



Sole wear identification

App

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Situation & Complication

S: Shoes are a necessity for us every day, and the traces of wear on the soles over time have become a key health indicator.



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C: However, 90% of people don't know **sole wear** related to **position and bad habits** during exercise

Key Question

KQ: our goal is to **find out the different sole wear** that everyone is unaware of when walking and exercising, and then provide them with a comprehensive improvement methods



01



02

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Meet the Team

Our group was made up of cross-domain background students, passionating with creating innovative ideas and technologies to help people solve halth problems

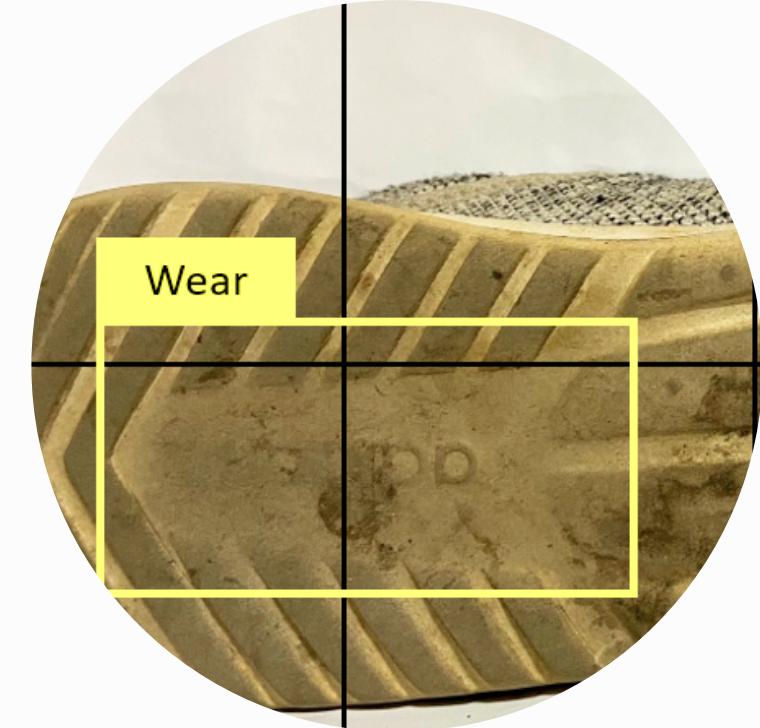
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Project Introduction

Our goal is to use image recognition models to classify different sole wear patterns. Before training models, we did a lot of data preprocessing such as collecting data, creating database, and labeling.



