models for surgical planning and training. It enables personalized healthcare solutions and improves patient outcomes through customized treatments.

Education: 3D printing is becoming a valuable tool in education, allowing students to learn about design, engineering, and manufacturing processes in a hands-on manner. Educational institutions use 3D printers to teach STEM concepts and foster creativity and problem-solving skills.

Architecture and Construction: Architects and engineers utilize 3D printing to create scale models, prototypes, and architectural elements with intricate designs. It enables rapid prototyping and visualization of complex structures, facilitating the design process and client communication.

Art and Design: Artists and designers use 3D printing to create sculptures, jewelry, fashion accessories, and other artistic creations with intricate details and unique designs. It offers new avenues for artistic expression and experimentation with different materials and techniques.

Consumer Goods: 3D printing is used in the production of consumer goods such as footwear, eyewear, and household items. It enables customization and personalization of products to meet individual preferences and requirements, enhancing customer satisfaction and brand loyalty.

Automotive and Aerospace: The automotive and aerospace industries leverage 3D printing for prototyping, tooling, and manufacturing of lightweight components with complex geometries. It enables design optimization, performance enhancement, and cost reduction in vehicle and aircraft production.

Food and Culinary Arts: 3D printing is emerging as a technology for creating edible food products, such as chocolates, pastries, and customized confections. It enables chefs and food enthusiasts to experiment with shapes, textures, and flavors, pushing the boundaries of culinary creativity.
**Project 4: Smart Car Simulation**  
*Made by Sanjeev, Hitesh, Abhishek, and Mohit in the year 2021.*

Smart car simulation involves the use of advanced computer models and simulations to emulate the behaviour and performance of smart or autonomous vehicles in various scenarios and environments. Utilizing sophisticated software algorithms, sensor data, and artificial intelligence, these simulations replicate real-world driving conditions, including traffic patterns, road obstacles, and weather conditions. By running simulations, engineers and developers can assess the safety, reliability, and efficiency of smart car systems, test different algorithms and control strategies, and identify potential issues or improvements before deploying them in actual vehicles. Smart car simulation plays a crucial role in the development and validation of autonomous driving technologies, enabling faster iteration, optimization, and deployment of intelligent transportation systems.

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Application:

**Autonomous Vehicle Development:** Simulation is crucial for developing and testing autonomous driving algorithms and systems. Engineers use simulated environments to assess the performance of self-driving vehicles in diverse scenarios, such as urban streets, highways, and adverse weather conditions. This enables iterative refinement of algorithms for perception, decision-making, and control, ultimately enhancing the safety and reliability of autonomous vehicles.
Safety Assessment and Certification: Smart car simulation is used to evaluate the safety of autonomous vehicles and obtain regulatory certifications. By simulating a wide range of hazardous scenarios, such as collisions, pedestrian interactions, and emergency maneuvers, developers can assess the vehicle's ability to avoid accidents and mitigate risks. Simulation-based safety assessments help demonstrate compliance with safety standards and regulations before deploying autonomous vehicles on public roads.

Training and Education: Simulation provides a safe and cost-effective platform for training autonomous vehicle operators, engineers, and researchers. Virtual environments allow individuals to gain hands-on experience in operating and debugging autonomous systems without the risk associated with real-world testing. Additionally, educational institutions use smart car simulation to teach students about autonomous vehicle technologies, algorithms, and challenges in a practical and interactive manner.

Traffic Management and Urban Planning: Smart car simulation helps city planners and transportation agencies assess the impact of autonomous vehicles on traffic flow, congestion, and urban mobility. By modeling the interactions between autonomous and human-driven vehicles, as well as infrastructure elements like traffic signals and road networks, simulation tools enable policymakers to evaluate the effectiveness of various traffic management strategies and infrastructure investments.

Vehicle-to-Everything (V2X) Communication: Simulation facilitates the development and testing of vehicle-to-everything (V2X) communication technologies, which enable vehicles to communicate with each other and with surrounding infrastructure. By simulating communication protocols, network congestion, and data exchange scenarios, developers can evaluate the reliability and performance of V2X systems in enhancing safety, efficiency, and connectivity in smart transportation ecosystems.

