

# HOW RANDOM IS YOUR FOREST?

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# Agenda

1. Background & Objectives
2. Exploratory Data Analysis
3. Models Overview
4. Conclusion



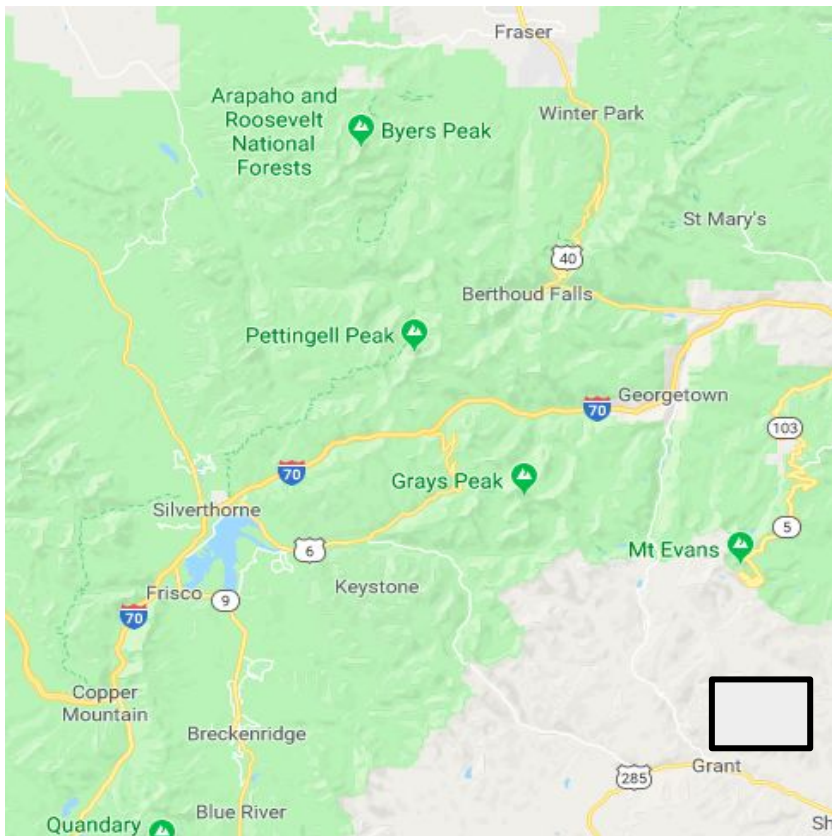
# BACKGROUND & OBJECTIVES

A photograph of a lush, green forest. Tall, straight tree trunks are visible in the background, and the foreground is filled with dense ferns and other undergrowth. Two people are walking away from the camera on a narrow dirt path that leads into the forest. The overall atmosphere is serene and natural.

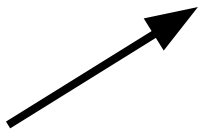




# Objectives



Predict the predominant tree type





A photograph of a dense forest with tall, straight trees and a thick undergrowth of ferns. Two people are walking away from the camera on a path in the distance. The word "EDA" is overlaid in the center in a large, black, handwritten-style font.