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Workflow

Collect training data

Create database

Labeling

Training





Workflow

Collect training data

Sportsfield, playground



Questionnaire

Gender	Age	Exercise Frequency
Usage time	Size	Weight

Create database

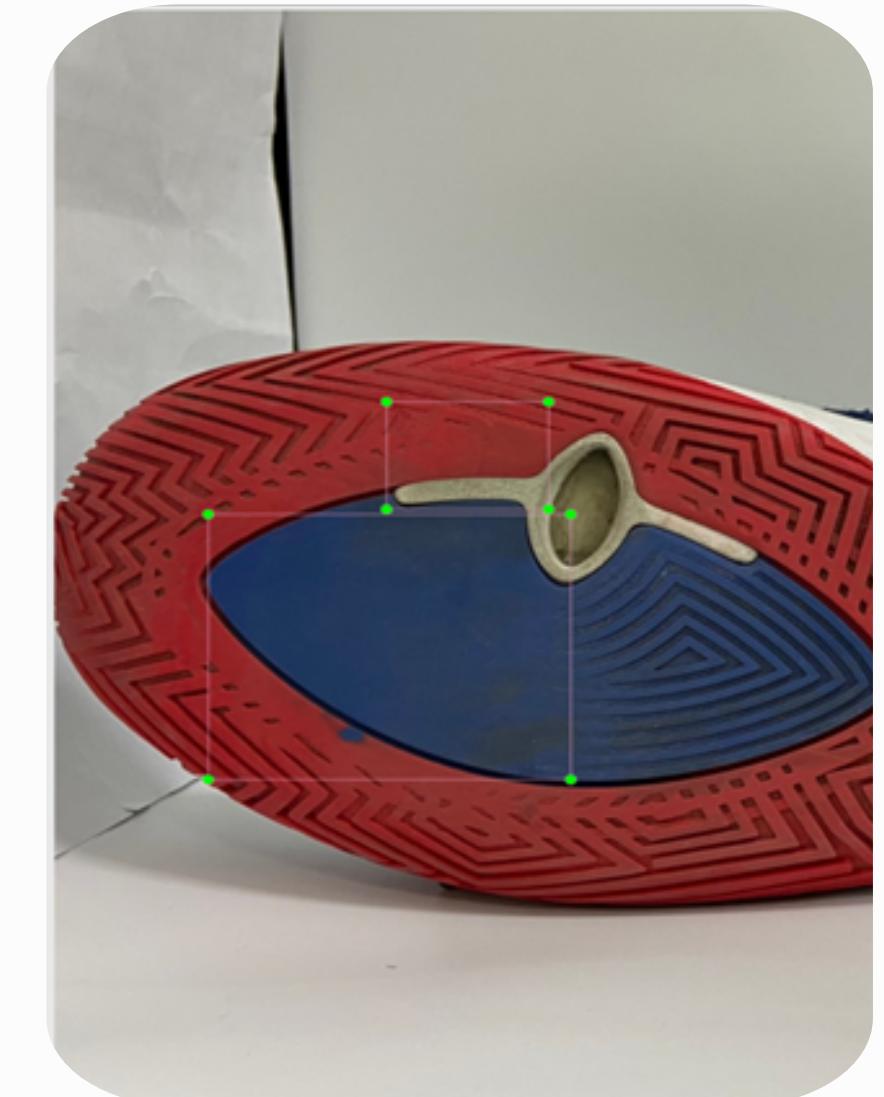
Exercise frequency, weight

Labeling

Label areas of wear

Training

Train the CNN model



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Normal



Inner Wear



Outer Wear



Front Wear



Insufficient
wear



Heel Wear



Excessive
Wear



7 Categories

We classified sole wear into 7 categories based on the health and medical report*, making models to learn the labels.





