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Smart Webcam Shield Protects Users from Unknown External Digital Intrusion

Superior automation to block unauthorized use of webcam, removing risk caused by user inattention

This smart shield for web cameras (webcams) adds a layer of security by utilizing one of two automated methods—an electrical-induced film and a motorized cover—to prevent unauthorized use of a computer's camera. Both battery-powered methods obfuscate the webcam lens until the device's sensitive phototransistor is triggered by the light-emitting diode (LED) indicator. If malicious individuals assert software to remotely initiate the webcam recording while bypassing the LED indicator, the smart shield's obstruction of remote visual access will remain in place as a defense for user privacy.

The technology actualizes with two methods of causing a blanket disruption to the camera's view when the LED indicator is off. The first method deploys an electrical polymer-dispersed liquid crystal (PDLC) film over the lens, while the second shifts a motor-initiated physical polyvinyl chloride (PVC) film cover across the camera field. The benefit of the PDLC film is that it is thin, flexible, electrically stable, and readily employed by an electrically switchable transmittance. The PVC cover offers the physical block over the camera that a majority of users prefer.

Both methods have been developed into working prototypes that have been tested on a laptop.

Whether the workstation is a work-from-home laptop or the family computer, this Georgia Tech innovation may offer protection of corporate strategy, children's wellbeing, and personal privacy by reducing the risk of digital intrusion by unauthorized webcam recordings.

Summary Bullets

- **Secure**: Offers visual obstruction of the webcam even when remote software attempts to record without triggering the computer's LED indicator
- **Reliable**: Automates the webcam safeguard for ongoing protection without reliance on user engagement
- **Flexible**: Enables two different actuators via the same sensor

Solution Advantages

- **Secure**: Offers visual obstruction of the webcam even when remote software attempts to record without triggering the computer's LED indicator

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Potential Commercial Applications

- Personal safety
- Corporate security
- Classroom shielding

Background and More Information

Since electronics designers miniaturized the webcam to fit into a personal computer, there have been efforts to increase its safeguards. Research shows that users have greater confidence in a physical block of their computer's webcam, with 61.5% admitting they have forgotten to engage a cover (e.g., sticker, integrated slide) despite intrusion concerns. There have been many instances of personal security breach and corporate espionage utilizing computer webcams without the permission or knowledge of the computer's owner. With significantly more users switching to home offices and children switching to remote learning modules due to the Covid-19 pandemic, there has been an increased reliance on personal computers within the home for work and school without the same level of security found on traditional corporate and school campuses. This technology is designed to enhance security in these situations.

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Publications

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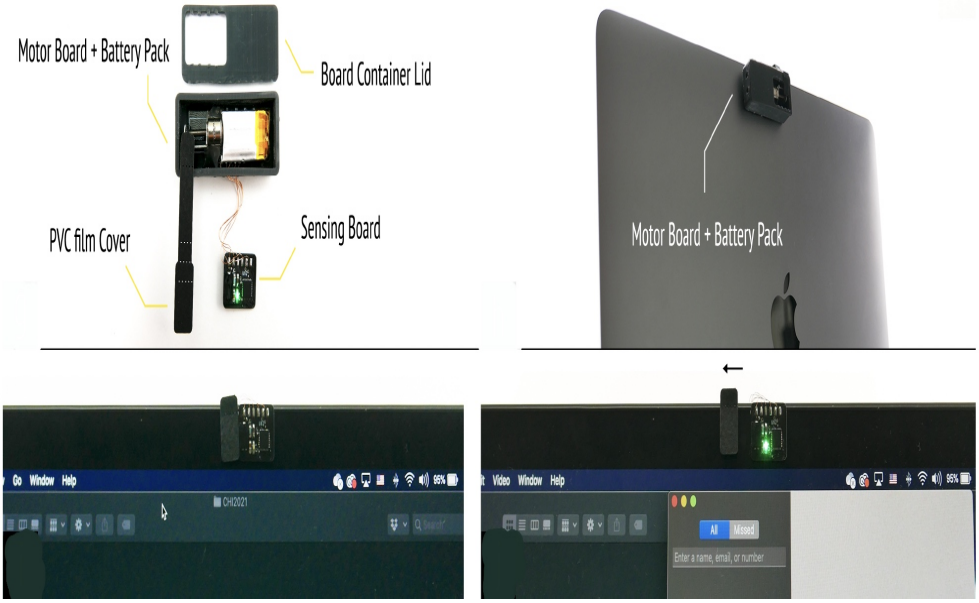
Images

Method 1: Electrical PDLC Smart Webcam Cover



Method 2: Motorized Smart Webcam Cover

Visit the Technology here:
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