Problem Statement

To fulfil the gap of guidance to individuals. Build a platform for individuals to get guided through their steps/positions for yoga. The platform must correct the Yoga pose using text or text to speech if possible. Use deep learning neural networks and Openpose. Build a web based platform.

CONTENTS

Introduction

- Human Pose estimation is an important problem that has enjoyed the attention of the Computer Vision community for the past few decades.

- Human Pose Estimation is defined as the problem of localization of human joints (also known as keypoints - elbows, wrists, etc.) in images or videos.

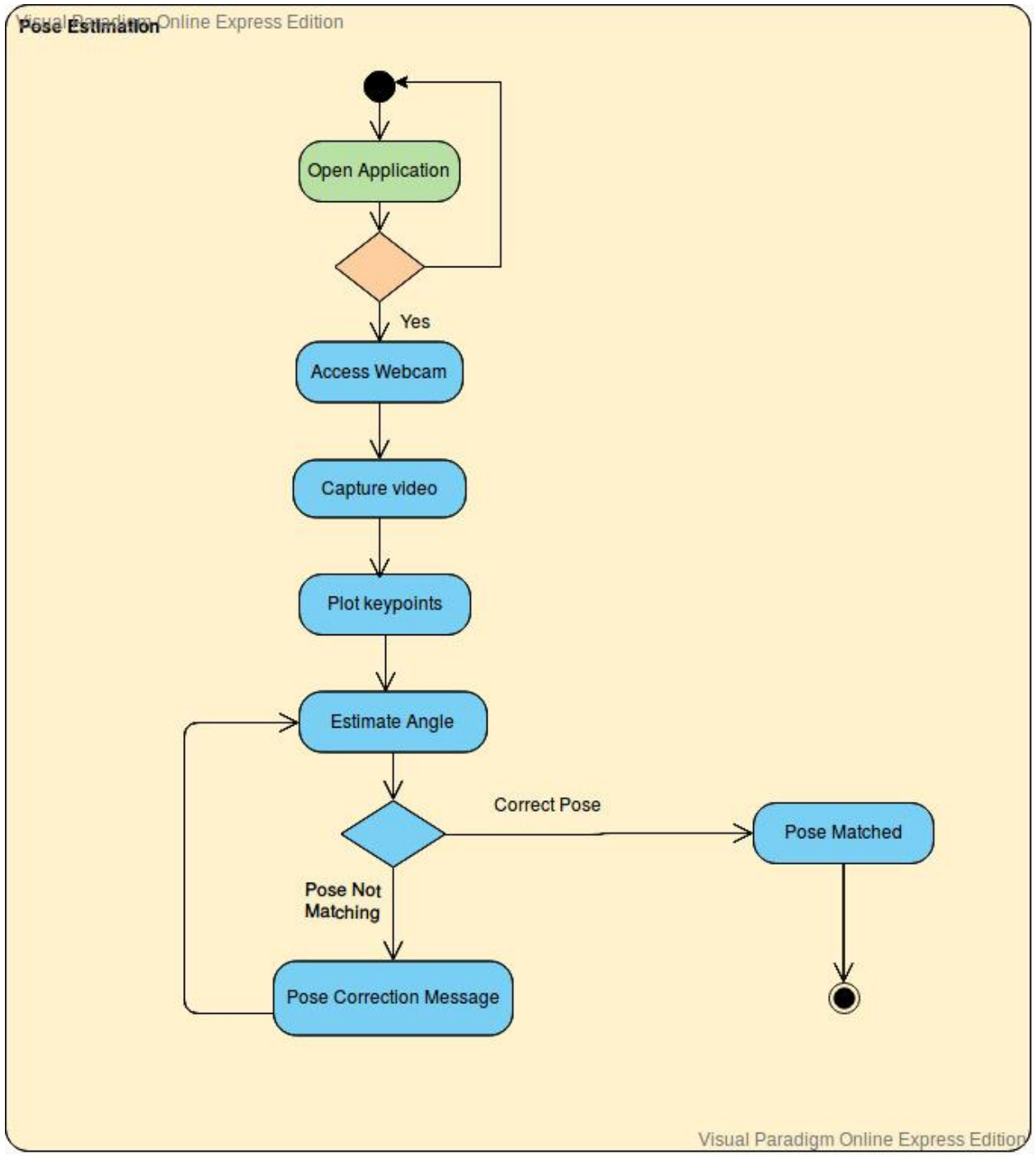
Motivation

- Due to lack of yoga trainers at a cost to suit budget.
- We thought of substituting traditional way with Technology for Yoga trainers.

