O Vodafone 5G DIG.

Top 100 Start-ups

Welcometo the Vodafone 5G DIG

At Group Innovation, we are passionately committed to accelerating Vodafone's journey to become a truly digital telco. This means being innovation hungry, open to experimenting and taking risks, and embracing collaborations with trail-blazing start-ups.

The Vodafone 5G Dig is a global quest to find the latest and greatest start-ups which offer partnership potential and help us respond to live business challenges providing real use cases for 5G. We spoke to senior leaders across Vodafone and identified five key verticals (Gaming, Media & Entertainment, Healthcare, Automotive and Smart Cities & Industry 4.0) to unearth the hottest topics, discover key pain points and uncover areas ripe for innovation.

Armed with this information, we then set out to find the world's best entrepreneurs at the point where they have proven tech, are ready to scale and will help us get to the future faster. We identified 100 pioneering start-ups with solutions which can respond to our needs. You can find these companies on Vodafone's new internal directory, The Vodafone Digest, on F6S.

Furthermore, we have whittled down the Top 100 to a rock star list of Top 20 start-ups which we believe have the potential to transform Vodafone. The Top 20 list was selected with the help of an expert panel of Vodafone senior leaders, who chose the top 4 start-ups per vertical using set scoring criteria.

We hope these start-up profiles will inspire you with the art of the possible. For more information or to explore potential partnerships, please get in touch with Paresh Modi from the Innovation Team.



innovation@vodafone.com



The 5 Verticals













Meet the Top 20 start-ups









































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Cloud Gaming



Polystream enables games and 3D applications to be streamed with unrivalled reach and unprecedented scale. A decade ago, the first generation of interactive streaming companies pushed to create something that everyone thought was impossible. Now many of those companies have disappeared. Why?

The problem they faced was about the crushing cost of filling the cloud with GPUs to stream applications using compressed video. It is prohibitively expensive, creates friction, hampers reach and just does not scale. This is why cloud gaming remains the hardest of streaming problems to solve;.

At Polystream, they believe in the power of distributed networks, the intelligent edge, and the visual cloud, bringing them all together, transforming how the world consumes interactive content and services.



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- Guildford, UK
- bruce@polystream.com
- 8 Bruce Grove



Next-Gen Gaming



Founded in 2015, Playsnak is a Berlin-based, globally-connected next-generation games company. In a time of ever-evolving technologies and increasing data bandwidth, Playsnak strives to create groundbreaking experiences for the maturing VR and AR markets.

Creator of a game developing platform designed to provide the latest technology based virtual reality games. The company's platform publishes self-developed first, second and third party games from various mobile game developers around the world, enabling online gamers to get the immersive virtual reality games that combine the easy access and innovative game mechanics of mobile play with the breathtaking possibilities of virtual reality.



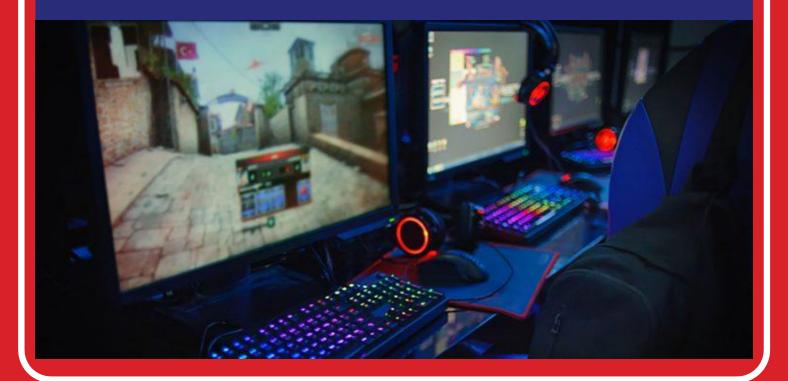
- www.playsnak.com
- Serlin, Germany
- paha@playsnak.com
 - Paha Schulz



Esports



FACEIT is the leading competitive platform for online multiplayer games, with more than 12 million users taking part in 15 million gaming sessions every month. FACEIT allows players to easily play in tournaments and leagues for virtual and real-world prizes through automated tournament management and competitive gaming technology. For developers, FACEIT's advanced software development kit (SDK) allows game creators to easily integrate user-friendly competitive gaming and tournaments into their titles to allow gamers to take part in competitive online games at all skill levels. Esports organizers, players and communities use FACEIT to create and manage online competitions.



