

PROSPECTS OF DRONE IN VIDEO PRODUCTION: AN EFFECTIVE AERIAL SHOOTING AMONG CINEMATOGRAPHERS IN ILORIN, KWARA STATE

BY

Tope Joseph Olorunmola¹, Bashir Amoda Ajijola², Rufai Bako Mohammed³ & Nofisat Abimbola Sadiq⁴

^{1,2}Department of Mass Communication, Al-Hikmah University, Ilorin, Nigeria

^{3,4}Department of Mass Communication, Kwara State Polytechnic, Ilorin, Nigeria

Email: temitopeolorunmola@gmail.com

Abstract

The paper unveils the prospects of drone in video production as an effective aerial shooting among Cinematographers in Ilorin. The field of video production is evolving and different technologies are being adopted by Cinematographers to capture unique moment and shoot at their desire angle in order to tell a compelling story and to improve their professionalism. The use of drone has been considered as 21st century Cinematographers' aid in shooting in the mid-air. Apart from being a military Arsenal used during the World War 1, drones can capture sweeping shots of landscapes, giving viewers a bird's-eye view of the scene. They can also capture dynamic shots of moving objects, such as cars or people, by following them from the air. The study concluded that drone is an essential innovation in video production serving Cinematographers with varieties of aerial shots to promote artistic work. However, the study recommended that video production manager and Cinematographer in Ilorin should explore the use of drone in their production in order to capture the attention of the viewers through a fascinating shot.

Keywords: Drone, Cinematographer, Video Production and Aerial Shooting

Introduction

Both drones (also known as Unmanned Aerial Vehicles or UAVs) and the internet were originally created for military use. However, over time, both technologies have been adapted and are now widely used by businesses and individuals for a variety of purposes (Pabón, Torres, Cueto, Morantes, Martínez & Herrera, 2025). Big companies like Google, Facebook, and Amazon are eager to use drones in their operations, leading to huge investment in the commercial drone market. This is because drones can be used in many different ways and have a bright future. The public is becoming more aware of drones, sometimes in surprising ways, like when a drone was mistaken for a helicopter flying in a place a helicopter could not go (Pabón *et al.*, 2025). While drones have been used by the military since World War I, it's only in the last ten years that we've seen them being used by civilians and businesses. When Amazon CEO Jeff Bezos announced on the TV show "60 Minutes" that his company planned to deliver packages with drones, it really opened people's eyes to the potential of drones in the commercial world. (Singh & Kumar, 2025). Actually, drones were already being used commercially in a small way, for things like taking pictures and helping farmers. Back in 2005, the FAA gave a company called Right Angle Photography permission to use drones for their business. This was a big deal because it opened the door for many other companies to get approval to use drones commercially, and now hundreds of companies are using them (Wang, Mutzner & Blanchet, 2025).

Drone technology is connected to a lot of other technologies. But first, it's important to understand the difference between drones that are controlled by someone with a remote, and drones that can fly and operate on their own (Heo & Na, 2025). There are two main types of drones: ones that you fly with a remote control like a toy airplane, and ones that fly themselves using robotics. For many jobs that drones do, like taking pictures or collecting information, it's really important to have good cameras and sensors that can capture high-quality images and data (Rahaman, Putra, Irawan & Biyanto, 2025). Since drones often move around a lot, they need special cameras that can take steady videos even when they're shaking or hovering. They use radio signals to send information back and forth to

the ground, and they have technology that helps them avoid crashing into things by changing their altitude. Drones also rely on GPS to find their way around, just like we use it in our cars or phones. And finally, none of it would work without software, which is really the brains of the whole operation (Rahaman *et al.*, 2025).