Literature Survey

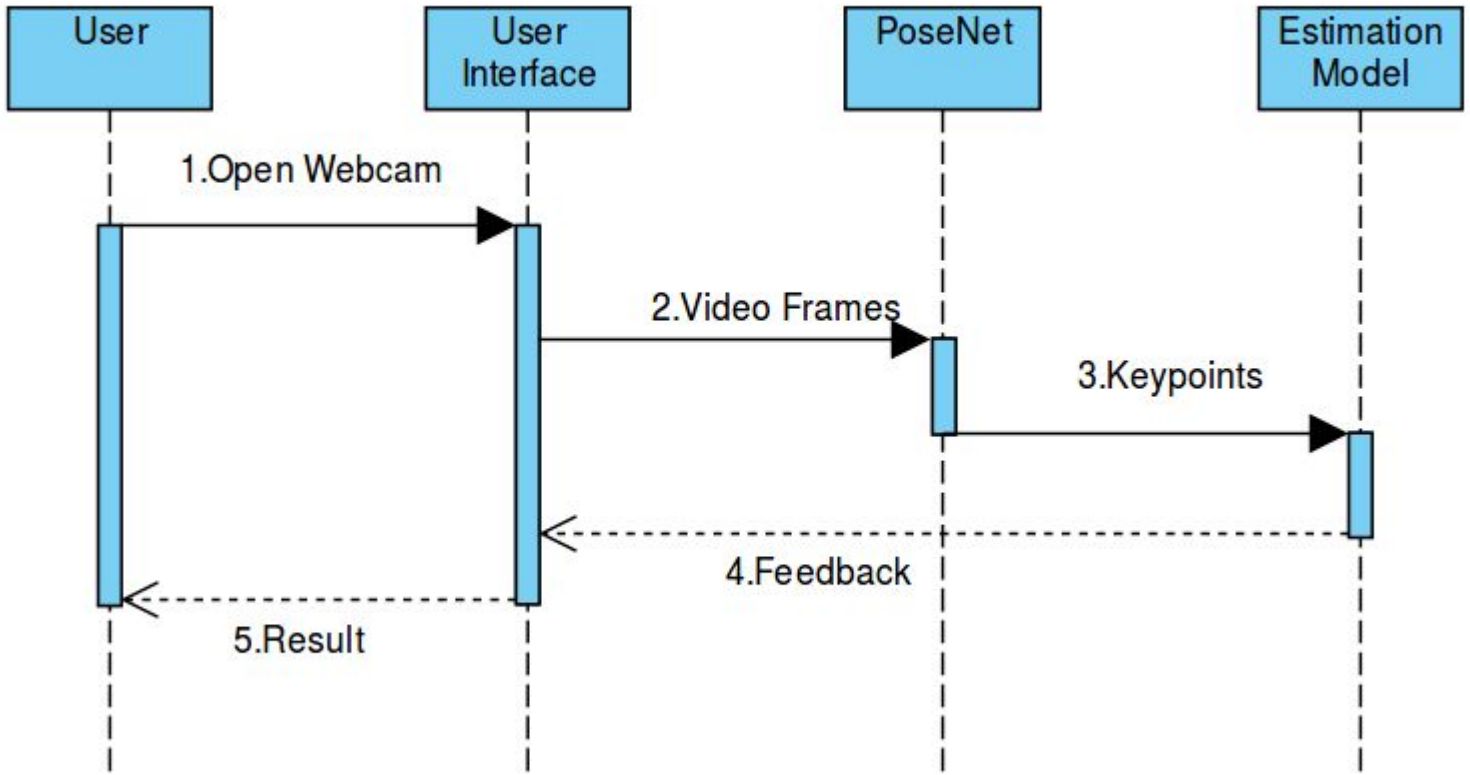
Sr. No.	Title	Author	Published year	Conference
1	Realtime Multi-Person 2D Pose Estimation using PAFs	Tomas Simon, Yaser Sheikh	2017	Computer Vision and Pose Recognition
2	Convolutional Pose Machines	Varun Ramkrishna, Takeo Kanade	2016	CVPR
3	DeepPose: Human Pose Estimation via DNN	Alexander Toshev, Christian Szegedy	2014	CVPR