Tools introduction

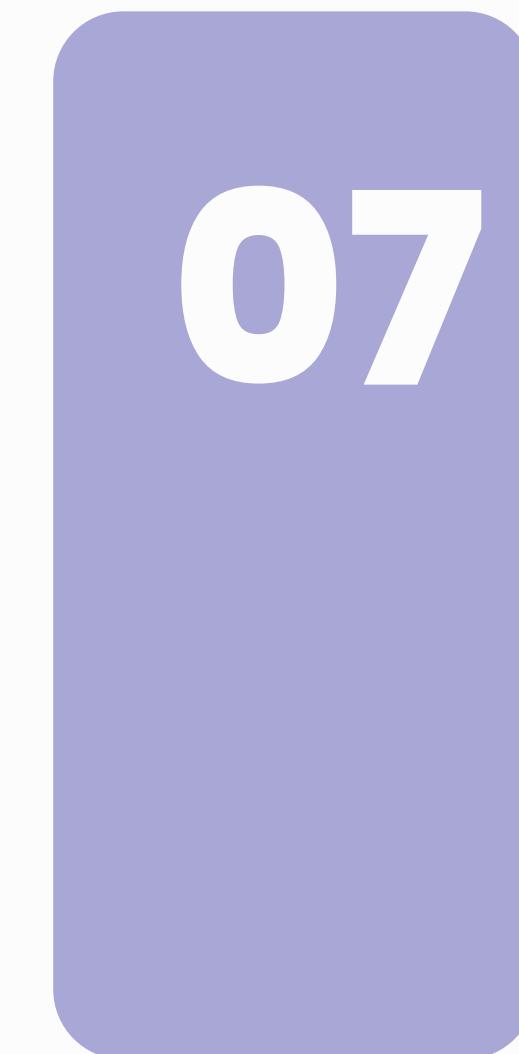
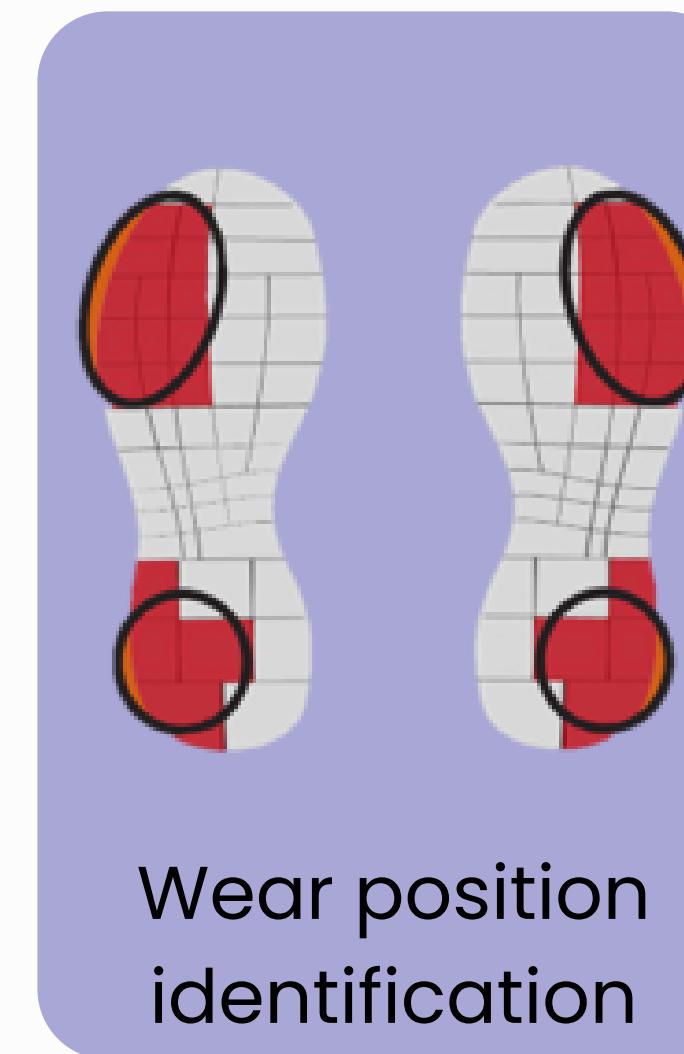
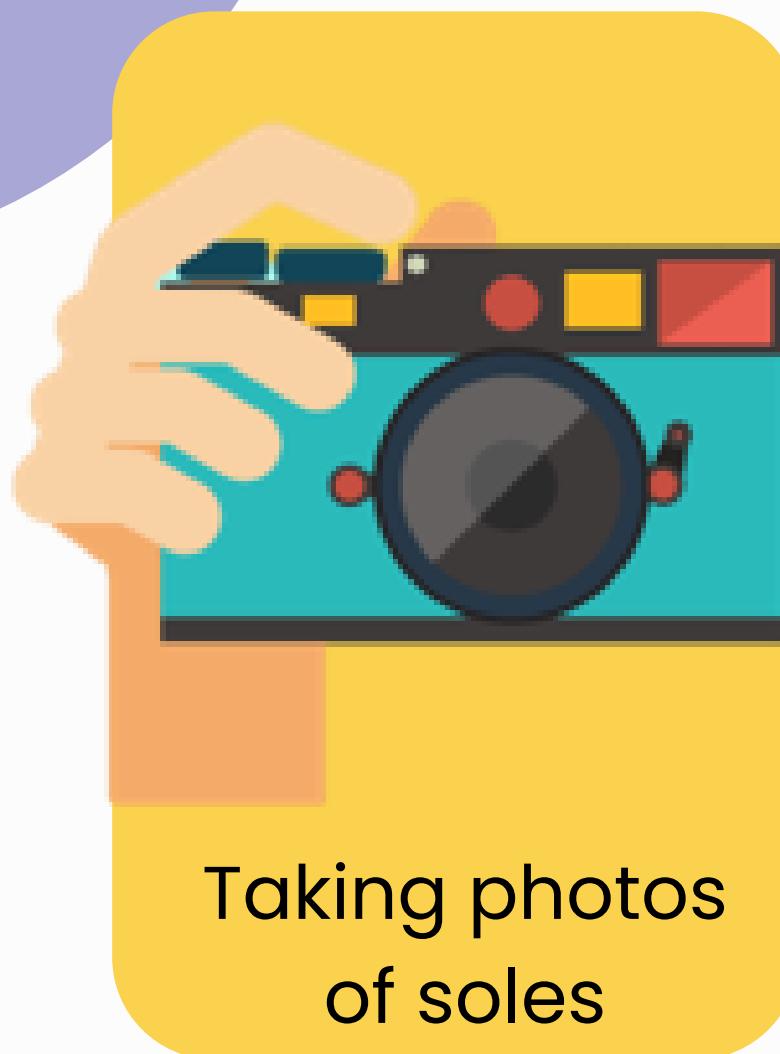
yolov4

- An object detection system in real-time completely based on CNN
- Isolates a particular image into regions and envisioned the confined-edge box and probabilities of every region
- More precise and superior speed
- Optimize neural networks detector for parallel computations



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Users workflow

Effortlessly Obtain a Comprehensive Health Report for Your Shoes

With our app, all you have to do is take a photo of your shoes, and our technology will generate a comprehensive health report containing professional recommendations.





Business Value

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01.



Customized shoes

Abnormalities that require adjustment, go to a professional institution for free consultation and testing, if customized shoe matching successful, we could get the **referral fee**

02.



Shoe identification

Extend this App to "**Shoe upper**" identification for people looking for a specific shoe style, taking advantage of what people are searching for to **decide the direction of shoe styles for next season**

03.



Sole Database

Through continuously collecting a large number of photos of shoe soles, we can **work with police** to provide a **comparison database**





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App Demo



Easy to Use



Reliable



Comprehensive health report



Professional suggestions



Thank You



Any concerns or discussions please sent email to: liu02637@umn.edu