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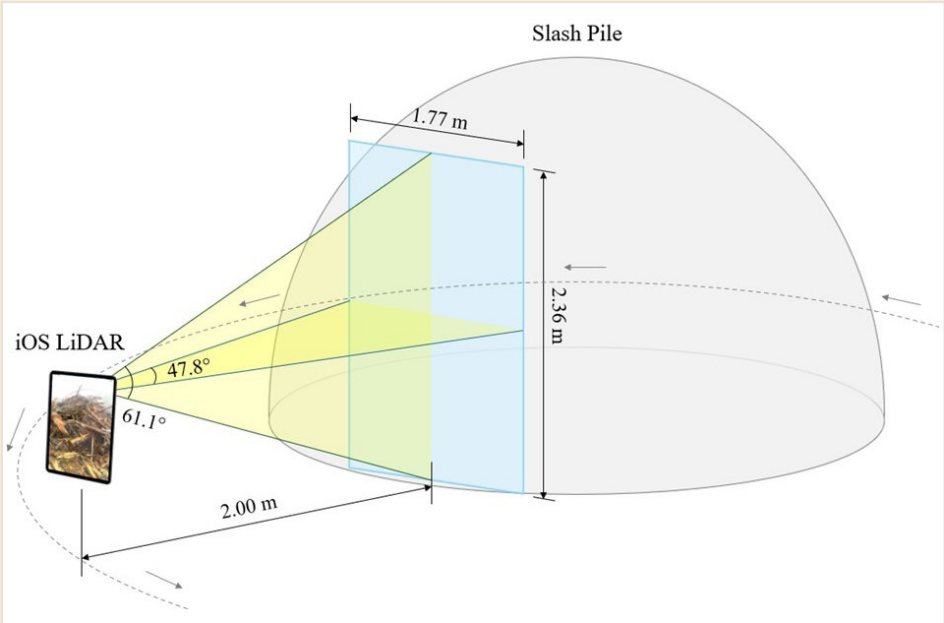
SlashScan: A new app for smart, fast, and cheap slash pile volume estimates in the field

For decades, foresters have sought cost-effective ways to remove the leftover twigs, branches, and boles—the "waste" of forest operations and fuels treatments—and transform them into a usable resource. Slash piles can be left alone, burned, or used. If left in place, slash piles may fuel the next wildfire or obstruct replanting efforts. Disposal via burning is relatively inexpensive but comes with risk, smoke, and increasingly, shorter burn windows. Before slash can be transported and processed into energy or bioproducts, land managers must inventory and measure the piles. These are often scattered across uneven terrain in all shapes and sizes.

Land managers also rely on accurate slash volumes to answer critical questions about wildfire risk (knowing how much fuel is on a landscape); potential biomass supply (for users like power plants); transportation logistics (estimating costs for moving and processing materials); and ecological stewardship (retaining some slash to support soil health and wildlife habitat). Researchers from Forest Service Research and Development and Oregon State University have created a new app to help.

"Our goal for SlashScan is to make slash pile measurement faster, safer, and more accessible," said Heesung Woo, assistant professor of Advanced Forestry Systems at Oregon State University. "Instead of relying on time-consuming manual measurements or expensive equipment, foresters can use a smartphone to quickly estimate slash-pile volume directly in the field. This allows managers to make more informed decisions about biomass utilization, fuel reduction planning, carbon accounting, and operational efficiency."

Just open SlashScan on an iPhone or iPad, aim the camera at a pile, and slowly walk around the pile. It's like taking a panoramic photo. No more hours of specialized training, measuring tapes, data sheets, drone calibrations, and in-office calculations. SlashScan marks a geolocation for each pile scanned so users can manage multiple piles across a site. It does not require a human to process or edit data as with drone data, according to the study. It is all done on site and is just as accurate for most piles. All functions (scanning, pile reconstruction, and volume calculations) are contained within the app. No Wi-Fi or



SlashScan is a new app that makes slash-pile measurement faster, safer, and more accessible. Providing near-real-time accurate volume estimates comparable to aerial drone LiDAR, all the work can be done quickly in the field using only an iPad or iPhone. Courtesy image by Oregon State University.

additional equipment is needed. Right now, SlashScan is only available as an iOS app on devices with lidar. Researchers hope to expand to Android systems in the future.

Factors like market demand and whether the biomass is green or cured determine what ends up in a slash pile. Pile characteristics play a role in volume estimation. "There's a lot of variability that makes it difficult to make accurate pile volume estimates," said Nathaniel Anderson, research forester with Forest Service Research and Development. "We hope this tool will help practitioners in the field make good estimates of what they have on hand for biomass inventory, which will help connect it to markets downstream or facilitate planning for disposal."

"SlashScan came from a very practical field need," said Heechan Jeong, a PhD student at Oregon State University. "Technology is advancing quickly, but applying new tools to real forestry problems often takes time. I hope SlashScan can be one small example of how computer vision and mobile sensing can be adapted to support everyday forestry work."

Featured Contributors

Nathaniel Anderson is a research forester with the Forest Service Research and Development Rocky Mountain Research Station.

Heesung Woo is an assistant professor of Advanced Forestry at the College of Forestry at Oregon State University.

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Annabelle Moore is the author of this Science You Can Use.

FURTHER READING

Jeong, Heechan; Woo, Heesung; Chung, Woodam; [et al.]. 2026. SlashScan: An iOS application for real-time forest slash pile volume estimation and mapping. Forest Ecology and Management. 613: 123776.

SlashScan App, v. 1.1. Advanced Forestry Systems Lab. Corvallis, OR: Oregon State University. https://apps.apple.com/us/app/slashscan/id6740838119

MANAGEMENT IMPLICATIONS

- The new SlashScan app provides near-real-time accurate volume estimates comparable to aerial drone LiDAR (a scanning technique that uses light and range to create digital 3-D models or maps of environmental or architectural structures).
- The app runs on a lidar enabled iPad or iPhone, without Wi-Fi, providing rapid field assessments. An Android app is not yet available.
- SlashScan reduces operational costs, equipment needs, and processing time.
- Geotagging of slash piles is automatic in the app, supporting inventory tracking, logistics, and documentation.



A medium-size slash pile at the research site. The variability in slash size and types makes it difficult to make accurate slash-pile volume estimates. Sometimes the slash is green or it may be cured. Piles may be hand piled or machine piled. SlashScan calculates the pile size in the field so post-data editing is not needed. Forest Service photo by Nathaniel Anderson.

Forest Service Research and Development researchers work at the forefront of science to improve the health and use of our Nation's forests and grasslands. More information about Forest Service research in the Rocky Mountain region can be found here: https://research.fs.usda.gov/rmrs. The mission of Oregon State University College of Forestry is to explore, evaluate, communicate, and catalyze new possibilities in forestry and advance sustainable solutions to challenges facing society.

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