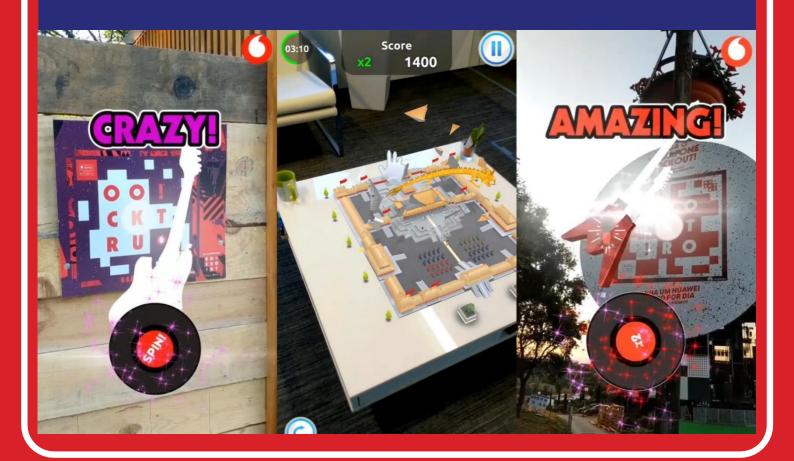
- www.faceit.com
- O London, UK
- press@faceit.com
 - Niccolo Maisto



AR Gaming



ONTOP brings a new type of social gaming entertainment by adding digital worlds over our own reality. The challenge that they have been overcoming, is to add more and more people together on the same shared experience, either as players or spectators, through AR and 5G technologies.



- www.ontopstudios.com
- Lisobon, Portugal
- nunof@ontopstudios.com
 - Nuno Folhadela



Advertising



Supponor's pioneering technology delivers the most powerful and impactful brand activation in broadcast sport.

They use augmented reality technologies to transform real-world mass-audience TV-visible advertising into high-impact targeted virtual brand messaging.

Sports rights and media owners can unlock a new world of creative and commercial opportunities to provide relevant, localised brand communications for sponsorship and advertising partners worldwide.



- www.supponor.com
- O London, UK
- david.patton@supponor.com
- S David Patton



Augmented Tours



Nimest goal is to create Smart Cities with a layer dedicated to tourism. In order to do so, they are developing a platform that uses Augmented Reality, Artificial Intelligence, 3D Mapping and Scanning to allow tourists to travel in time when visiting the city.

They are bringing back to life important historical figures and environments and allowing users to interact with them, thus learning about local history and culture on an interactive and fun way.



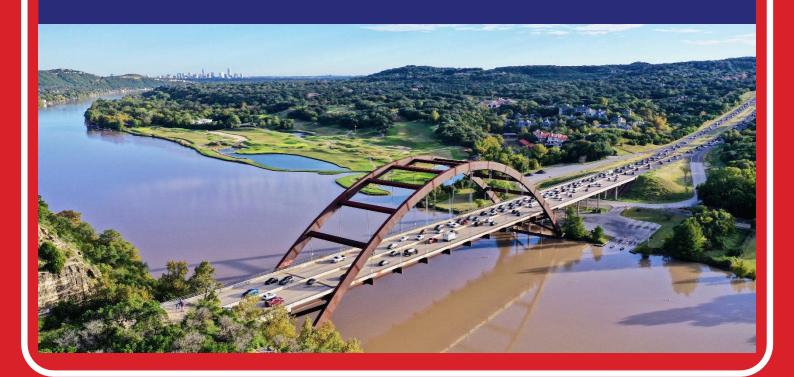
- www.nimest.tech
- Porto, Portugal
- info@nimest.co
 - Carlos Morais



Personalised 360° content



Mativision, producing and delivering interactive 360° content and immersive applications for global clients since 2012, is now offering the core 5G-ready immersive content delivery platform for media partners on the future network. As emerging technology specialists, the Mativision platform will enable live-streamed 360° video and interactive experiences alongside seamless video-on-demand extended reality content libraries.



