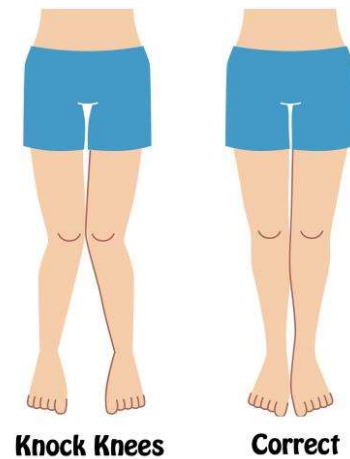# KNOCK KNEES DETECTION

INTRODUCTION

Knock knees, medically known as "genu valgum" is a common orthopaedic condition characterized by an inward deviation of the knees when a person stands with their feet together. This condition can affect people of all ages, but early detection and appropriate intervention are critical to preventing long-term musculoskeletal issues. The timely identification of knock knees in their early stages is essential for effective treatment and improved quality of life.

Knock Knees   Correct

CAUSE

- Vitamin D deficiency
- Obesity
- Lack of physical activity
- Injury
- Genetics (rarely)

PROBLEM STATEMENT

Our project aims to address the problem of early-stage knock knees detection and treatment recommendation through the application of machine learning techniques. The primary challenges include:

Early Detection: Identifying knock knees in their early stages can be challenging, as the visual symptoms may be subtle. Existing diagnostic methods, such as physical examinations and X-rays, are often performed only when the condition becomes severe. Our goal is to develop a reliable and non-invasive method for detecting knock knees at an early stage, enabling proactive intervention.

Doctors do not usually order x-rays for children within the normal age range for knock knees if they have no problem walking, running, or playing, and have typical appearing legs. This avoids exposing the child to unnecessary radiation

https://www.childrenshospital.org/conditions/knock-knees

Severity of the problem: Temporarily knocked knees are part of a standard developmental growth stage for most children. This usually corrects itself as the child grows. Knock knees that persist beyond six years of age, are severe or affect one leg significantly more than the other may be a sign of knock-knee syndrome.

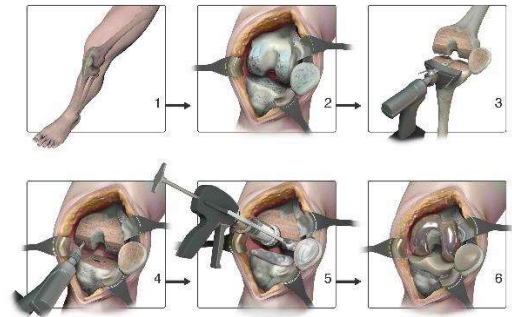https://www.hss.edu/condition-list_knock-knee.asp#normal

Due to the negligence during early stages of knock knees, the patient might have to go through surgeries/operations like OSTEOTOMY or KNEE REPLACEMENT SURGERY.

Average cost of SINGLE KNEE REPLACEMENT is around Rs.3,10,800 to Rs.4,14,400.

https://www.vaidam.com/search/knock-knee-surgery/india
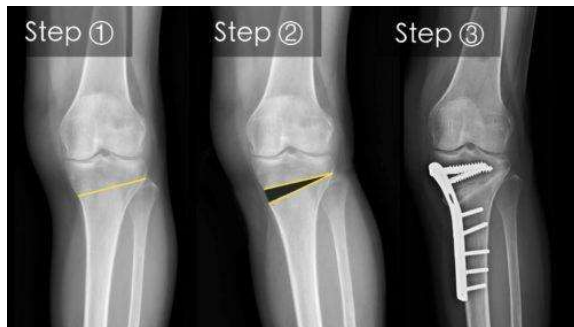
OSTEOTOMY SURGERY

KNEE REPLACEMENT SURGERY

Treatment Recommendation: Once knock knees are detected, it is essential to provide tailored treatment recommendations. Our machine learning model accurately classifies the severity of knock knees and recommends whether there is a need of treatment or not.

What's our take on this?

SOLUTION

We are going to take on this problem using our machine learning model which is trained On the pre-processed dataset. Our modules consist of machine learning algorithms suitable for image classifications.

We trained the model with a diverse dataset of various leg images both normal and disease affected. These models will be used to detect the presence of knock knees and classify the severity of the condition. Treatment recommendations will be based on the severity classification.

FEATURES

- Our Application adopts deep neural networks and a novel algorithm for searching central points of organs to automatically calculate angles.
- The measurement method proposed in this application is similar to the way that doctors measure the angle, it uses the computer algorithm to imitate doctor's workflow.
- As the result of the recognizable outline of the femoral head, the knee, and the ankle, it's suitable to adopt deep learning algorithm to segment them.

OUR APPLICATION

Our project will involve collecting a diverse dataset of leg images and clinical measurements from individuals with varying degrees of knock knees.
We will train machine learning models, such as convolutional neural networks (CNNs) and classification algorithms, on this dataset. These models will be used to detect the presence of knock knees and classify the severity of the condition. Treatment recommendations will be based on the severity classification.
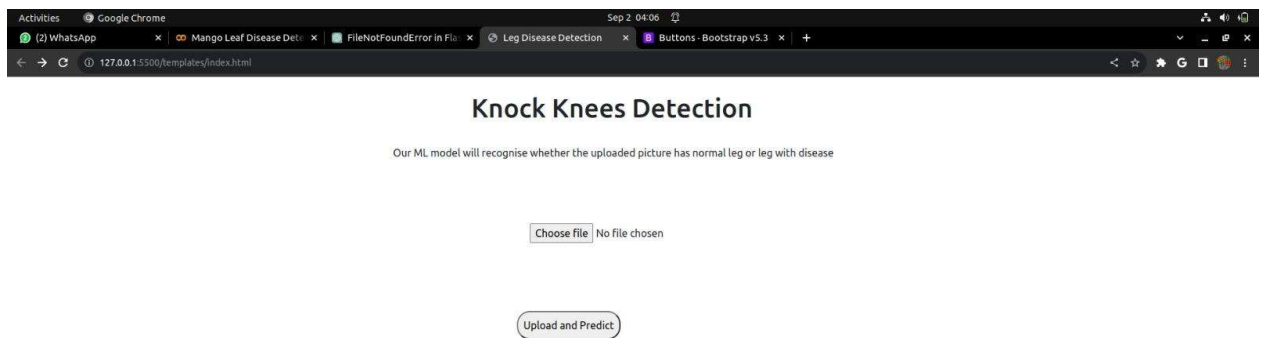
EXPECTED OUTCOMES

We anticipate the following outcomes from our project:

- An accurate knock knees detection model.
- Classification of individuals into treatment groups based on severity.
- A user-friendly application for knock knees detection and treatment recommendations.

CONCLUSION

Our project aims to address the critical issue of early-stage knock knees detection and treatment recommendation using machine learning. By developing an accurate model and user-friendly application, we aspire to improve the quality of life for individuals with knock knees and promote proactive healthcare practices.

REFERENCES

https://www.hss.edu/condition-list_knock-knee.asp#normal

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