Way back in the 1800s, brave reporters and photographers would go up in hot air balloons to report on things like the Civil War. Then, in the middle of the 1900s, news organizations started using airplanes and helicopters to cover all sorts of dangerous events, like wars, fires, and protests (Morgado & Vieira, 2025). When drones with cameras first became popular, any video taken from the sky was really interesting to people (Kuljanin & Zivojinović, 2025). Because drones can fly low and move freely, the videos they take were really captivating when they first came out. People are especially interested in new technology when it's changing quickly, like it is with drones. It's exciting because it's something we have not seen before. So, people were interested in the drones themselves, as well as the amazing videos they could capture. (Uth, Stehle, Wilhelm, Detel & Podschuweit, 2025). An Unmanned Aerial Vehicle (UAV), or drone, is a small aircraft controlled remotely. Think of it like a tiny, flying robot. Drones come in different shapes and sizes and can be equipped with advanced technology like cameras, GPS, and sensors. They are primarily used to keep an eye on things, monitor areas, and collect data for creating maps (Uth *et al.*, 2025).

News organizations are really excited about using drones because they can capture amazing aerial footage. This new technology is changing how news is reported, offering a bird's-eye view that was previously difficult and expensive to get. For example, CNN is using drones to improve their reporting and get better shots. It's much cheaper than using helicopters or planes, and it allows them to cover news stories in new and exciting ways (Veglis, 2025). Drones are like versatile tools that can be equipped with different gadgets to collect various types of information. For example, they can use geographic tools to map how far a wildfire has spread, or they can have sensors to measure things like radiation, wind speed, or temperature (Kaur, Kumar, Singh, Thakur, Bansal & Arya, 2025). Singh and Kumar, (2025) believes that drones will dramatically change the media, just like the internet changed how we get news from newspapers and magazines. This is because drones are relatively cheap and can go places that might be too dangerous for people, like construction sites, forests, or war zones.

Drone technology has been a game-changer for filmmakers, offering a safer and more efficient way to capture stunning aerial shots. In the past, getting those dramatic overhead views often meant risking lives and expensive equipment by using cranes, helicopters, or precarious camera placements. Now, with drones, filmmakers can easily achieve those same shots and explore new creative possibilities. This has revolutionized video production, changing how stories are told and how we see the world (Pabón *et al.*, 2025). Several studies have revealed a tremendous increase in the use of this tool over the years (Rana & Bhambri, 2025; Singh, 2025). While drones are becoming increasingly popular with filmmakers in Ilorin, there were initial concerns from the Nigerian Civil Aviation Authority. They banned drones due to worries about privacy and their potential use for spying. This highlights a common issue: governments sometimes restrict new technologies before fully understanding their benefits. This can hinder innovation and prevent people and organizations from exploring the positive applications of drones (Kumar & Vishwanathan, 2025).

Abdullahi *et al.*, (2024) explored the use of drones in libraries, specifically focusing on their potential for security. The study found that librarians perceived drone surveillance as a valuable tool for enhancing library security. This perception aligns with broader trends in the field, as drones are increasingly used for monitoring and security purposes in various settings. The study also revealed that AI chatbots are perceived as useful for reference services, AI can be used for cataloging and classifying library materials, and AI expert search tools can aid in information retrieval. Additionally, AI is seen as beneficial for automating library routines. Drone usage in Ilorin, specifically within the University of Ilorin Main Campus, is focused on creating 3D city models for urban planning, infrastructure development, and maintenance. High-resolution images are captured using a DJI Phantom 4 Pro drone, flying at 100 meters altitude with 70% side overlap and 60% forward overlap. The images are then processed to generate orthophotos, digital surface models (DSMs), and digital terrain models (DTMs). These models provide valuable spatial information for analysis, decision-making, and urban planning applications (Mustapha & Ajibade,

2024). News coverage of kidnappings and humanitarian crises in Kwara State, particularly in Kwara South and North, has been limited because it's too dangerous to send reporters to those areas. Using drones could be a good solution, allowing journalists to gather information safely. Currently, news outlets often have to rely on official government reports, which may not tell the whole story. This paper looks at how drones can be used to improve video production and aerial filming for cinematographers in Ilorin, potentially leading to more effective and comprehensive news coverage of these critical issues.