Fleet Management and Optimization: Smart car simulation assists fleet operators and logistics companies in optimizing the operations of autonomous vehicle fleets. By modeling fleet dynamics, route planning algorithms, and demand patterns, simulation tools help optimize vehicle utilization, minimize idle time, and reduce operational costs. Fleet managers can use simulation-based decision support systems to plan routes, schedule maintenance, and allocate resources efficiently.
Project 5: MEDI Robot Project
Made by Devender, ayush, Rohit and Yogeshin the year 2022.
"Medi Robo" likely refers to a medical robot or robotic system designed to assist in various healthcare tasks. These robots are a part of the rapidly growing field of medical robotics, which aims to integrate robotics and automation into healthcare to improve patient outcomes, enhance efficiency, and alleviate the burden on healthcare providers.
Medical robots can serve various functions, including surgical assistance, rehabilitation, diagnostics, medication dispensing, and patient care. They are equipped with advanced sensors, actuators, and computer algorithms that enable them to perform precise and delicate tasks under the supervision of trained medical professionals.
One of the primary advantages of medical robots is their ability to enhance the accuracy and consistency of medical procedures, reducing human error and improving patient safety. For example, surgical robots can provide surgeons with enhanced visualization, dexterity, and control during minimally invasive procedures, leading to shorter recovery times and better surgical outcomes.
Applications:
Medical robots have a wide range of applications across various healthcare settings. Here are some common applications of medical robots:

**Surgical Robots:** Surgical robots are perhaps the most well-known application of medical robotics. These systems assist surgeons in performing minimally invasive procedures with enhanced precision and dexterity. Surgical robots are used in procedures such as laparoscopic surgery, cardiac surgery, orthopedic surgery, and neurosurgery.

**Telepresence Robots:** Telepresence robots enable remote medical consultations and examinations. They consist of a mobile robotic platform with a screen and camera that allows healthcare providers to interact with patients and other healthcare professionals from a distance. Telepresence robots are particularly useful in telemedicine applications, enabling specialists to assess patients in rural or underserved areas, provide medical education, and collaborate on treatment plans.

**Rehabilitation Robots:** Rehabilitation robots assist patients in recovering from injuries or disabilities by providing targeted exercises and therapies. These robots can help patients regain mobility, improve muscle strength, and facilitate motor recovery. Rehabilitation robots come in various forms, including robotic exoskeletons for assisting with walking or upper limb movements, robotic arms for physical therapy, and robotic platforms for balance and gait training.

**Pharmacy Robots:** Pharmacy robots automate medication dispensing and management tasks in hospitals and pharmacies. These systems can accurately count, package, label, and dispense medications, reducing the risk of errors and improving medication adherence. Pharmacy robots also streamline inventory management and medication distribution workflows, allowing healthcare providers to focus more on patient care.

**Assistive Robots:** Assistive robots are designed to support patients with activities of daily living, particularly the elderly or individuals with disabilities. These robots can help with tasks such as mobility assistance, personal hygiene, medication reminders, and household chores. Assistive robots aim to enhance independence and quality of life for individuals who may require additional support due to aging, injury, or disability.

**Diagnostic Robots** Diagnostic robots assist healthcare professionals in collecting and analysing patient data for diagnostic purposes. These robots may include devices for automated specimen collection, diagnostic imaging systems, and robotic instruments for conducting diagnostic procedures such as biopsies. Diagnostic robots can improve the speed and accuracy of diagnoses, leading to more effective treatment decisions and better patient outcomes.
Project 6: Quadcopter drone

Made by Lakshya, Manish, Nitesh, Parkshit and Mahenderin the year 2022.

Quadcopter drones, commonly known as "quad drones" or simply "quads," are unmanned aerial vehicles (UAVs) equipped with four rotors arranged in a square configuration. They have gained significant popularity in recent years due to their versatility, ease of operation, and wide range of applications. Here's an introduction to quadcopter drones:

Design and Structure: Quadcopter drones feature a simple design consisting of four propellers (two clockwise and two counter clockwise) attached to motors, arranged at the ends of four arms extending from a central body. The motors provide lift and maneuverability by varying the speed of rotation of each propeller independently. This design offers stability and agility, allowing quadcopters to hover, fly in any direction, and perform aerial maneuvers with precision.