EDA

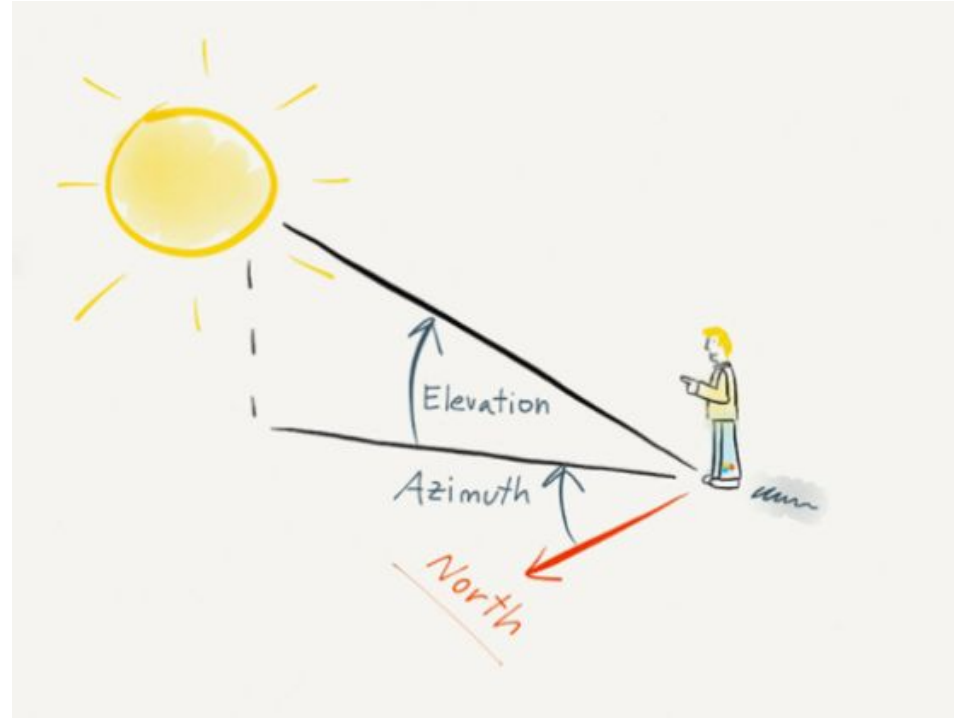
# Data

## Cartographic Variables:

- Elevation
- Slope
- Aspect (Azimuth)
- Distance to water, road, fire

## Environmental Variables:

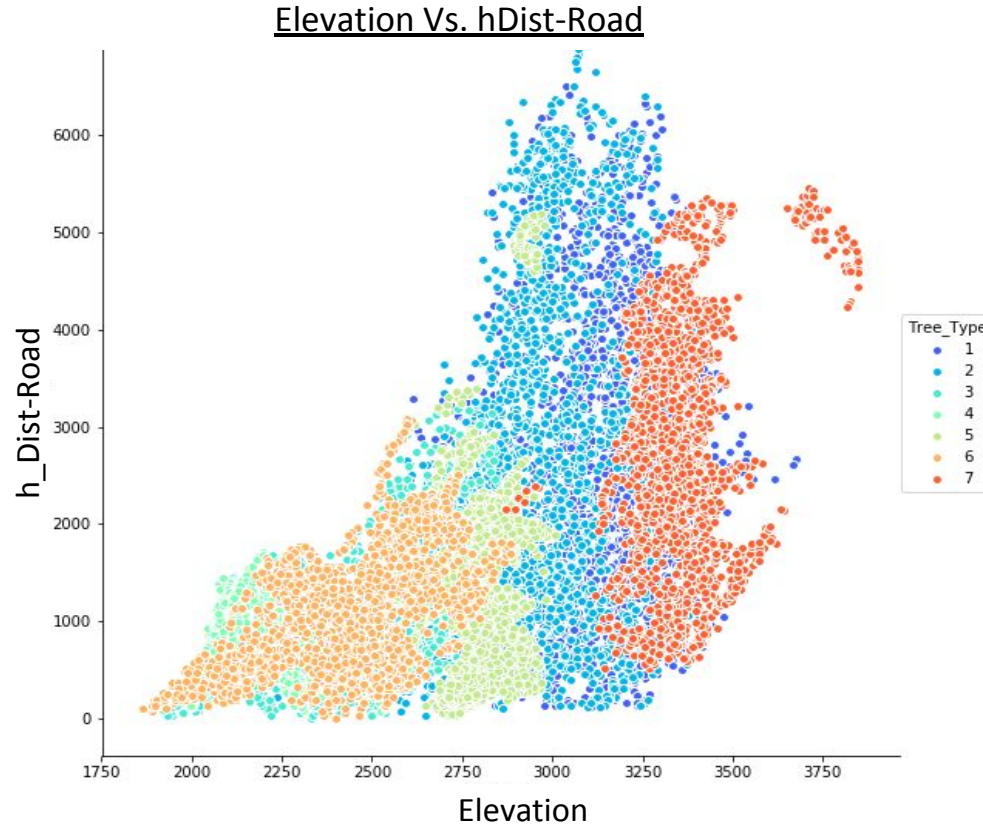
- Tree Type\* (7)
- Wilderness areas\* (4)
- Soil types\* (40)
- Shade levels



