Final Project
Predicting Skin Disease

Supervised Machine Learning Classification

gradio

OpenAI

Oscar Lidheim

Questions

- Can you accurately predict what skin disease a person have?

- How accurate is the prediction only using simple model (12 simple clinical/visual attributes)?

- Could this be a useful application to deploy?

Data

366 patients

6 Skin Diseases (Psoriasis + 5 other)

- 12 Clinical Features (Visual)
- 22 Histopathological Features (Skin sample under microscope)

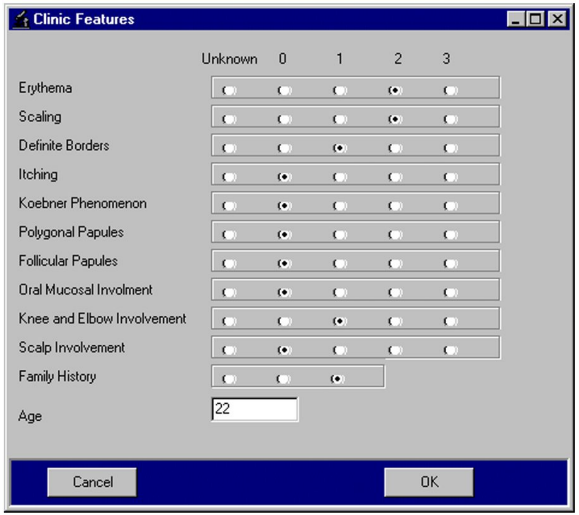
All data (except age) is on range 0-3

- 0 No presence
- 1-2 low-mid range
- 3 Large presence

Student (Data Engineering Dept)

First program 1998 (Turkey) c. 95% accuracy

More than +10 studies since. 100% accuracy



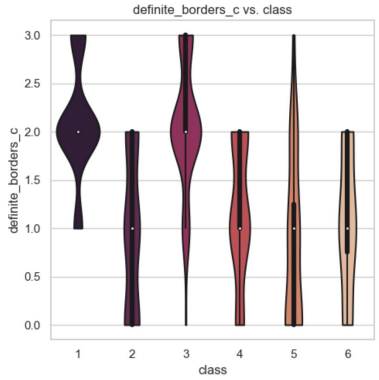
Workflow

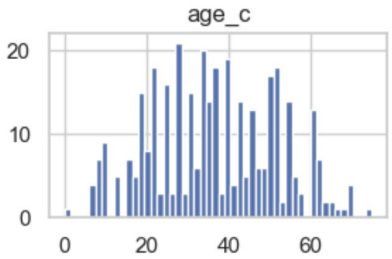
1) Clean Data
   a) Split Simple/Full Model
2) EDA
3) Train 14 models with standard settings (GridsearchCV)
4) Tuning two models:

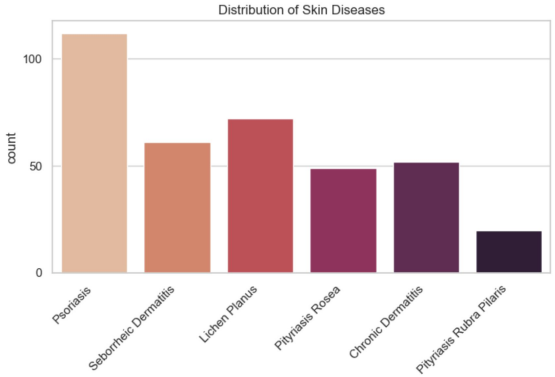
   Simple Model: **LinearSVC**

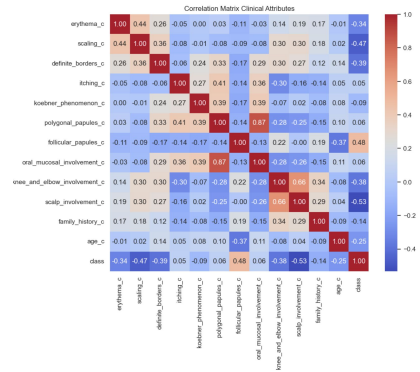
   Full Model: **ExtraTreesC**

5) Final Evaluation
6) Deploy model on web app (Gradio)
   a) Implement OpenAI API