UML (activity) diagram



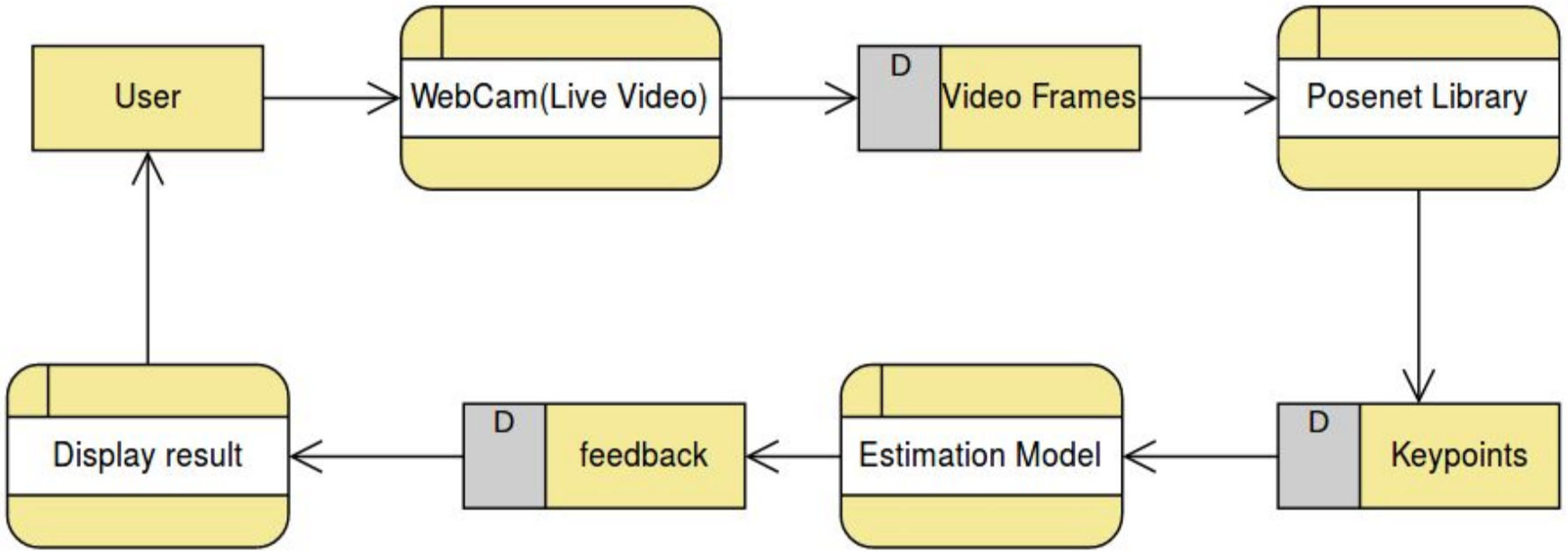
Tool used:-
Visual Paradigm

UML (Sequence) diagram