\* = Categorical

# EDA

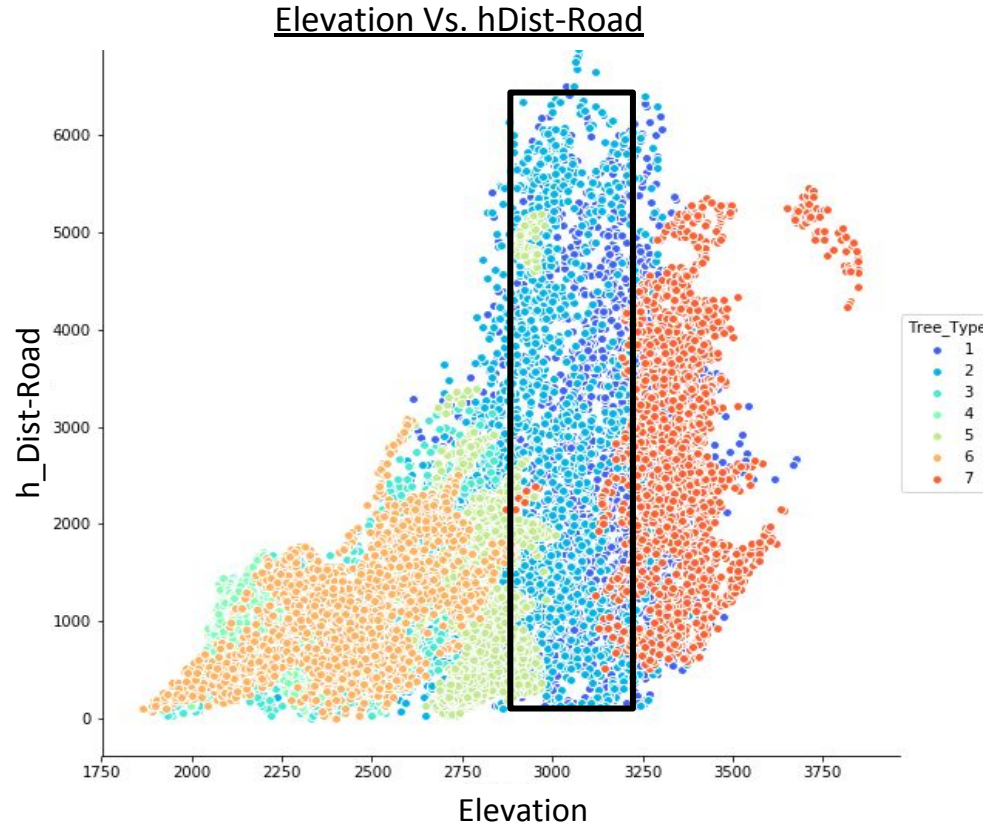
- Visualized the highest correlated features in respect to Tree Type





# EDA

- Visualized the highest correlated features in respect to Tree Type



# MODELS OVERVIEW

A photograph of a dense forest with tall, moss-covered trees and a person walking on a path. The text "MODELS OVERVIEW" is overlaid in the center.



# Models Overview

Base



```
graph TD; Base[Base] --> GaussianNB[Gaussian N.B.]; GaussianNB --- KNN[KNN];
```

Gaussian N.B.

KNN

# Models Overview

Base



```
graph TD; Base[Base] --> Gaussian["Gaussian N.B.  
(0.54)"]; Gaussian --> KNN["KNN  
(0.83)"]
```

Gaussian N.B.  
(0.54)

KNN  
(0.83)



# Models Overview

Base



Gaussian N.B.  
(0.54)

KNN  
(0.83)

Advanced



SVC (Built-in)

SVC (Manual)

# Models Overview

Base



Gaussian N.B.  
(0.54)

KNN  
(0.83)

Advanced



SVC (Built-in)  
(0.84)

SVC (Manual)  
(0.79)



# Models Overview

Base



Gaussian N.B.  
(0.54)