Theoretical Framework

This research was anchored on Diffusion of Innovation. Diffusion of Innovation Theory (DIT) The overwhelming effect and use of modern technologies in filmmaking today may be ascribable to Everett Rogers. In 1962, the communication scholar, propounded a theory that aims to explain how, why and for how long new technologies, products and/or ideas spread. In the Diffusion of Innovation Theory (DIT), he identifies four elements that impact the diffusion of new technologies: The innovation, the communication channels, time and the social system in which the new technology operates in. For an emerging idea/technology to be accepted and sustained by a wider audience, it needs to be adopted by the people it is exposed to. The categories of actors that he identified that are crucial in the process of an idea/technology to catch on are the innovators themselves, the early adopters, the early majority, the late majority and laggards (Rogers cited in Memedovich, Steele, Orr, Hollis, Salmon, Hu & Beall, 2025). The DIT has prevailed over time and has proven to be a useful tool to understand the underlying mechanisms for an innovation to catch on, regardless of its cultural or societal system

Rogers' Diffusion of Innovations Theory (DIT) explains how, why and the rate at which a product, service gains momentum and diffuses or spreads through a population or social system. This theory postulates that people as a part of the social system easily adopt a new idea, behaviour or product. The DIT still holds when explaining emerging trends in today's time as foundational for explaining both macro and micro level processes, with a distinct set of limitations. When applicable to video production, we look at prospect of drone in video production and are working and achieving results in the areas of production and distribution of videos in various platforms. These digital technologies have greatly enabled the growth of vibrant film industries across the globe and have assisted raw talents to use the latest trends and technologies to engage in the practice and art of making movies for domestic and international consumption (Memedovich *et al.*, 2025). However, the coming of drone has paved way for different shots in video production, making the videographer to capture moment in the mid-air and promoting artistic and professionalism in Ilorin. Therefore, the use of drone will contribute positively in the development of video production among cinematographers in Ilorin.

An Overview of Drone

The term "drone" has a long history in aviation, dating back to the early days of remotely flown target aircraft. These drones, such as the Fairey Queen and de Havilland Queen Bee, were used for target practice by battleships. Later models like the Airspeed Queen Wasp and Miles Queen Martinet continued this tradition, eventually being replaced by the GAF Jindivik (Caballero-Martin, Lopez-Guede, Estevez & Graña, 2024). The term "drone" remains widely used today. Modern autonomous drones utilize a variety of advanced technologies to operate without human control, including sophisticated software, cloud computing, computer vision, artificial intelligence, and sensors. For recreational purposes, drones often feature first-person video, autonomous flight capabilities, or both, making them popular for aerial photography and videography (Caballero-Martin *et al.*, 2024). The history of drones, also known as unmanned aerial vehicles (UAVs), goes all the way back to the early 1900s. The first ones were created during World War I for military purposes like spying on the enemy, keeping watch over areas, and practicing shooting at targets (Criollo, Mena-Arciniega & Xing, 2024). These early drones were big and costly, needing a whole team of experts to operate them. During and after World War II, the US military continued developing UAVs, including jet-powered ones like the Ryan Firebee. The Vietnam War saw widespread use of reconnaissance drones, and they were also used for other tasks like distracting the enemy, launching missiles, and even dropping leaflets. Later, in the

1960s, the US developed the Predator drone, which became famous for its surveillance work in the 1991 Gulf War (Criollo *et al.*, 2024).

Around the early 2000s, companies like DJI, Parrot, and Yuneec started making small, lightweight drones with cameras that everyday people could buy and use. At first, these drones were mainly used for fun, like taking pictures and videos from the sky (Fakhri, Latifi, Mohammadi & Fassnacht, 2025). As drone technology improved and became more affordable, filmmakers began to see the potential of using drones in film production. One of the first major Hollywood films to use drones for filming was the 2012 James Bond film "Skyfall," which featured a stunning aerial shot of the Scottish Highlands captured by a drone. Since then, drones have become a standard tool in the film industry, used to capture breathtaking aerial shots in a wide range of productions. In the early stages of drone technology, their use in film production was limited to hobbyists and experimental filmmakers (Fakhri *et al.*, 2025). However, as drones became more advanced, affordable, and accessible, their presence on film sets has grown exponentially. Today, drone technology is widely used in various aspects of film production, from independent projects to major Hollywood blockbusters.