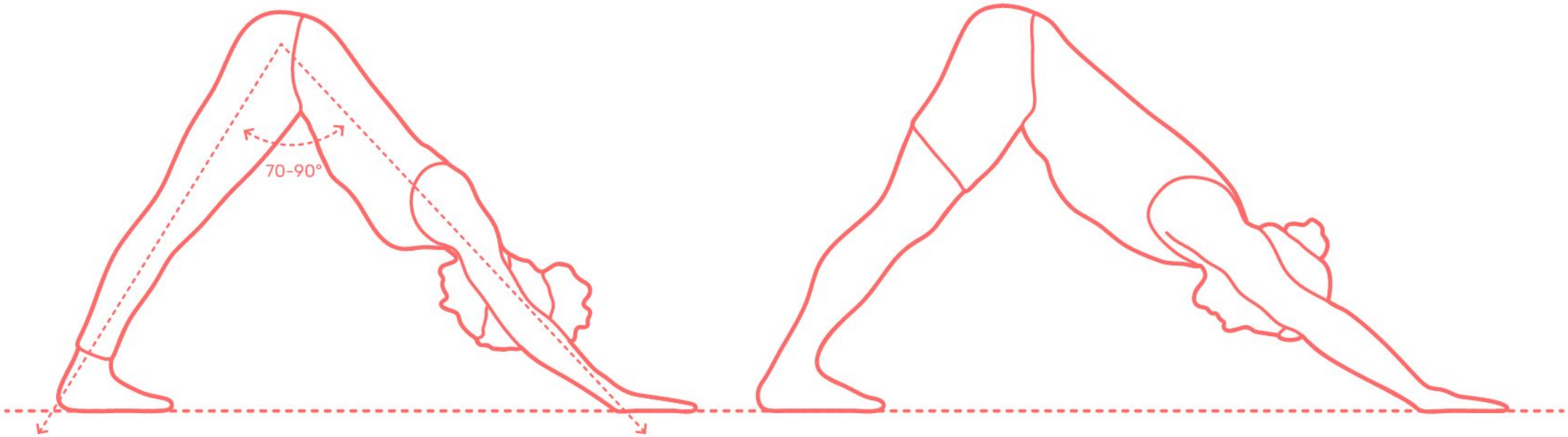
Tool used:-
Visual Paradigm

Data Flow diagram



Tool used:-
UMLet 14.3

What we are trying to implement