Flight Capabilities: Quadcopter drones are capable of vertical take-off and landing (VTOL) and can hover in place, making them suitable for various aerial tasks. They can fly at different altitudes and speeds, depending on the model and specifications. Most quadcopters are equipped with gyroscopes, accelerometers, and other sensors to maintain stability and control orientation during flight.
Applications: Quadcopter drones have diverse applications across industries, including:

Photography and Videography: Quadcopters equipped with high-resolution cameras are used for aerial photography, cinematography, and surveillance, capturing stunning aerial views and footage for various purposes.

Agriculture: Agricultural drones are used for crop monitoring, spraying pesticides or fertilizers, and assessing crop health and yield. They help farmers optimize crop management practices and improve agricultural productivity.

Mapping and Surveying: Quadcopters equipped with mapping and surveying payloads are utilized for land surveying, 3D mapping, terrain modeling, and infrastructure inspection. They provide accurate and detailed aerial data for urban planning, construction, and environmental monitoring.

Search and Rescue: Quadcopter drones are deployed in search and rescue missions to locate missing persons, assess disaster areas, and deliver supplies to inaccessible or hazardous locations. Their agility and aerial capabilities make them valuable tools for emergency response teams.

Recreational and Hobbyist Use: Quadcopter drones are popular among hobbyists and enthusiasts for recreational flying, aerial racing, and drone photography competitions. They offer an exciting and immersive way to explore the skies and capture breathtaking aerial images and videos.
Project 7: Bluetooth Car Project
Made by Mohit and Kunal in the year 2023.

A Bluetooth car, often referred to as a "Bluetooth-enabled car" or simply a "Bluetooth car kit," is a vehicle equipped with Bluetooth technology that enables wireless communication between the car's audio system and external devices such as smartphones, tablets, or other Bluetooth-enabled devices. Here's an introduction to Bluetooth cars sex types.

Bluetooth Technology: Bluetooth is a wireless communication standard that allows devices to exchange data over short distances using radio waves. In the context of cars, Bluetooth technology enables hands-free calling, audio streaming, and other connectivity features without the need for physical cables.

Hands-Free Calling: One of the primary features of a Bluetooth car is hands-free calling, which allows drivers to make and receive phone calls directly through the car's audio system. Calls can be initiated using voice commands or buttons on the car's dashboard or steering wheel, and audio is transmitted through the car's speakers.

Audio Streaming: Bluetooth cars also support audio streaming, allowing users to play music, podcasts, or other audio content from their Bluetooth-enabled devices through the car's speakers. This feature enables drivers to enjoy their favorite music or entertainment while on the road.

Voice Commands: Many Bluetooth cars support voice recognition technology, allowing drivers to control various functions using voice commands. This includes making phone calls, selecting music tracks, sending text messages, and accessing navigation features without taking their hands off the wheel.

Phonebook Integration: Bluetooth cars can sync with the user's smartphone to access their contacts, making it easy to place calls without manually dialling numbers.
Incoming calls also display the caller's information on the car's audio system, providing additional convenience and safety.

**Audio Quality:** Bluetooth cars typically offer high-quality audio playback for both phone calls and music streaming, ensuring clear and crisp sound through the car's speakers. Advanced audio codecs such as AAC and aptX are often supported to deliver superior audio performance.

**Compatibility:** Bluetooth cars are compatible with a wide range of Bluetooth-enabled devices, including smartphones, tablets, and MP3 players, regardless of the operating system (iOS, Android, etc.). They also support various Bluetooth profiles for different functionalities, such as Hands-Free Profile (HFP) and Advanced Audio Distribution Profile (A2DP).

**Installation and Integration:** In many cases, Bluetooth functionality is integrated directly into the car's audio system, either as a standard feature or as an optional upgrade. However, for older vehicles without built-in Bluetooth support, aftermarket Bluetooth car kits are available, which can be installed professionally or as do-it-yourself projects to add Bluetooth connectivity to existing audio systems.

**Safety and Convenience:** Bluetooth cars offer both safety benefits and convenience for drivers. Hands-free calling helps minimize distractions and improves road safety by allowing drivers to keep their hands on the wheel and eyes on the road while making phone calls. Additionally, features like voice commands and phonebook integration enhance convenience and ease of use, making it easier for drivers to stay connected while driving.
A smart city is a term used to describe an urban area that utilizes technology and data-driven solutions to enhance the quality of life for its residents, improve efficiency in urban operations, and promote sustainability and economic development. These cities leverage various technologies, including the Internet of Things (IoT), artificial intelligence (AI), data analytics, and digital infrastructure, to address urban challenges and create more connected, resilient, and liveable environments.

