

Team develops real-time detection system for spotting bird nests on transmission towers

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Research in the *International Journal of Wireless and Mobile Computing* addresses a significant safety issue facing power supply companies—the presence of bird nests on power line towers and other infrastructure.

Haopeng Yang and Enrang Zheng of the School of Electrical and Control Engineering at Shaanxi University of Science and Technology, and Yichen Wang and Junge Shen of the Unmanned System Research Institute at the Northwestern Polytechnical University all in Xi'an, Shaanxi, China, have developed a real-time detection system capable of swiftly identifying bird nests on transmission towers.

At first glance, one might imagine that the presence of a [nest](#) on a power transmission [tower](#), or pylon, would be harmless, but there are serious issues with damage and the potential for avian activity to "trip" safety cutouts on [power systems](#), leading to outages for consumers. This is particularly true of substantial nests built high up on pylons by raptors, storks, and other large species.

Unfortunately, the detection of such small objects as bird nests and the passing of the information back to a control center have represented an ongoing challenge due to their small size and the potential data loss during detection. The team's new system, uses an algorithm that can identify and so detect bird nests at different scales allowing for rapid risk identification.

An [unmanned aerial vehicle](#) (UAV), often referred to as a drone, fitted with a camera can patrol the towers, record and analyze images using an onboard computer running the team's algorithm and report back to the controllers with information that flags specific towers with a nest problem. The team's algorithm readily overcomes the problem of the background scenery in an image of a pylon being checked detecting only the presence of nests.

The research team says they have achieved an average accuracy rating of 90.05%. This high level of performance meets the demands of the State Grid for high-precision and real-time line maintenance inspections. The automated detection system precludes the need for costly regular manual

inspections.

More information: Haopeng Yang et al, Real-time detection system of bird nests on power transmission lines based on lightweight network, *International Journal of Wireless and Mobile Computing* (2023). [DOI: 10.1504/IJWMC.2023.131295](https://doi.org/10.1504/IJWMC.2023.131295)

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