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## Engineers' Day Celebrates Innovation & Ingenuity: From Start-ups to Academia

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Every year on Engineers' Day, we celebrate the remarkable achievements and contributions of engineers across the globe. Engineers have played a pivotal role in shaping our world, from constructing awe-inspiring infrastructure to developing cutting-edge technology. This day also provides a platform to showcase the incredible innovations that continue to emerge from the world of engineering.

In the heart of India, at the UPES, engineers and innovators are pushing the boundaries of what's possible. Cognecto, a start-up founded by UPES alumni Divyani Singh and Anshul Saxena, is at the forefront of remote monitoring solutions for the mining and construction sectors. They are revolutionising efficiency and quality through advanced technology. Their patent-pending system accurately tracks road compactions by road rollers, ensuring superior quality and extending the lifespan of road infrastructure, even in remote areas.

In the mining industry, Cognecto has introduced an Automated Trip Recording and Geofencing solution, simplifying trip count recording and tracking. With telematic devices, they provide real-time data for informed decision-making. Their Dynamic Allocation system optimises the use of tipper trucks, enhancing operational efficiency and cost savings. Cognecto is paving the way for greater efficiency, precision, and sustainability in vital industries.

Meanwhile, Krishna Singh, a first-year student of Electronics and Computer Engineering at UPES, is crafting innovation from the ground up. Through his start-up, Pie Craft, he's developing 3D printers, CNC plotters, laser cutters and more, tailored for college students. His creations include a CNC Plotter capable of drawing complex lines based on coordinates and an apparatus that transforms plastic waste into diesel fuel using pyrolysis. He also designed drones to optimise farming practices, addressing real-world agricultural challenges with technology.








One such student, Mohammed Arfan, USC MSEE'22, Hardware Engineer, Apple shared his experience, "During my Master's degree at Khan Lab USC, I worked as a research assistant. The lab focused on bioelectronics, wearables, ingestibles, and printed electronics. I was involved in various projects, including creating a smart ingestible capsule for gas sensing in the GI tract, coupled with a wearable magnetic patch on the stomach for localization. My role included designing mixed-signal electronics, sensing, and encapsulation. This project met FDA guidelines for form factor and packaging materials, which was challenging but rewarding. Collaboration with experts in the lab, especially in making a gas-sensitive membrane in-house, was a valuable part of my experience. Overall, my time at Khan Lab USC was professionally enriching and personally fulfilling, allowing me to engage in cutting-edge research with a diverse and passionate group of individuals.

The success of the students is not possible without the guidance and coaching from their teachers and experts. One of the experts, Ravi S Iyer, Professor and dean at UPES, School of Computer Sciences emphasises the importance of academia in nurturing young engineers. He highlights the role of teachers, peers, seniors and hands-on experiences in labs in shaping the








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next generation of engineers. He said, "Universities play a crucial role in guiding impressionable minds toward creativity, confidence, and innovation."


Dr. Shri Narayanan, a University Professor and Chair in Engineering at USC, acknowledges the profound impact of engineering, particularly in computing and AI, on various aspects of society. He emphasises the interdisciplinary nature of engineering and its potential to address global challenges. He said, "At USC's Signal Analysis and Interpretation Laboratory, students are creating engineering advances while improving human lives through innovative technologies."

Dr. Yasser Khan, Assistant Professor at USC, focuses on additive manufacturing and hardware AI for medical devices. He highlights the collaborative team mentality in his lab and the students' brilliance driving innovation forward. He said, "We foster a collaborative team mentality, but the true drivers of innovation are the students themselves, whose brilliance and creativity propel our research forward. We've had the privilege of hosting outstanding students from India and will continue the tradition."

Engineers' Day is a testament to the limitless possibilities that engineering offers. From start-ups like Cognecto and Pie Craft to academic institutions like UPES and USC, engineers are making a positive impact on society through their innovative spirit and dedication to solving real-world problems. As we celebrate this day, we look forward to a future where engineering knows no bounds and innovation continues to thrive.

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