KNN  
(0.83)

Advanced



SVC (Built-in)  
(0.84)

SVC (Manual)  
(0.79)

Tree Methods



Decision Tree

Extra Trees

Random Forest

# Models Overview

Base



Gaussian N.B.  
(0.54)

KNN  
(0.83)

Advanced



SVC (Built-in)  
(0.84)

SVC (Manual)  
(0.79)

Tree Methods



Decision Tree  
(0.8)

Extra Trees  
(0.84)

Random Forest  
(0.87)

# Models Overview

Base



Gaussian N.B.  
(0.54)

KNN  
(0.83)

Advanced



SVC (Built-in)  
(0.84)

SVC (Manual)  
(0.79)

Tree Methods

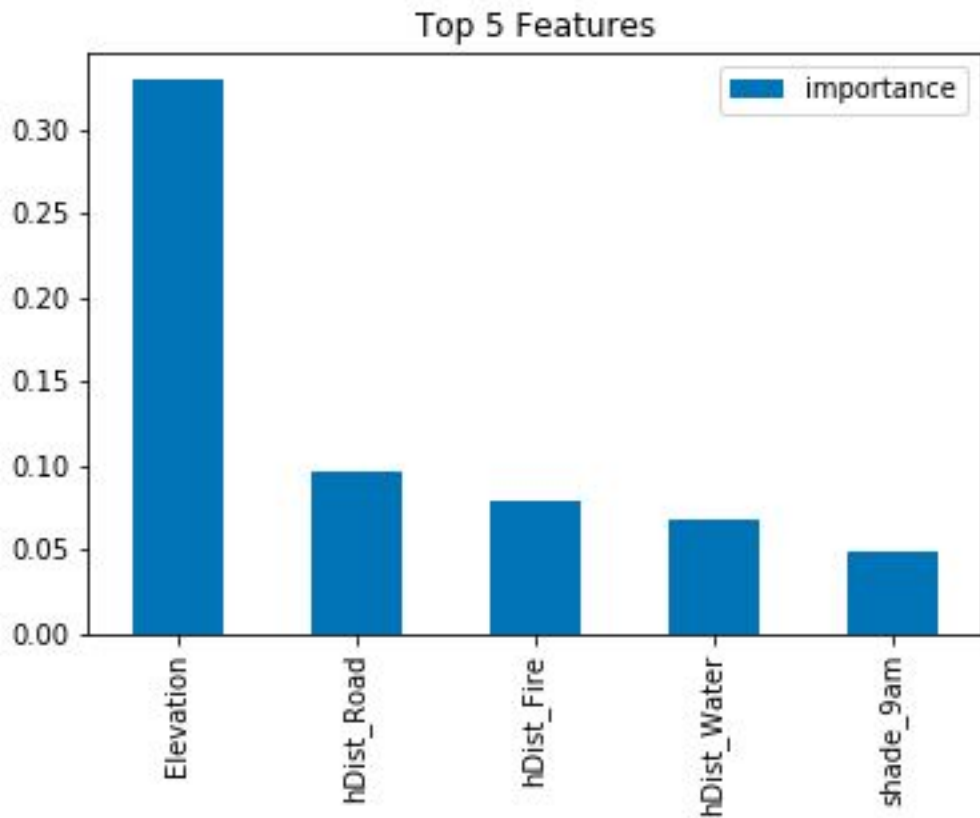


Decision Tree  
(0.8)

Extra Trees  
(0.84)

Random Forest  
(0.87)