- www.mativision.com
- O London, UK
- anthony.karydis@mativision.com
 - Anthony Karydis



Smart Data



The amount of data in the sport industry is growing and the value now lays in making this BIG DATA becoming SMART DATA and make it available in real time to the staff and the fans. Artificial Intelligence algorithms developed by Math&Sport allow real-time analysis of athletes' behaviour and game patterns to support coaches in defining winning tactics and to enrich fan experience and media contents. Data coming from different detection systems is analysed by Math&Sport's algorithms, to output KPIs that describe each action, player and the entire game from a qualitative and quantitative point of view. For the football world,



- www.mathandsport.com
- Milan, Italy
- ottavio.crivaro@mathandsport.com
 - Ottavio Crivaro



Connected Autonomous Vehicles



Conigital are a deep tech AI & Optimisation company developing the ConICAV™ platform targeting the £907 billion connected autonomous vehicles market.

ConICAV™ automates and optimises ground transport fleets either driven or driverless both landside and airside for the worlds largest airports needing to boost key operational and performance metrics.

This software stack consists of both the on-vehicle automation and off-vehicle operation/optimisation elements. A fundamental USP is to enable CAVs to integrate and operate with other transportation systems in the most efficient manner using the Conigital optimisation algorithm, ConOptium $^{\text{M}}$



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- monique.seth@conigital.com
 - Monique Seth

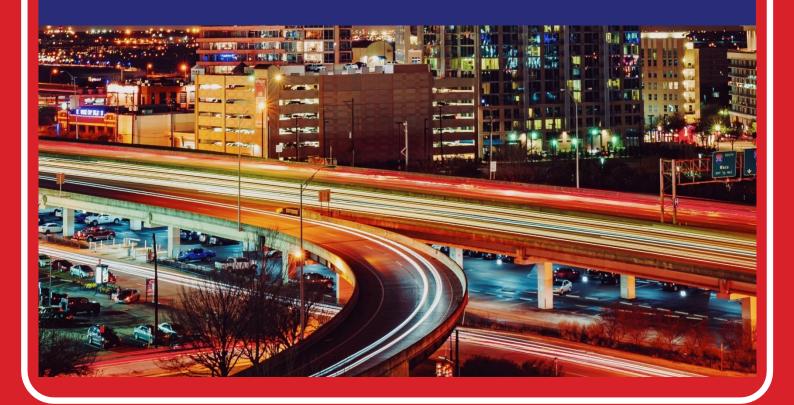


Autonomous Vehicles & Systems



Ottopia delivers safe teleoperation (remote control) of vehicles, for both autonomous and non-autonomous vehicles. Ottopia builds and provides all core technologies that make teleoperation a safe reality:

- 1. Network bonding and optimization
- 2. Ultra low latency video compression and transport
- 3. Embedded cyber-security
- 4. Advanced Teleoperator Assistance Systems (ATAS) such as path choice, path draw and a suite of vehicle-side collision avoidance algorithms



- www.ottopia.tech
- Tel Aviv, Isreal
- amit@ottopia.tech
 - Amit Rosenzweig



Electric cartour



Provider of self-drive electric cars intended to rediscover a new way to visit the cities. The company's electric cars offer free Wi-Fi, GPS audio guide and free hotspot facilities in the vehicles along with tourism operations and animation features, enabling users to stream their whole experience live on social networks with friends and family.



- www.liveelectrictours.pt
- Lisbon, Portugal
- djalmo.gomes@electric-rent.pt
 - Djalmo Gomes



Predictive Maintenance



CARFIT have created a self-diagnostic and predictive maintenance platform in the connected car space, providing dealers and service providers with customized lead generation.

They help car owners get the most out of their automotive investment. Through CARFIT PULS™, their innovative car vibrations tracking device, they can help lower car maintenance costs, increase efficiency, and increase transparency about how your vehicles work.

CARFIT blends NVH (Noise, Vibration and Harshness) automotive science with artificial intelligence to create the most comprehensive library of vehicle vibration data.



- www.car.fit
- Palo Alto, US
- nicolas@car.fit
 - ^S Nicolas



Multimedia content storage



SurgeonMate are developing a single tool to allow surgeons to create their own library containing surgical records and multimedia content. To do that, the solution is composed of dedicated smart-glasses (hardware) focused on the surgeon's needs and a software to manage, edit, store and share the media content.