Technical Details of Drones

To understand the potential implications of drones, brief technical background is needed. Drone technology is in an advance stage today in many fields (Maharana, 2017). The sub parts that are used in making a drone altogether make it a powerful device. The components that are used mentioned below:

- **Propellers:** The pilot controls the propellers manually where the intensity of the spin is proportional to the intensity of the movement of the drone.
- **The Frame:** Frame of a drone connects all the components together.
- **Camera:** Drones come with camera, which allows them to record video on air or take photographs.
- **Electric Speed Control:** This component connects the motor and the battery. It sends a signal to the motor to control the speed of the spin.
- **The Flight Control Board:** The flight control board is the component which gives command for the operations of drones.
- **Transmitter:** This component is the remote control of drone. It sends signals to the drone which is understood by the receiver (UAVCoach, ND).

NXP has developed a special system called CAS (Collision Avoidance System) that helps drones avoid crashing into things. It's like giving the drone a virtual sensor that allows it to create a "mental map" of its surroundings. This sensor is constantly checking the environment, and because it can scan super fast, it can detect obstacles and prevent collisions. By combining information from CAS and ITS (Intelligent Transportation Systems), drones can even predict danger and react accordingly (Abu-Zaid, Aljaidi, Al-Na'amneh, Samara, Alsarhan & Qadoumi, 2025).

The four main controls of drones are Roll, Pitch, Yaw and Throttle described below in detail.

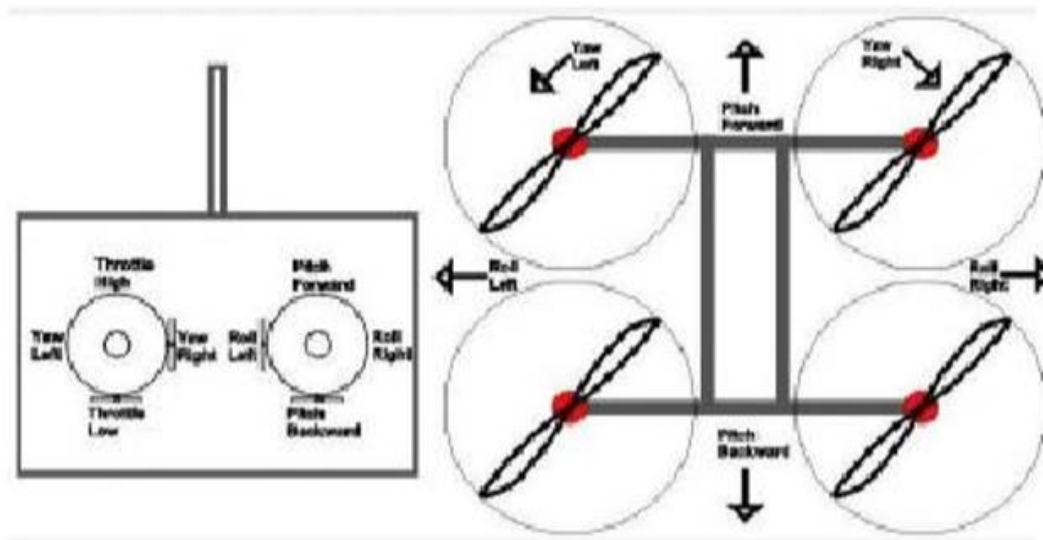


Figure 1: Controls of Drones (Maharana, 2017)

- **Roll:** Roll helps in left right movement of the drone.
- **Pitch:** Pitch helps in forward and backward movement.
- **Yaw:** Yaw rotates the drone clockwise or anti clockwise.
- **Throttle:** The Throttle gives power to the drone (UAVCoach, ND).