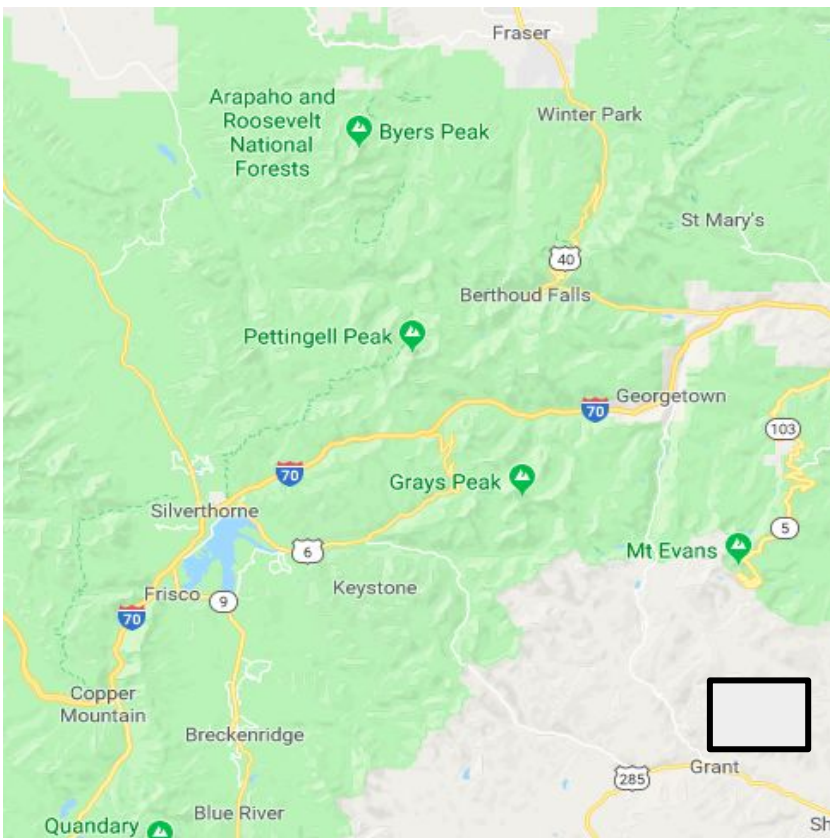
# Feature Importance



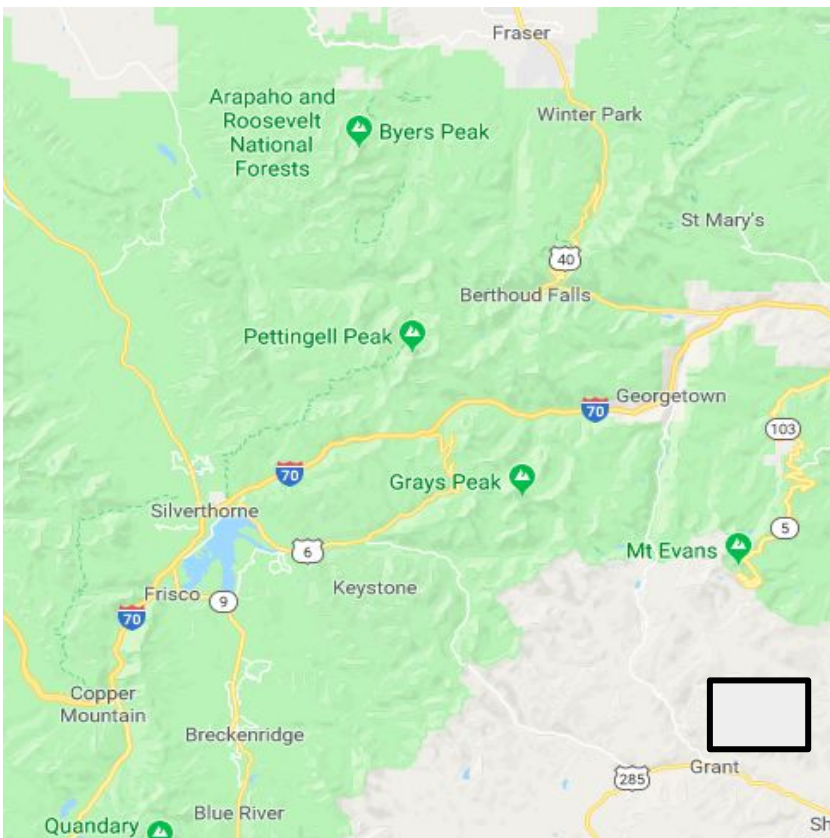


# CONCLUSION

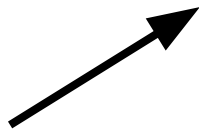
A misty forest scene with tall trees and ferns, with two people walking away in the distance.