With SurgeonMate Vision and SurgeonMate Library keeping records has never been easier! Because they're all connected, with this tool, telementoring is now a simple way to teach and to improve the learning experience.



- www.surgeonmate.com
- Porto, Portugal
- nunomuralha@gmail.com
 - Nuno Muralha



Safety and monitoring system



Tendertec are building an Al-powered safety & monitoring system for:

- Seniors living alone to automatically & in real-time alert their carers in an emergency
- Carers to verify daily living activities and incidents remotely & make data-driven decisions improving the quality of senior healthcare.



- www.tendertec.co.uk
- O Cardiff, UK
- afroditi.konidari@tendertec.co.uk
 - Afroditi Konidari



Crash Analysis



Developer of a trauma analysis platform designed to provide post crash safety.

The company's platform provides real-time information by creating a medical report regarding the type and severity of the passenger's injuries and delivers it automatically to the first respondents and relevant hospitals, by utilizing existing sensors and connectivity applications, enabling people to save their lives, decrease long-term morbidity, save in rehabilitation expenses and reduce the amount and size of liability claims.



- www.mdgo.io
- Haifa, Isreal
- shahar@mdgo.io
 - Shahar Samoelov



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Augmenting Surgical Performance



Provider of cloud-based data analytics systems designed to codify surgical procedures and improve global surgical care.

The company's cloud-based data analytics systems use cognitive mapping techniques, cutting edge artificial intelligence and 3D rendering technology, enabling clients to train and support surgeons in gaining detailed clinical procedure knowledge.



- www.touchsurgery.com
- O London, UK
- iean@touchsurgery.com
 - 3 Jean Nehme

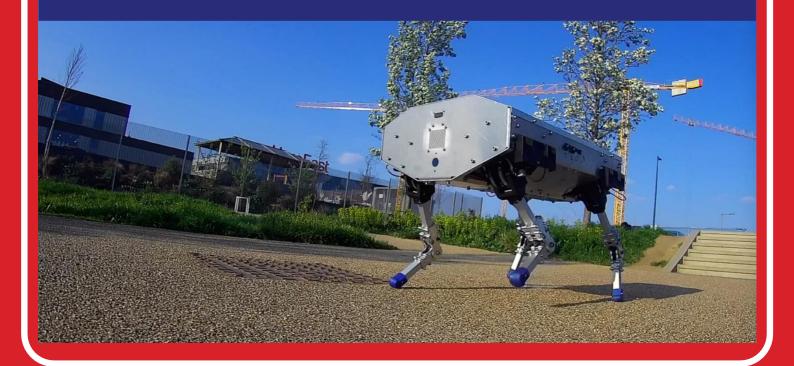


Automating Industrial Inspections



ZOA digitises industrial sites, providing plant managers total visibility on the condition and integrity of all assets in an industrial plant.

Leveraging their low-cost, high performance quadruped robot Zeta, ZOA will inspect and digitise sites which are large, remote or hazardous and reduce the cost of inspection and maintenance through AI powered predictive analytics.



- www.zoarobotics.com
- O London, UK
- thiago@zoarobotics.com
- 8 Thiago Azevedo



Smart Buildings



Invisible Systems manufacture innovative sensors for monitoring energy, conditions and fixed assets plus Wireless RF transmitters and control tools.

A bespoke software programme (Realtime-Online™) gathers all available data and displays information on cloud dashboards, within a comprehensive reporting suite.



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- O Cumbria, UK
- pete@invisible-systems.com
 - Pete Thompson



AR PowerPoint



weAR's solution wants to enhance the efficiency and effectiveness of maintenance activities carried out "on field".

In order to achieve this goals they use state-of-the-art technologies such as Augmented Reality, Mobile and Wearable Devices, Artificial Intelligence Engines and 5G network capabilities, all melted in a user-friendly, cloud-based and as-a-service solution: a B2B Augmented Reality PowerPoint.