Drone as New Camera Technology

Making a film is not an easy task. Film technology today has penetrated almost all levels of production with an array of cameras for shooting. Better cameras provide more versatility and image quality. Frank Eleanya, Author at Businessday NG reports that: Kunle Afolayan. Producer and director of the 2020 hit movie Citation is also one of the modern Nollywood practitioners that prioritises high level production. The movie Citation was shot with Canon EOS C500 Mark, one of the latest cameras produced by Canon (n.p). The basic camera mounts are handheld, shoulder, tripod, steadicam and monopod. Today, the director of photography may wear a steadicam mount which absorbs the wobbles and jitters even if he walks or runs about with the camera while keeping the picture perfectly steady. Camera movements today are most fascinating especially when autonomous drone cameras are used for aerial shots to give a bird's eye view of a scene. With advancements in camera technology, these shots which were hitherto obtained using only helicopters are easily obtained by using a drone camera. The autonomous drone camera technology is designed with the capability to take shots from different camera angles, while avoiding obstacles in flight. Nowadays the drone camera can shoot 4k or 5k resolution footage of digital quality pictures.

Benefits of using Drones in Film Production

I. Capturing Aerial Shots with Drones

One of the biggest advantages of using drones in filmmaking is their ability to capture amazing aerial shots. Drones can fly at different heights and angles, giving filmmakers the chance to get unique and breathtaking footage that was impossible to get before. This has opened up a whole new world of creative possibilities, allowing directors to film their movies in ways they never could have imagined (Agrawal, Jawarkar, Dhakate, Parthani & Agnihotri, 2024).

Besides the creative benefits, drones have also made aerial filming much more affordable. In the past, filmmakers had to rent expensive helicopters or cranes to get those shots, which took a lot of time and money. Now, drones offer a much cheaper option, making it possible for even low-budget films to have amazing aerial scenes (Agrawal *et al.*, 2024). A major reason filmmakers love drones is that they can now get incredible aerial shots that were simply not possible before. Drones can fly high, low, and at all sorts of angles, allowing for unique and breathtaking footage that you just couldn't get with traditional cameras (Azzarelli, Anantrasirichai & Bull, 2025). A major reason filmmakers love drones is that they can now get incredible aerial shots that were simply not possible before. Drones can fly high, low, and at all sorts of angles, allowing for unique and breathtaking footage that you just couldn't get with traditional cameras (Azzarelli *et al.*, 2025). Drones are also great for filming in cities because they have advanced GPS and systems to avoid crashing into things. This means they can easily navigate tight spaces and avoid obstacles like trees and buildings, which is something traditional filming methods often struggle with.

II. Improving Cinematography with Drones

Drones do more than just provide amazing aerial views; they actually improve the overall quality of filmmaking. By using drones, filmmakers can capture shots from angles and perspectives that were previously impossible, making their stories more captivating and engaging for the audience (Senturk, Gormus, Gonen, Bariskan & Durmaz, 2025). For example, drones can capture shots from below, making characters look bigger and more powerful, or from above, making them seem smaller and more vulnerable. These kinds of shots can add a lot of emotion and depth to the story, keeping the audience more engaged. These small details can make a big difference in a movie, and filmmakers are using drones in creative ways to give movie lovers a better viewing experience with amazing cinematography (Senturk *et al.*, 2025).

Security Dangers of Drone Usage

Although drones are used a surveillance and security device, it is equally a security threat and challenge on its own, especially when in the wrong hands. As useful as drones have been, safety and privacy, among others, has been a major concern since it took to the skies for other purposes other than warfare. One of the greatest risks associated with drone usage according to Abu-Zaid *et al.*, (2025) is the fall of a drone from great heights. Although the world has witnessed the benefits of drones in different fields, it has also witnessed a number of security incidents in the following;