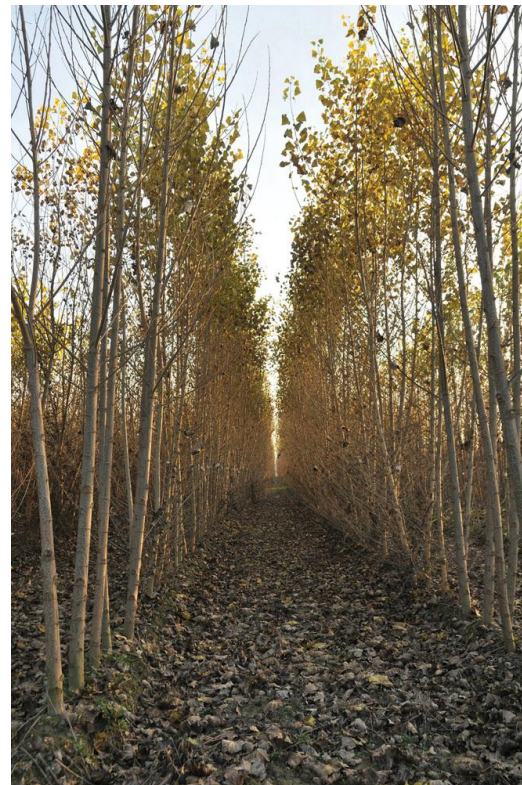
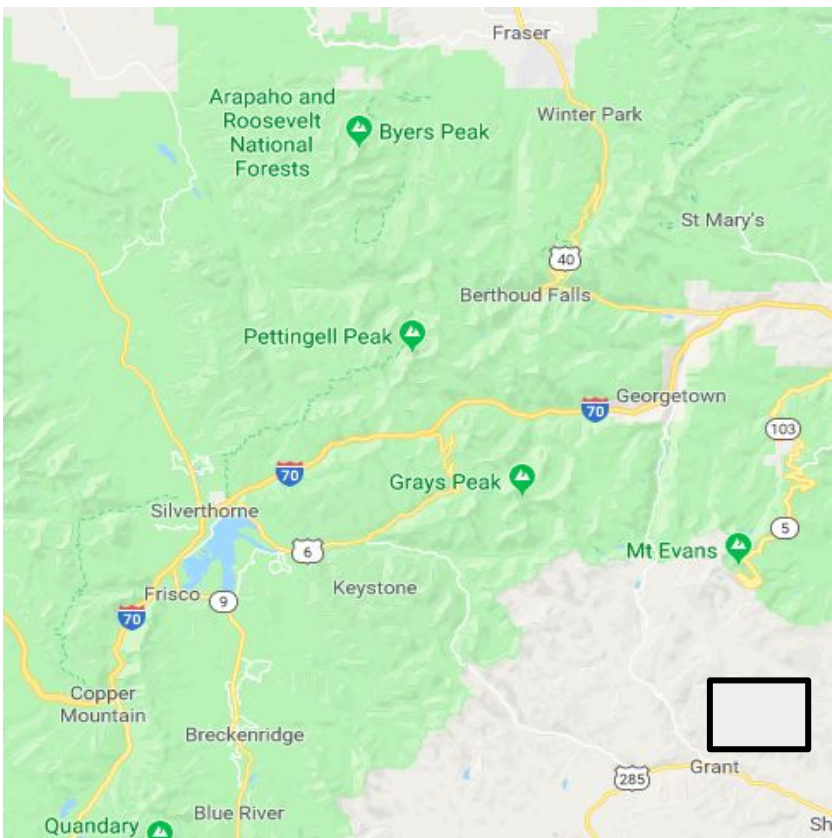
Predict the predominant tree type



Tree Type 5 - Cottonwood!









