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PRESENT WEATHER IMAGER

HARDWARE, CIRCUITS, & SENSORS

All-weather sensor for accurately identifying weather conditions and precipitation fall intensities.

TECHNOLOGY TYPE

Instrumentation
Optical Sensors
Meteorology
Hydrometeor

STAGE OF DEVELOPMENT

Ongoing research to determine efficacy of the stereo camera and LED lighting configuration.

IP PROTECTION

U.S. Utility Patent Pending
Hydrometeor Identification Methods and Systems
US20160247273A1

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Reference Number: U-5901

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TECHNOLOGY SUMMARY

Accurately characterizing the physical properties of atmospheric hydrometeors is essential to improve numerical models for weather forecasting and to respond to current weather conditions. Weather systems track precipitation type and intensity using lasers, shadows, and diffraction patterns, but fail to consistently identify changing precipitation states. These systems are especially unreliable with precipitation at temperatures near freezing and lack sufficient visualization of hydrometeors.

The *present weather sensor* utilizes high-speed imaging to accurately identify and communicate precipitation types. The sensor consists of a small camera mounted inside an outdoor security enclosure, with an LED lighting array to facilitate image processing. The sensor captures various precipitation types and fall intensities to maximize the accuracy of hydrometeor measurements, even in windy conditions. Standard meteorological measurement tools, such as thermometers and barometers, can be attached to the top of the device to increase the present weather sensor's versatility and enhance precipitation measurements.

FEATURES AND BENEFITS

- Accelerates data transfer.
- Improves compatibility with external devices.
- Enhances power regulation.
- Reduces complexity.
- Improves image capture and processing.

RECENT PUBLICATIONS

Garrett, T.J., Yuter, S.E., Fallgatter, C., Shkurko, K., Rhodes, S.R., Endries, J.L. (2015). Orientations and aspect ratios of falling snow. *Geophysical Research Letters. 42*(11): 4617-4622. doi: 10.1002/2015gl064040

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