**Project Overview: AI Techniques to Find Patterns in Wood Property Variation in Eucalypts**

**Project Title:**

Using AI Techniques to Find Patterns in Radial Wood Property Variation in Eucalypts

**Advisor:**

Prof. David Drew

**Project Overview:**

The goal of this project is to use AI to identify patterns in how wood properties vary from the centre (pith) to the outer edge (bark) of eucalypt trees. Wood properties like cell size, wall thickness, and density change as the tree grows. Understanding these patterns can help in forestry and wood science.

**Objective:**

Use artificial intelligence (AI) to identify patterns in how the properties of eucalypt wood change from the center (pith) to the outer edge (bark) of the tree. Understanding these changes can improve forestry practices and wood science.

**Why This is Important:**

Eucalypt trees show complex variations in wood properties like:

* **Cell Size**
* **Wall Thickness**
* **Density**

These variations are influenced by:

* **Tree Growth**
* **Environmental Factors**

Even trees growing close to each other can show different patterns. By finding and understanding these patterns, we can:

* Improve wood quality
* Optimize forestry practices
* Enhance scientific knowledge

**How We’ll Do It:**

1. **Collect Data:**
   * Gather existing datasets of eucalypt wood properties.
   * Ensure data covers different properties and multiple trees.
2. **Clean and Prepare Data:**
   * Organize the data for analysis.
   * Fix any issues like missing or inconsistent data.
3. **Analyze Data Using AI:**
   * Apply AI techniques to find patterns in the data.
   * Use machine learning models to identify how properties change from pith to bark.
4. **Interpret Results:**
   * Understand the patterns found by the AI.
   * Relate these patterns to environmental and developmental factors.
5. **Report Findings:**
   * Write a detailed report explaining the patterns and their implications.
   * Provide recommendations for forestry and wood science.