- www.wear-mobile.com
- Perrara, Italy
- emanuele@wear-mobile.com
 - Emanuele Borasio



Predictive Maintenance



Conundrum AI and deep learning software suite helps industrial companies, telecoms, utilities and operators of engineered assets to quickly build Machine Learning solutions for predictive maintenance, improving quality, decreasing energy and resource consumption. Its uniqueness is in automating work of data scientists, and transforming data analytics projects from one-off showcases to continuous scalable deployments.

Over 15 industrial, energy, Oil and Gas companies use Conundrum Al software to process huge amounts of IoT, sensor and machine vision data in diverse use cases, from improving quality of coal shipments to locating faults in robotic welding equipment, from optimizing Paper Mills output to making sure that oil pumps perform more efficiently.



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 - Konstantin Kiselev



Meet the Top 100 Start-ups













































































































































































































Meet the Gaming start-ups

Polystream

Enabling games and 3D applications to be streamed with unrivalled reach, and unprecedented scale.



Developing groundbreaking experiences for the maturing VR and AR markets.



Independent competitive gaming platform for online multiplayer PvP gamers.



Turning the real world into a gaming platform with VR technology.

Top 20 Companies



Mobile multiplayer and eSports company developing their own original mass media products.



Professional eSports platform, follow teams & players, find stats and make fantasy bets.

Loot Masters Studio Ltd. Specialises in emerging technology to create immersive, fun and rewarding gaming experiences.



Platform enabling gamers to share their experiences online with videos.



Affordable mixed reality glasses that deliver spectacular up-close table top experiences.



In-game advertising platform that brings the sophistication of advertising into video gaming and eSports.

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Meet the Gaming start-ups



Marketplace for city discovery games where all experiences are created by locals.



Removing constraints of physical hardware by giving users access to a powerful, cloudbased computer.



Developing a realtime, streaming platform for live VR and AR content.



Developed a freemium AR game with virtual characters as well as a social media platform.



Platform enabling developers to build powerful cloud-first applications.



Easy to use subscription cloud platform for hosting game servers.



Cloud gaming solution eliminating the need for a console or a high-end PC.



Flexible, cost-effective virtual games for innovation, collaboration and learning simulations.

Meet the Media & Entertainment start-ups



Offering technology that delivers powerful and impactful brand activation in broadcast sport.



Uses AR, Al and, 3D Mapping to allow nimest tourists to travel in time when visiting places.



Delivers Virtual Reality (VR) experiences across various industry verticals.

Focused on the optimization of math & sport athlete's performance using mathematics and data science.

Top 20 Companies



VR business intelligence software LUME VR for analysts to better explore and share their 3D data.



Fun learning platform for kids. Handpicked games, videos and activities.



New type of internet video service using machine learning to improve the user experience.



Offers Dynamic location-based mobile marketing tools.

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Meet the Media & Entertainment start-ups



Provides advanced cloud automatic TV production systems.



Edutainment platform helping people to learn languages and explore cultures through films.



Unique technology that closes the gap between the online and offline worlds.



Location-based experiences platform powering branded, global campaigns.



Platform showing all the best YouTube videos handpicked daily.



Al-based automatic sports production solutions for the amateur and semi-professional market.



Developed sensorbased motion capture solutions and a marketplace of motion assets.



Providing solutions to provide friends and family an interactive group viewing experience.

Meet the Media & Entertainment start-ups



Offers sollutions to reduce the complexity video services.



Delivers the vision of personalized viewing experience at scale for VOD or live events.



Offers affordable, lowlatency delivery of extremely highresolution video to consumer devices.



Enables the capture of real people into volumetric holograms, for use in AR & VR.

MorphCast^{*}

Technology using facial analysis to adapt content to the viewer in real-time.



Pioneering 3D VR-CAD design and real-time collaborative CAD design.



Platform allowing you to play with any object you can imagine using the power of your voice.

Meet the Healthcare start-ups



Focused on improving the performance of surgeons using emerging technology.



Building an AIpowered safety & monitoring system for healthcare use.



Provider of cloudbased data analytics systems designed to improve global surgical care.



Developer of a trauma analysis platform designed to provide post crash safety.

Top 20 Companies



Creates intuitive products to ease the aging process and improve health outcomes.



Mobile Personal
Health Record
platform to securely
exchange health
information.



Designs smart medication packaging for seniors and allows families to track via an app.