# THANK YOU!

CONTACT:

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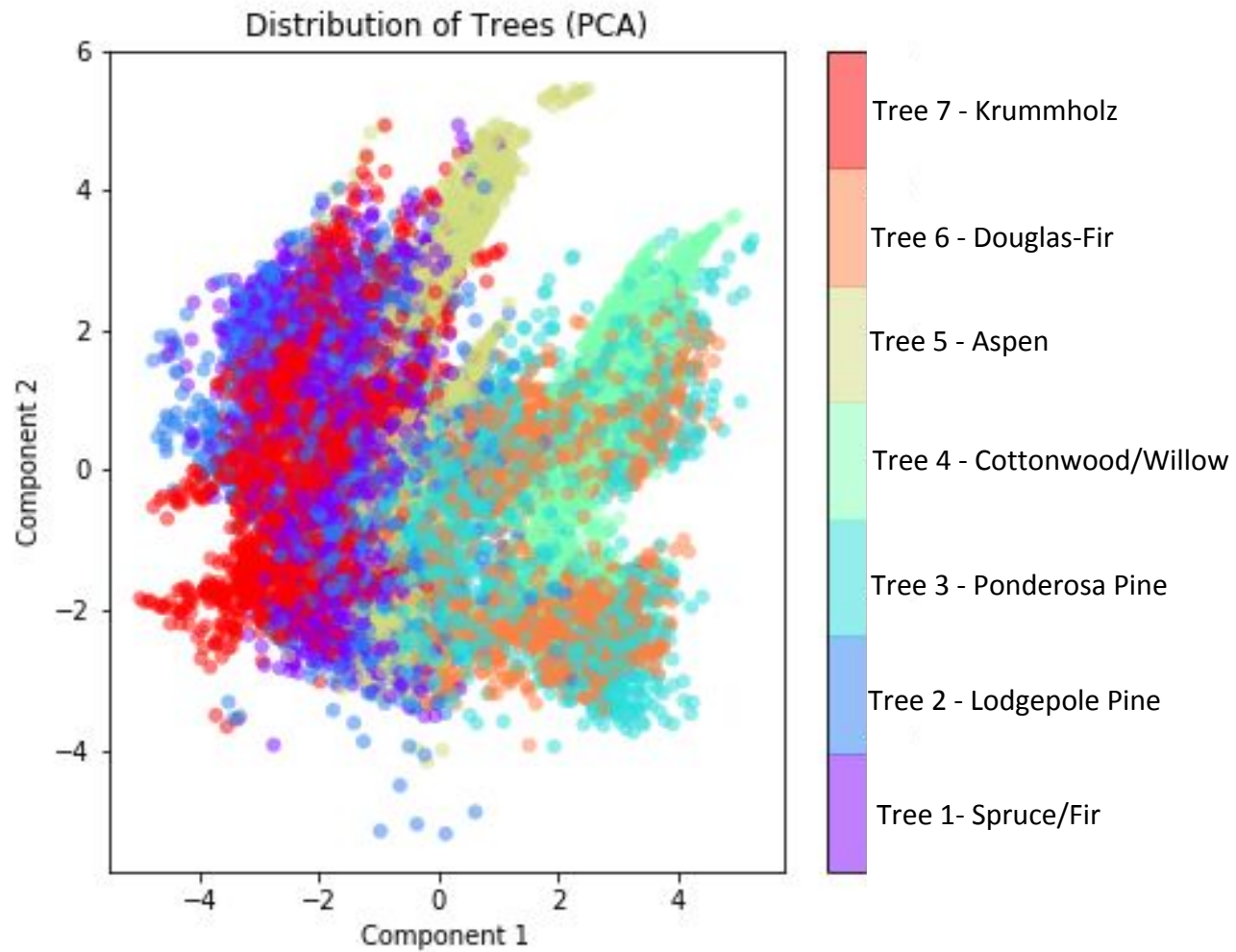
LINKEDIN: [LINKEDIN.COM/IN/BENJAMINLIN24/](https://www.linkedin.com/in/BENJAMINLIN24/)

GITHUB: [GITHUB.COM/BENLIN100](https://github.com/BENLIN100)



A photograph of a dense forest with tall, straight trees and a path leading into the distance. The image is slightly faded, giving it a soft, ethereal feel. The word "APPENDIX" is written in a large, black, hand-drawn font across the center of the image.

# APPENDIX





# Model Analysis