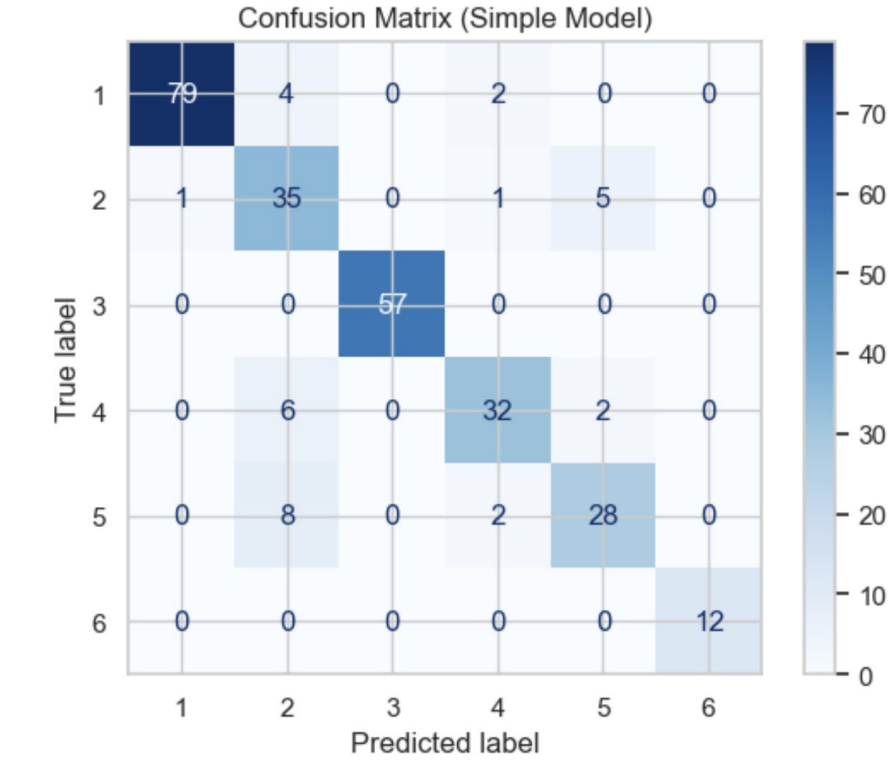


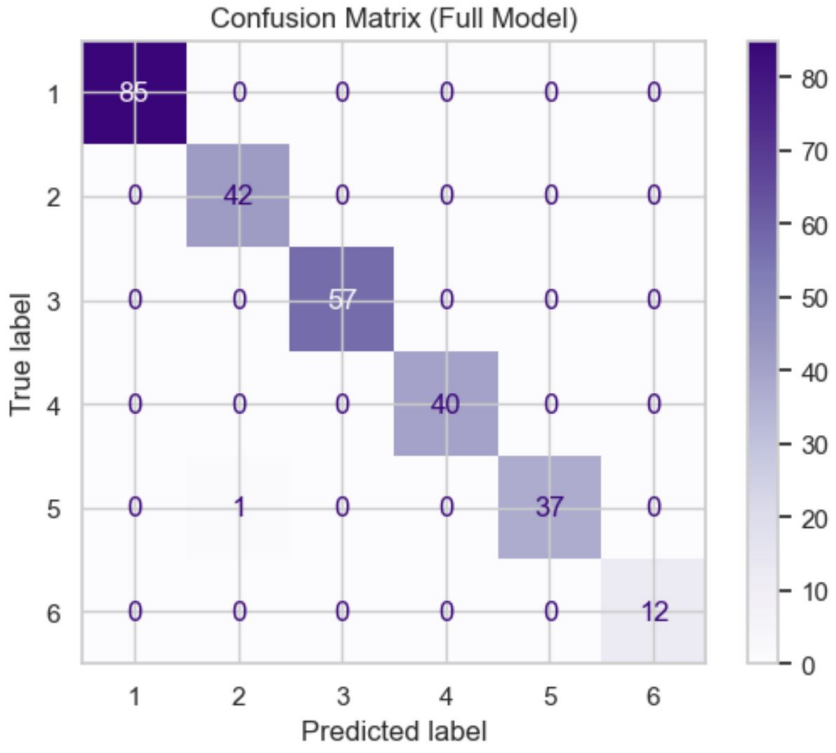






Confusion Matrix (Training)





Final Evaluation

Simple model (LinearSVC):

Accuracy 88%

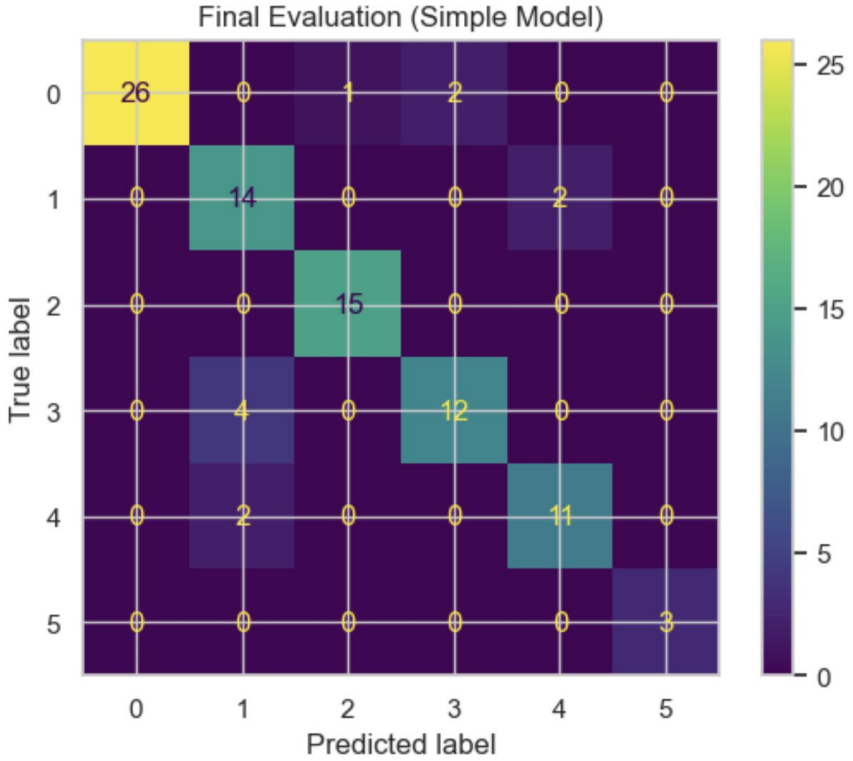
Precision 89%

Recall 88%

F1 88%

Full model (ExtraTrees):

100%



Challenges & Learnings

Challenges

- Visual Studio Crash (4hrs)
- Gradio took most time (minor changes)
- Keeping track of saved models when running program

Learnings

- Saving, prediction and deployment of ML models
- Using new library Gradio
  - Working with visuals/UI

Thank You