

Team LumberHack



Team Members: Colin Wood, Jenna Pedro, Thomas Whitney, & Matthew Flanders

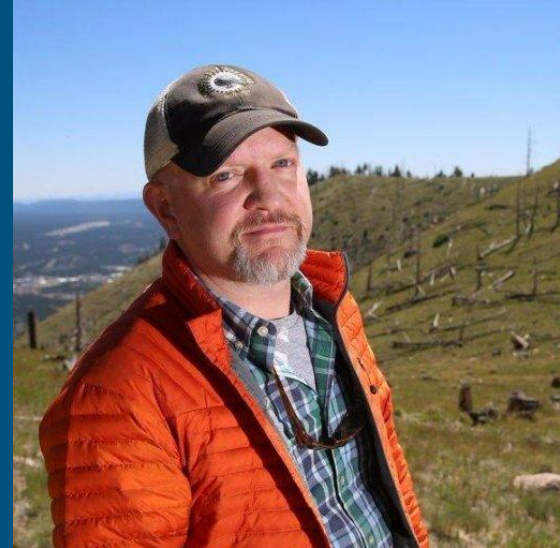
Team Mentor: Melissa D. Rose

Our client

Andrew J. Sanchez Meador, Ph.D

Executive Director, Ecological
Restoration Institute

- Works to protect and rehabilitate forest ecosystems
- Combines hands-on, technological, and software based solutions



**NORTHERN
ARIZONA
UNIVERSITY**

Ecological
Restoration Institute

Restoring Healthy Forests

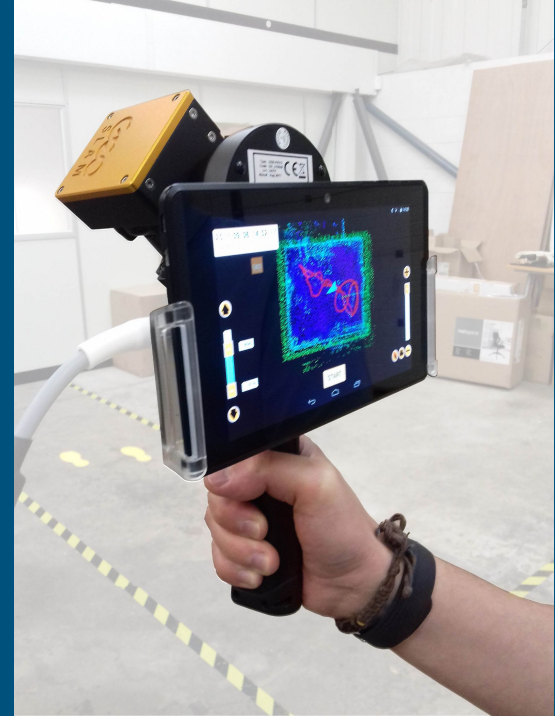
- Past policies focused on fire prevention have led to dense unhealthy forests that pose wildfire risks.
- Traditional methods of monitoring are time intensive, costly, and produce results that are difficult for non-technical people to understand.
- New methods are needed that can quickly gather data over large areas and present findings in an easily interpretable way.



Museum Fire in Flagstaff

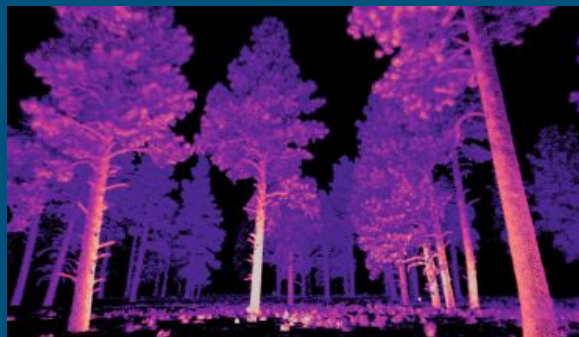
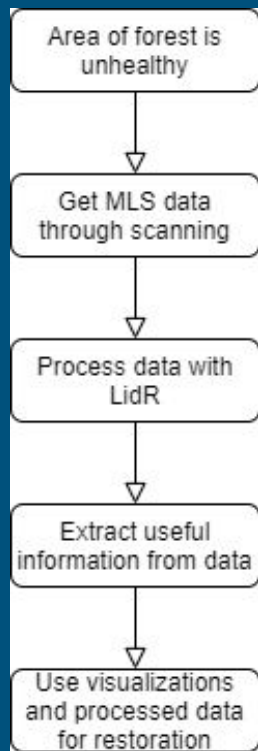
What is Lidar?

- Light Detection And Ranging (Lidar)
- How does it work?
- Photons are sent out into the environment which reflect off objects. A sensor collects these reflections and uses them to map the environment.



Mobile Lidar Scanner (MLS)

Workflow view of our client's research process



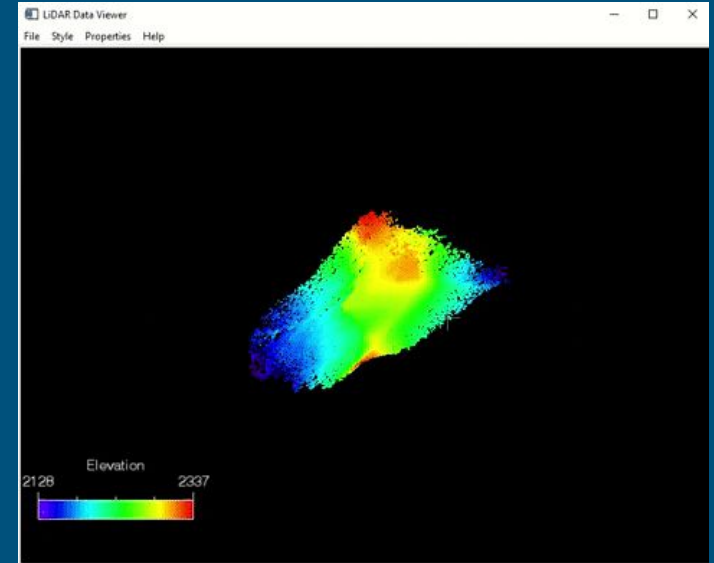
MLS Point Cloud

What made our client wish for newer/better software?

- Accessible for more people
- Need for more features
- We want an all in one tool

Our solution

- Making an app that expands with an existing lidR package's functionality
- Read mobile lidar scanning(MLS) data
- Process MLS data to provide ecologically pertinent attributes:
 - Height
 - Volume
 - Above-ground biomass
 - Individual tree location
- Visualize sets of points that describe the resulting tree at two points at a time



Lidar Point Cloud

Works Cited

Sánchez Meador, Andrew J. *Facilitating Forest Monitoring with Mobile Lidar*.

Desk, News. "GeoSLAM ZEB-REVO RT Hand-Held Laser Scanner." Geospatial World, 2017, <https://www.geospatialworld.net/>.

Ktar.com. (2019, September 13). *Forest crew accidentally sparked museum fire in Northern Arizona*. KTAR.com. Retrieved October 7, 2021, from <https://ktar.com/story/2739085/forest-crew-accidentally-sparked-museum-fire-in-northern-arizona/>.