- i. **Invasion of privacy and trespassing:** One of the major concerns of flying drones is that of privacy and trespassing. In the research titled 'Peeping Town: Drone Surveillance and the Exclusionary Rule in Long Lake Township', Massa, (2025) describes the various invasion of privacy issue perpetrated with the use of drones.
- ii. **Loss of Eye:** As reported by Hilton (2017), in 2015, a toddler in England sustained a serious injury to his eyes when it was sliced open by a drone propeller after the operator lost control of the drone.
- iii. **Airspace Threats:** The crewless aircraft with no pilot or passengers can pose a serious threat to any flying machine with people and goods on board which is why flying drones in an airport or even close to it is restricted. In the UAE, for instance, a recreational UAV hovering around the plane's airspace brought all flights to a halt for 55 minutes, and although no damage was done, the disruption had economic consequences.
- iv. **Vehicles for weapons:** Before drone technology became a gadget for all, it had a solid military background and is still very much used for warfare. As it can be seen in the ongoing Russian invasion of Ukraine. Drone in the hands of terrorists, for instance, will cause destruction of properties and lives. Aside from using drone for shooting missiles and dropping explosives, small drones can be used to deliver chemical or biological agents in an attack. According to News24, the terrorist groups use the drone technology for surveillance in the northeast of the country causing an increase in death toll and casualties.

- v. **Criminal Activity/Smuggling:** Drones have been used to commit burglaries, smuggle contraband to prison inmates, delivering lethal weapons and so on. Accident in the air: Faulty drone to a reckless pilot can cause collision in the air. However, this has proven dangerous on several occasions, one of which involved crashing into a 5th floor of a building in Cape Town, South Africa, with the drone colliding into the resident's head in 2016.
- vi. **Hacking:** Drone Hacking as stated by Pro Technologies (2016) is ranked high among the host of drone-related security risks. Drones store many data, with some holding more sensitive data than others, especially if it is a government-owned drone. Hacking does not only involve getting access to stored data but also tapping into the GPS coordinates to alter the flight plans of the drone, which can be done even when the drone is in the air. Confidential information could be leaked or used to the hacker's advantage which may cause damage to the parties involved.

Types of Drones Used in Cinematography

According to Hoe and Na (2025), there are different types of drones according to how they work, the following type of droner are associated with cinematography.

- I. **DJI Mavic 2 Pro:** This type of drone is the best consumer drone for filmmaking. This drone is complete package, affordable and have quality. This results in video that is appropriate for advanced grading and editing software. It is also a fantastic small drone that is affordable to use. It boasts a top speed of 44 mph, a flight time. OF 31 minutes, Ocusync 2.0 with a 5-mile range and Active Track 2.0.
- II. **Parrot Anafi:** Based on the review of the 7 Best Drones for Filmmakers (Steiner, S. C. 2019) Parrot Anafi Found quite easy to use for film making with the Anafi. Parrot demonstrated this. It shoots in 4K, has a log recording mode, and a high-resolution 21 MP 1/2.4 sensor that allows for sharp stills and lossless digital zoom in video. The Anafi's main feature is its ability to tilt upward, which allows Filmmakers to create incredibly unique shots that would be impossible to achieve with almost any other drone
- III. **Autel EVO:** This type of drone used with the fold-up that took off a year ago with 4K video at up to 60 frames per second (fps), this drone stands out from the crowd. The built-in 3.3" 720p OLED night on the accompanying remote controller is another smart design choice, it is also operating at up to 4.4 miles away and has a 12MP 1/2.3" sensor to get the job done.
- IV. **DJI Matrice 600:** This drone is a hexacopter that professionals want. This model of drone that use for film making gains the hexacopter designation and can lift a 34-pound payload, and allowed to bring serious gear. It works with zenmuse systems, and also shines with Ronin-MX and the quality of result is unvated.
- V. **Power Vision Power Ray ROV:** Power Vision is a wonderful choice for underwater film making, you can start it by dropping it into water from your boat, dock, or even the edge of pool. Working or filming underwater has a number of challenges, therefore. this ROV is outfitted with LED lights and other capabilities to help.
- VI. **DJI Mavic Mini:** This type of drone is possible to capture stunning aerial Footage for Films or vlogs. It's small, weighing only 249g and a noncommercial Fliers don't need registration. It may not be a perfect for video with maximum resolution of 2.7K and a still resolution of 12MP, but with proper technique, can surely can get decent pictures for films.
- VII. **DJI Inspire 2:** It is a big drone with big cameras and that means the bigger the cameras the bigger the sensors and better videos. It is belonged to the most popular drone uses in cinematography for a high-quality capturing of video, video clips, and short films.