Integration of Technology: Smart cities integrate technology into various aspects of urban life, including transportation, energy management, public safety, waste management, healthcare, and governance. This integration enables the collection and analysis of data from sensors, devices, and digital systems to optimize city operations and services.

Key Components:
- **Internet of Things (IoT):** IoT devices such as sensors, cameras, and actuators are deployed throughout the city to collect real-time data on environmental conditions, traffic flow, energy usage, and other parameters.
- **Data Analytics:** Advanced data analytics and machine learning algorithms are used to analyze the vast amounts of data generated by IoT devices, providing insights that inform decision-making and enable predictive modeling for various urban systems.
**Digital Infrastructure**: Smart cities invest in digital infrastructure, including high-speed internet connectivity, smart grids, and communication networks, to support the seamless transmission of data and enable connectivity across different urban systems.

**Citizen Engagement**: Smart cities prioritize citizen engagement and participation through digital platforms, mobile apps, and social media channels, allowing residents to provide feedback, access services, and participate in decision-making processes.

**Sustainability**: Sustainability is a key focus of smart cities, with initiatives aimed at reducing energy consumption, minimizing environmental impact, promoting renewable energy sources, and implementing green infrastructure solutions.

**Mobility Solutions**: Smart transportation systems incorporate technologies such as intelligent traffic management, real-time public transit information, ridesharing platforms, and electric vehicle infrastructure to improve mobility, reduce congestion, and enhance accessibility.

**Safety and Security**: Smart cities deploy advanced surveillance systems, emergency response networks, and predictive analytics tools to enhance public safety, prevent crime, and mitigate risks during emergencies and natural disasters.

**Benefits**: 
**Improved Quality of Life**: Smart cities enhance the quality of life for residents by providing efficient public services, optimizing transportation systems, reducing pollution, and creating vibrant and inclusive urban spaces.

**Enhanced Efficiency**: By leveraging technology and data-driven solutions, smart cities streamline urban operations, reduce resource consumption, and enhance productivity across various sectors.

**Sustainability**: Smart cities promote sustainability by reducing carbon emissions, conserving resources, and adopting eco-friendly practices that contribute to environmental conservation and resilience.

**Innovation and Economic Development**: Smart cities stimulate innovation and economic growth by fostering collaboration between government, industry, academia, and the community, attracting investment, and creating opportunities for entrepreneurship and job creation.
RPS GROUP OF INSTITUTIONS

Report on

‘Making and Demonstrating a Robo-boat during Yugaantar 2K23’

at

RPS CET, MAHENDERGARH

13/03/2023 to 15/03/2023
A group of Electrical Engineering students from 1st and 2nd year made a wirelessly controlled Robo-boat for the demonstration purpose during Yugaantar 2K23 on 13th March, 2023 to 15th March, 2023. Many students from different streams and backgrounds came during this demonstration. They were introduced with the basic design and electrical circuitry of the project. Students operated the Robo-boat and had fun also. The main objective behind this was to inspire the students towards innovation, and applying the engineering knowledge and skills to realize the physical things and processes.

The key points discussed during the demonstration were:

- Design of boat to make it float
- Wireless data transfer using RF module
- Design of remote-control logic

The learning of students after making of this project:

- Basic fundamentals of circuit simulation, PCB design & etching, and soldering
- Wireless data transfer using RF module
- Designing of circuit logics
The students took the guidance from Er. Vishal Kumar Mittal (Assistant Professor – EE Dept.). The students self-designed the PCB for the circuit using ExpressPCB designing software. Students learnt the PCB etching process. These students inspired the other students and themselves for further innovating the things, and applying the engineering skills and knowledge for the community welfare.

Thanks
Er. Vishal Kumar Mittal
AP, EE DEPTT.

Principal
R.P.S College of Engg. & Tech
Balana Mohindergarh (HR.)
Report on

‘Making and Demonstrating a Robo-crane during Yugaantar 2K23’

at

RPS CET, MAHENDERGARH

13/03/2023 to 15/03/2023
A group of Electrical Engineering students from 1st and 2nd year made a wired controlled Robo-crane for the demonstration purpose during Yugaantar 2K23 on 13th march, 2023 to 15th march, 2023. Many students from different streams and backgrounds came during this demonstration. They were introduced with the basic design and electrical circuitry of the project. Students operated the Robo-crane to lift small load and had fun also. The main objective behind this was to inspire the students towards innovation, and applying the engineering knowledge and skills to realize the physical things and processes.