Design AI technology to hear, identify and predict lifethreatening situations.



Changing healthcare through open and accessible technologies.



Preventive healthcare company, redesigning the hospital bed for the 21st century.

Vodafone 5G DIG.

Meet the Healthcare start-ups



Secure smart messaging platform Medic Bleep to Communicate with your healthcare professionals..



Develops wearable sensors, which improve clinical management of critically ill patients.



Platform that combines your body's Circadian Rhythm with your biometrics and genetics.



Developed a revolutionary smart cane developed for the visually impaired.



Helping Enterprise, Healthcare & Academia develop and educate people using VR technology.



Mobile based technology, made by psychologists for psychologists to treat anxiety disorders.



Overcoming motor and communication disabilities through **Brain-Computer** Interface technology.



Building world's first voice assisted Al dementia care, providing automated assistive care.

Meet the Automotive start-ups



Developing a platform Tech Al targeting the autonomous vehicles market.



Platform enabling the control any type of vehicle from remote. in a both safe and cyber-secure manner.



Self-drive electric cars for tourist equipped with free wi-fi, GPS audio guide and even a live camera.



Developed a technology that analyses car vibrations to predict maintenance needs.

Top 20 Companies



Provider of cuttingedge LiDAR technology for autonomous mobility and IoT applications.



Technology tracking your car's data in realtime and alerts you to potential problems before they happen.



Real-time alerts to motorists when HAAS ALERT responders/roadway personnel are enroute or on-scene.



Drone Photography Company based in the Impact Aerial Midlands, covering the full range of Drone Services.

Meet the Automotive start-ups



Develops AI for machine vision and handling.



Vacation packages for road trips: rent cars, Road.Travel book hotels, find and plan journeys, share travel experiences.



Drone data solution asset managers use to decisions.



Moving terabytes of data between vehicles and the cloud.



Smart Robotics company, digitally transforming shop floor operations.



Developing AI technology to today's serial production cars self-driving.



Designs sustainable autonomous cars to help transform the mobility systems of society.

Meet the SC & I 4.0 start-ups

ZOA

Developing low-cost quadruped robots to enable Autonomous Inspections for industrial customers.



Design a wide range of wireless monitoring systems for a variety of applications.



Augmented and mixed reality supporting maintenance, repair and operations.



Industrial automation based on Al-driven CONUNDRUM technology to address PdM, quality control and optimization.

Top 20 Companies



Provides real-time data on vehicle and pedestrian counts and movements around cities.



UK's #1 parking app, helping drivers to find information about parking at a destination.



Creates Digital Models of buildings by using real-time data and Al.



AR platform for industries needing to streamline their processes.



Edge-based solution transforming data-rich environments into intelligent and optimized resources.



Platform for managing highvolume distributed projects with accurate real-time data.

Vodafone 5G DIG.

Meet the SC & I 4.0 start-ups



Provides edgeintelligent video surveillance and security technology.



Developing a new type of cargo airplane; small, unmanned and extremely fuel efficient.



Robots for food. changing the way the world prepares, offers, and experiences convenience food.



Intelligent **Automation Platform** netObjex for Tracking, Tracing and Monitoring Digital Assets.



Traffic management platform solving traffic challenges while preparing roads for the connected era.



Computer vision and Al-based Image enhancement platform.



Helps insurance companies create a PHOTOCERT secure automated standard for claims and onboarding.



Risk analytics platform that helps property managers and insurers reduce their losses.



Develops computer vision Al and AR automate customer assistance.



Provides integrated and intelligent Zensor monitoring solutions for use in various industries.



Meet the SC & I 4.0 start-ups



Platform improving both the experience **zipabout** of transport use and the efficiency of those delivering them.



Providing products that help companies achieve rapid business transformation with minimal effort.



IoT Customer Profiling and Product Protection Platform.



Delivering costefficient & impactful soft skills training at scale with VR & AI.



Home automation, helping families to ≈ powahome save energy remotecontrolling lights and sockets.



Develops learning algorithms that can turn urban video streams into insightful data.



Developed a wireless real time location system for Industry 4.0 and Smart Cities. based on the IoT.



Developed technology providing real-time, data, for livestock farms.

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