



PIETRA

Gemstone Identification Using Computer Vision Framework



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Introduction

The classification of gemstones is one of the daunting tasks faced by the gem industry for two reasons:

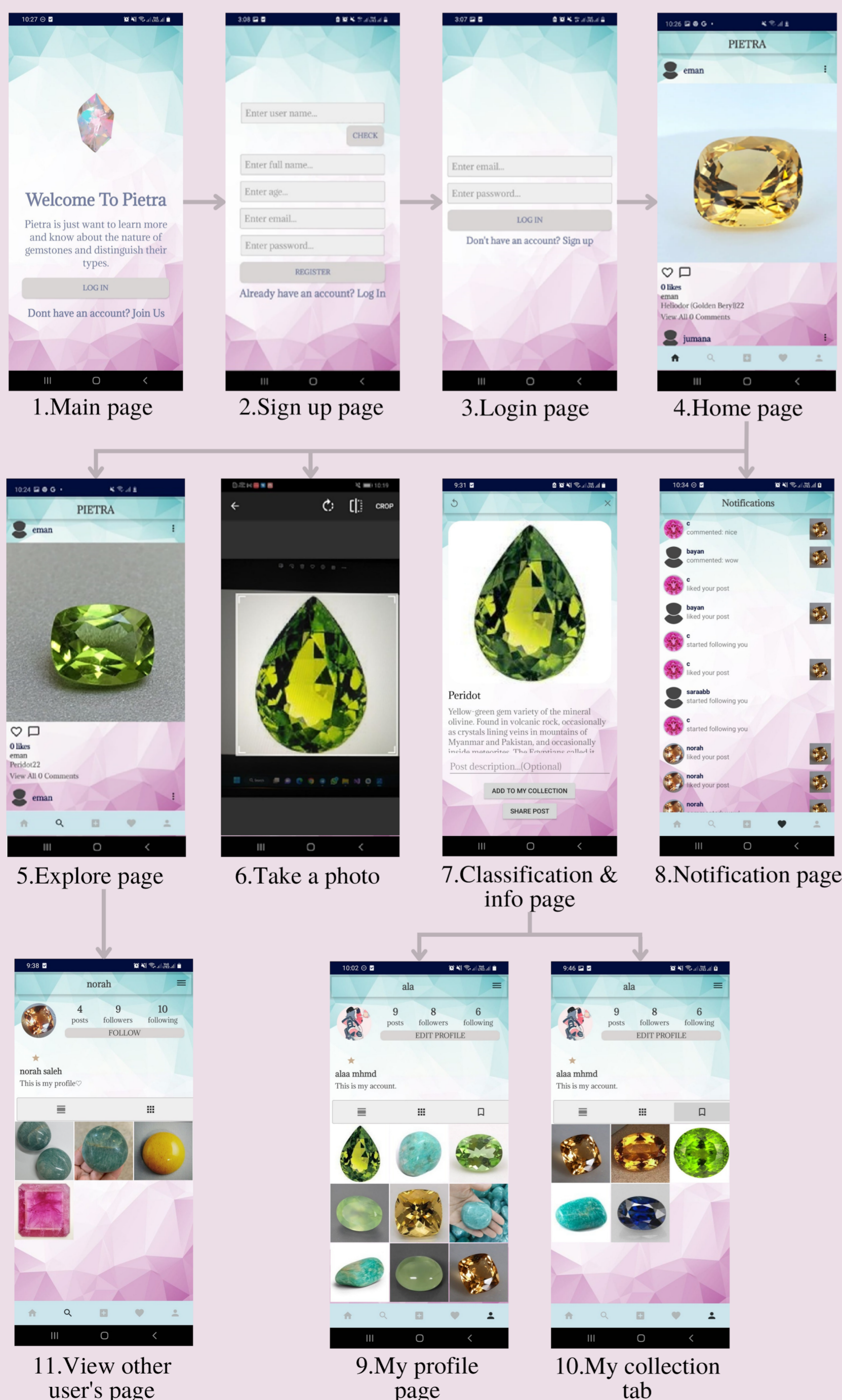
- The classification of a gemstone is often difficult to detect with unaided eye, or take long time by expertise.
- It is often a time-consuming process and may require a large number of instruments.