The key points discussed during the demonstration were:

- Design of robo-crane to lift objects
- Design of remote-control logic and how to demultiplex the signal for the wheels and arms

The learning of students after making of this project:

- Basic fundamentals of circuit simulation and soldering
- Designing mechanical hardware
- Designing of circuit logics
The students took the guidance from Er. Vishal Kumar Mittal (Assistant Professor – EE Dept.). These students inspired the other students and themselves for further innovating the things, and applying the engineering skills and knowledge for the community welfare.

Thanks
Er. Vishal Kumar Mittal
AP, EE DEPTT.
RPS GROUP OF INSTITUTIONS

Report on

Project Exhibition

at
RPS CET, MAHENDERGARH

01/06/2023

by 3rd Semester EE/ECE Students

Organized by

Elec-Power Club (EE Deptt.)

R.P.S College of Engg. & Tech
Balana Mohindergarh (HR.)

Principal
A project exhibition on 1st June, 2023, was organized by the Department of Electrical Engineering of RPS College of Engineering & Technology in which the students of Electrical Engineering and Electronics & Communication Engineering from 3rd semester participated to exhibit the projects on which the students worked upon. 26 students – 11 from Electrical Engineering and 15 from Electronics & Communication Engineering, participated. The students made projects utilizing their skills on engineering and applying the knowledge they studied in the earlier semesters. The students learnt a lot from their projects. They engaged themselves in learning the details and working of the projects of other students. All the projects were guided by Er. Vishal Kumar Mittal, Assistant Professor, Electrical Engineering department, RPSCET.

Introduction

The objective behind this exhibition was to inculcate the innovation among the students to start working and applying the knowledge of engineering in developing the things and processes for the community welfare. Students got experience of handling the projects and the designing of the project life cycle. Students got experience of designing and etching PCBs, and the different electronic and electrical components and their uses. The practice opened the numerous dimensions for innovation among the students.

Projects Worked Upon and Displayed

- Wired remote control for a 4-wheel moving robot
- Displaying Thumbwheel switch count on 7-segment display
- Automatic street light using LDR
- Intelligent cooling system using LM35
- Home automation using RF module
- Auto door open-close using IR transmitter and receiver
Students of the college, faculty members, Dean and Director of the college motivated the students through witnessing the demonstration of the projects. Director sir also encouraged other students also to take actively participation in such projects.

Thanks
Er. Vishal Kumar Mittal
AP, EE DEPTT.
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## LIST OF STUDENTS

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<th>S.NO.</th>
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<td>DEVNIDHI(20CS14) DEEPAHSHU(20CS12) HIMANSHU(20CS22) GOPESH(20CS18)</td>
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Dr Gundeep Tanwar
Head of Department

Principal
R.P.S. College of Engg. & Tech
Balana Mohindergarh (HR.)
## LIST OF PROJECT IDEA SUBMITTED

<table>
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<td>Hostel Gate Pass Mobile Application</td>
<td>1) Naveen Nirban Yadav 2) Naveen Kumar</td>
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<td>Attendance Management System Mobile Application</td>
<td>1) Pravinder 2) Ashish</td>
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<td>RPS Multi purpose Mobile App</td>
<td>1) Vinay Kumar 2) Yogesh Kumar</td>
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<td>RPS Academic Portal</td>
<td>Deepak Vashistha</td>
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<td>Yugantar2k19 Mobile App</td>
<td>1) Shivam 2) Manish</td>
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<td>Team Members</td>
<td>Tools/Technologies</td>
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| 7   | RPS Digital Library Mobile Application | 1) Mohit Jangra  
2) Sahil | 16CS30  
16CS61 | Android Studio, Java | Mobile application used for searching, deletion and addition of books, renewal of books, notification before renew dates, deletion / adding student account |
| 8   | Library Management System     | 1) Muskan  
2) Jyoti                  | 16CS35  
16CS20 | PHP, Bootstrap, Html, CSS, Javascript | - Manages and stores books information  
- Student request for the book by book id and admin approval the request for books  
- Allows both the admin and the student to search for the desired book |
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PROJECT: HOSTEL GATE PASS MOBILE APPLICATION

This application is designed for the convenience of hostel students in issuing gate pass for their home visit. It is designed to minimize the paperwork & authority authentication time span for students. Student has to apply gate pass request through android application. Then request will be routed to the higher Authority for approval. After confirmation the responsible warden will generate gate pass.