Drone or Unmanned Aerial Vehicle (UAC) has been used from the early days of aviation and following the World War I, the use of drone become prominent after the birth of consumer drones which started to become popular, almost all aerial video from camera drones attracted attention. The low-altitude perspectives and the way drones could move with almost complete freedom were enough to keep a viewer's attention. Drones can fly at various

heights and angles, allowing filmmakers to capture unique and breathtaking shots during the production. The adoption of drone by different video production firms serve as unique step in presenting ideas and attracting the viewers to feel the essence of the cinematography. Previously, there are some shots that can't be achieved in video production, however, the adoption of drone in shooting among Ilorin based video production managers and cinematographers give opportunity to actualize different shots and angle in video production.

This paper concluded that drone is an essential innovation in video production serving Cinematographers with varieties of aerial shots and giving the viewers resonance of video production. Gone are those days when Cinematographers undergo stress when trying to capture essential camera shot, sometimes, their equipment get damaged but with the birth of drone, it has serve as a change mechanism in telling stories with the aid of aerial shots. However, if drone is properly used to capture quality shots, it will promote the art of video production in Ilorin and Kwara State at large.

Recommendations

Therefore, the study recommended that;

1. Cinematographers in Ilorin should adopt the use of drone in their video production to better tell a fascinating story.
2. Also, the Cinematography is evolving with different drones, hence, Cinematographers should contribute positively in exploring these drones to capture low-angle shots, making characters appear larger and more imposing.
3. Drones can capture sweeping shots of landscapes, giving viewers a bird's-eye view of the scene, therefore, Cinematographers should leverage on this unique shooting through drones.
4. Government should empower the Cinematographers in Ilorin and ensure there is proper training on how to use drone for coverage.
5. Drone can also serve as security apparatus, therefore, Cinematographers can adopt the use of drone in this aspect for reportage.

References

- Abu-Zaid, A., Aljaidi, M., Al-Na'amneh, Q., Samara, G., Alsarhan, A., & Qadoumi, B. (2025). Advancements and Challenges in the Internet of Drones Security Issues: A Comprehensive Review. *Machine Intelligence Applications in Cyber-Risk Management*, 1-24.
- Agrawal, P. S., Jawarkar, P. S., Dhakate, K. M., Parthani, K. M., & Agnihotri, A. S. (2024, May). Advancements and Challenges in Drone Technology: A Comprehensive Review. In *2024 4th International Conference on Pervasive Computing and Social Networking (ICPCSN)* (pp. 638-644). IEEE.
- Azzarelli, A., Anantrasirichai, N., & Bull, D. R. (2025). Intelligent Cinematography: a review of AI research for cinematographic production. *Artificial Intelligence Review*, 58(4), 108.
- Caballero-Martin, D., Lopez-Guede, J. M., Estevez, J., & Graña, M. (2024). Artificial intelligence applied to drone control: A state of the art. *Drones*, 8(7), 296.
- Criollo, L., Mena-Arciniega, C., & Xing, S. (2024). Classification, military applications, and opportunities of unmanned aerial vehicles. *Aviation*, 28(2), 115-127.
- Fakhri, A., Latifi, H., Mohammadi Samani, K., & Fassnacht, F. E. (2025). Improving the Accuracy of Forest Structure Analysis by Consumer-Grade UAV Photogrammetry Through an Innovative Approach to Mitigate Lens Distortion Effects. *Remote Sensing*, 17(3), 383.