This project seeks to develop an application to help traders and gemstone collectors to detect the type of gemstones instantly using its image. It uses Computer Vision algorithms to give the best guess of the type of gemstone. Users can also publish pictures of gemstones and communicate with other users.

Tools

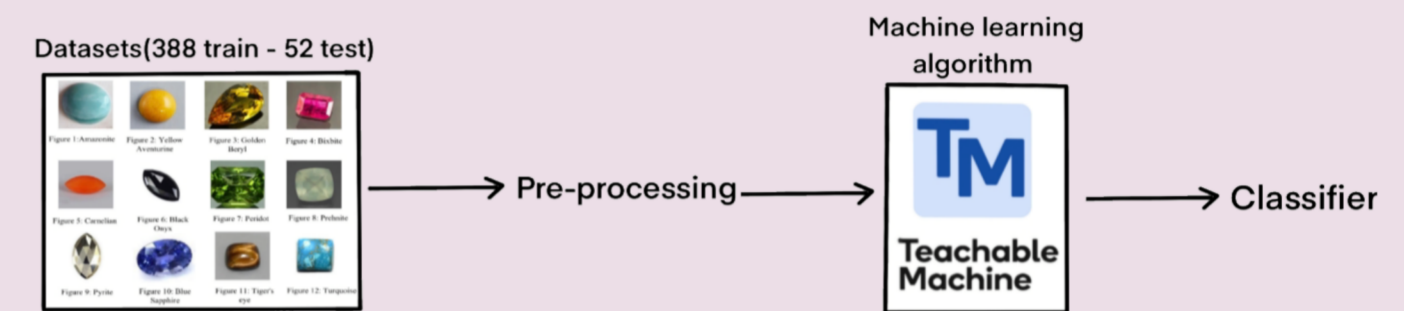


Application UI

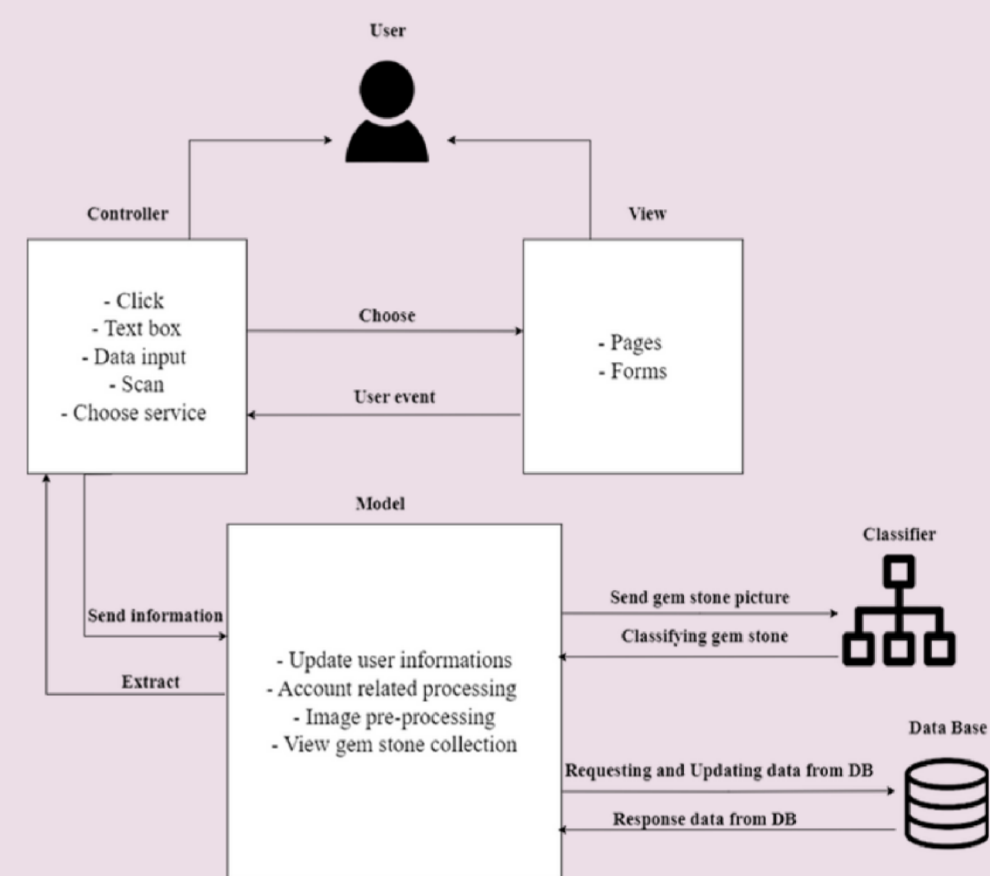


Methodology

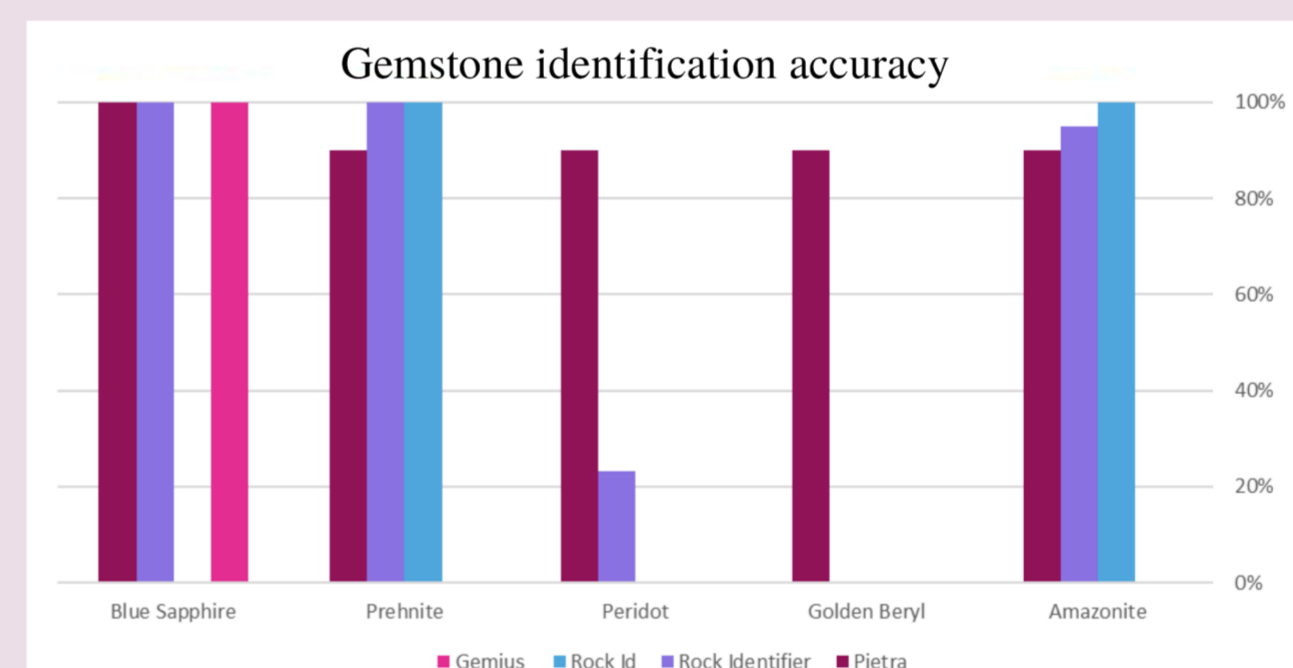
- Machine learning classifier was required first to be integrated to the developed application.



- By integrating the classifier to the application, the application will classify gemstone accurately and instantly. The waterfall model was employed.



Performance analysis



- Fast
- Accurate
- Reliable
- Secure

Conclusion

Our application can recognize 12 different types of gemstones and classify them from their image instantly and accurately. It performed better than most of the existing applications. Also, it gives one specific classification of the gemstone rather than giving several suggestions.

Future Work

- Adding more recognizable gemstones and rocks to the dataset. such as volcanic rocks.
- Adding the option to join the application as a store or shop.
- Authenticating expert users with tests and certificates.
- Enabling chatting between users.

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