Key Features:-

1. Designed in keeping mind of girls convenience.
2. Fast & smooth performance due to small size.
3. Sustainable request ,data ratio.
4. Universal design to adapt any device.
5. Local database for high security.
7. Authorization through concerned faculties.

Technology/ Platform used: PHP, JAVA, MySQL, Apache Web Server

Developers:

1) Naveen Nirban Yadav (17CS38)
2) Naveen Kumar (17CS40)
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PROJECT: ATTENDANCE MANAGEMENT SYSTEM MOBILE APPLICATION

Description

- Allows to take attendance daily of the students.
- Allows to download report of attendance taken for the specific duration
- Allows to find the list of students having short attendance and download its report.
- Allows to send messages daily to the parents
- Allows to add new teachers, subjects

Platform / Technology Used: Android Studio, JAVA

Developers:

1) Pravinder (17CS48)
2) Ashish (17CS10)
RPS Multipurpose App

Submitted by
Vinay Kumar (17CS70)
Yogesh Kumar (17CS74)

DIPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
RPS COLLAGE OF ENGINEERING AND TECHNOLOGY
MAY 2019
Description

Overview

This report discusses the result of the work done in development of “RPS Multipurpose App” on Android Platform. It is a part of project going in Computer Science Department, RPS CET and aims at the development of an application for providing a common platform for students to provide updates of their result, ongoing events and a platform to reporting problems related to hardware and software to the admin.

Objective

Notifying different notices or information to students is primary thing in any institution / organization. This project will help students to know upcoming events, notice, their result and reporting problems in Labs just from their smartphone.

Features

- Students Result
- Report a Problem
- E-Notice Board
Technology/Language Used

- Unity
- C#
- REST API
- Firebase
  - Firebase Authentication
  - Firebase Real time Database

Submitted By

Vinay Kumar
17CS70

Yogesh Kumar
17CS74
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PROJECT : RPS ACADEMIC PORTAL

DESCRIPTION OF PROJECT :-
1. Students can check Sessional dates.
2. Students can send messages / communicate with Teachers
3. Student can confess also.
4. Student can check Notices posted by Teachers.
5. Student can share Innovative projects with others.

DEVELOPER' S NAME
Deepak Vashisth (16CS 11)

Principal
R.P.S. College of Engg. & Tech
Balana Mohindergarn (HR.)
DESCRIPTION:

Yugaantar 2K19 Android App available during the Yugaantar 2k19 (College Fest held on 11th Mar to 13th Mar 2019) for online registration of events and getting information concerned with different events.

RPS STUDENT FEEDBACK MOBILE APP

- Student feedback system is designed for RPS CET CSE department for taking feedback of different subject teachers from students.
- Students can rate teachers on different parameters on a scale of 1 to 5.
- Report can be generated of the feedback taken from various students.

RPS E-NOTICE BOARD

- Rps E-noticeboard Android app work on progress by which every new update/information is available on to the user.

Team Members

1. Shivam Arora (16VCS66)
2. Manish (16CS25)

TECHNOLOGY USED:

Android Studio + JAVA, Firebase
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PROJECT: RPS DIGITAL LIBRARY (LIBRARY IN YOUR HANDS)

DESCRIPTION:

- Searching, deletion and add books
- Renew, check in and check out
- Search, Add and delete student account
- Get notification before renew date
- Get notification of latest books
- Calculation of fine

TEAM MEMBERS:

1) Mohit Jangra (16CS30)

2) Sahil Jangra (16CS61)

Technology used: Android Studio, Java
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PROJECT: LIBRARY MANAGEMENT SYSTEM

DESCRIPTION OF PROJECT:

- Manages and stores books information
- Student request for the book by book id and admin approve the request for books.
- Allows both the admin and the student to search for the desired book.
- Student also give feedback by this project.

DEVELOPER’S NAME:

1) Muskan (16CS35)

2) Jyoti (16CS20)

Technology/Language Used: PHP, Bootstrap, HTML, CSS, Javascript