- Heo, S. J., & Na, W. S. (2025). Review of Drone-Based Technologies for Wind Turbine Blade Inspection. *Electronics*, 14(2), 227.
- Kaur, J., Kumar, S., Singh, S. K., Thakur, R., Bansal, S., & Arya, V. (2025). Drones and Unmanned Aerial Vehicles Automation Using Reinforcement Learning. In *AI Developments for Industrial Robotics and Intelligent Drones* (pp. 257-284). IGI Global Scientific Publishing.
- Kuljanin, J., & Zivojinović, T. (2025). 10 Drone Technology. *Intelligent and Sustainable Engineering Systems for Industry 4.0 and Beyond*, 180.
- Kumar, A., & Vishwanathan, A. (2025). Use of drones in Indo-Pak cross border terrorism: Challenges, regulations and evolving responses.
- Maharana, S., (2017). Commercial Drones. *Proceedings of IRF International Conference*, 22nd January 2017, Mumbai, India.
- Massa, S. (2025). Peeping Town: Drone Surveillance and the Exclusionary Rule in Long Lake Township v. Maxon. *Northwestern University Law Review*, 119(4), 1103-1134.
- Memedovich, A., Steele, B., Orr, T., Hollis, A., Salmon, C., Hu, J., ... & Beall, R. (2025). Applying a diffusion of innovations framework to characterise diffusion groups and more effectively reach late adopters: a cross-sectional study on COVID-19 vaccinations in Canada in late 2021. *BMJ Public Health*, 3(1).
- Morgado, F., & Vieira, L. R. (2025). Global Ocean Science Infrastructures, Technological Development and Plankton Research. *Zooplankton Challenges in a Changing World: Volume 1: A Worldwide Perspective and Research Approach*, 1.
- Mustapha I. O., & Ajibade, A. A., (2024) Application of Unmanned Aerial Vehicle in 3D City Model, A Case Study of University of Ilorin.
- Pabón, C. I. R., Torres, J. A. G., Cueto, D. A. R., Morantes, J. F. R., Martínez, D. F. M., & Herrera, E. P. (2025). System for Early Warning in Harsh Areas in the Context of the Military Applications. *Revista Logos Ciencia & Tecnología*, 17(1).
- Rahaman, M., Putra, K. T., Irawan, B., & Biyanto, T. R. (2025). Industrial Evolution: The Integration of AI in Robotics and Drone Systems. In *AI Developments for Industrial Robotics and Intelligent Drones* (pp. 85-114). IGI Global Scientific Publishing.
- Rana, R., & Bhambri, P. (2025). Harnessing AI and Machine Learning for Enhanced Geospatial Analysis. In *Recent Trends in Geospatial AI* (pp. 27-72). IGI Global Scientific Publishing.
- Senturk, K., Gormus, A. F., Gonen, S., Bariskan, M. A., & Durmaz, A. K. (2025). Artificial intelligence-enhanced intrusion detection systems for drone security: a real-time evaluation of algorithmic efficacy in mitigating wireless vulnerabilities. *Cluster Computing*, 28(3), 175.
- Singh, B. (2025). Sharda School of Law, Sharda University, Greater Noida, India. *Unmanned Aircraft Systems*, 313.
- Singh, R., & Kumar, S. (2025). A Comprehensive Insights into Drones: History, Classification, Architecture, Navigation, Applications, Challenges, and Future Trends. *arXiv preprint arXiv:2501.10066*.

- Uth, B., Stehle, H., Wilhelm, C., Detel, H., & Podschuweit, N. (2025). The journalism-audience relationship in the digital age: A theoretical literature review. *Journalism*, 26(1), 45-64.
- Veglis, A. (2025). Practicing Local Data Journalism: Opportunities and Obstacles. In *Encyclopedia of Information Science and Technology, Sixth Edition* (pp. 1-13). IGI Global.
- Wang, N., Mutzner, N., & Blanchet, K. (2025). 'We Need Time...': An Expert Survey on Societal Acceptance of Urban Drones. *Science and Public Policy*, scae084.