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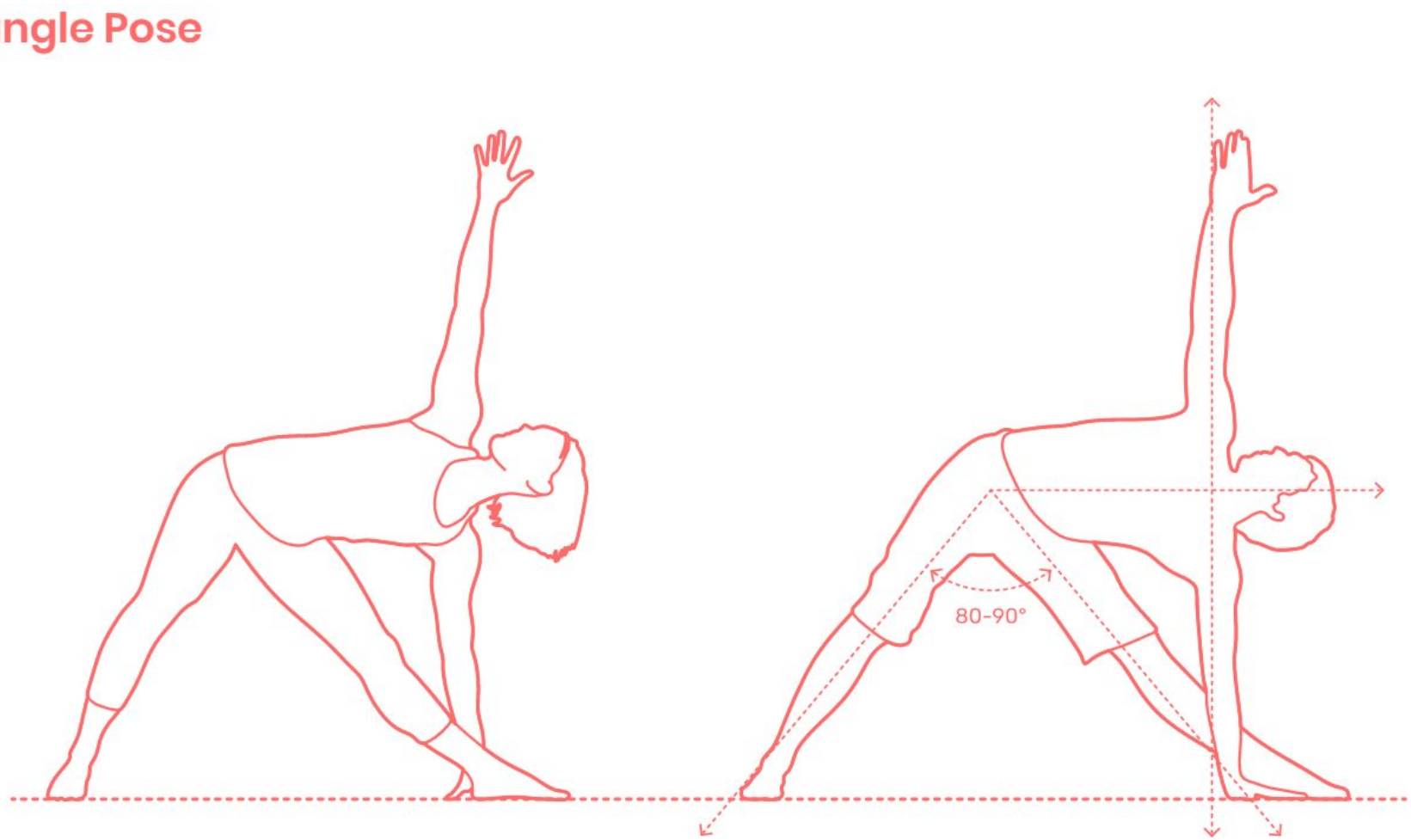
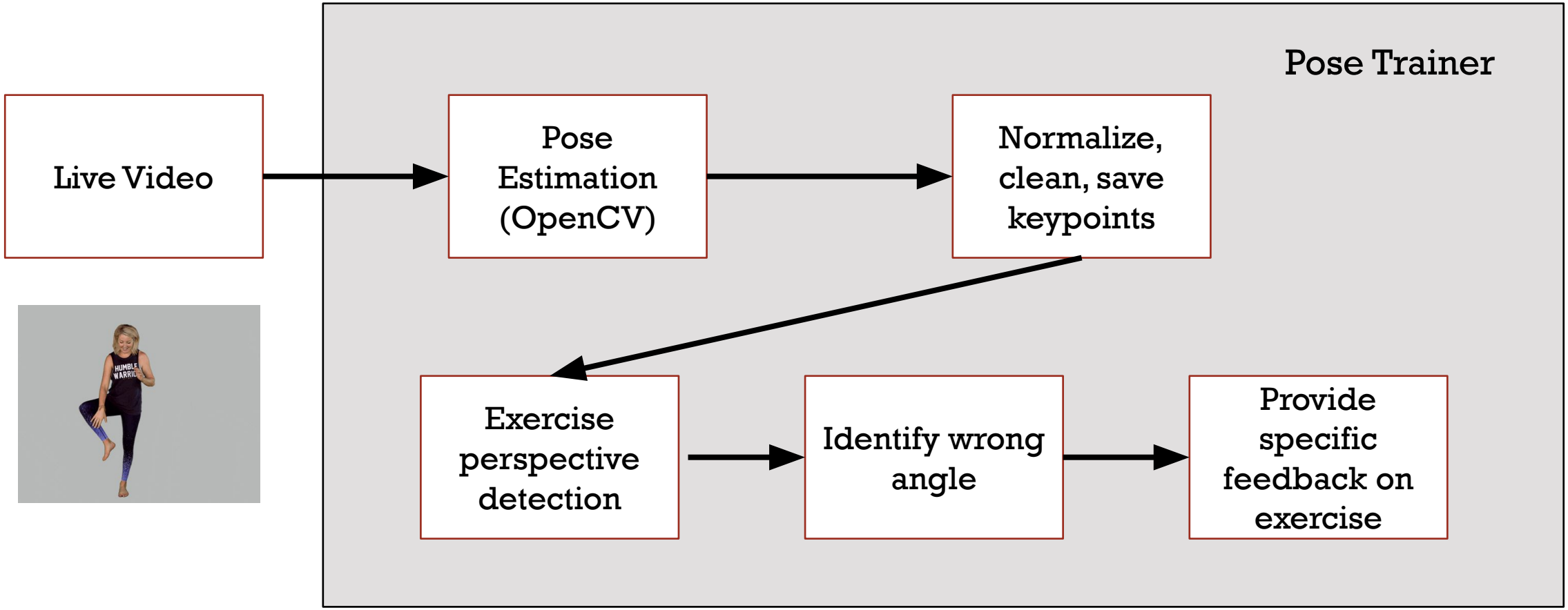
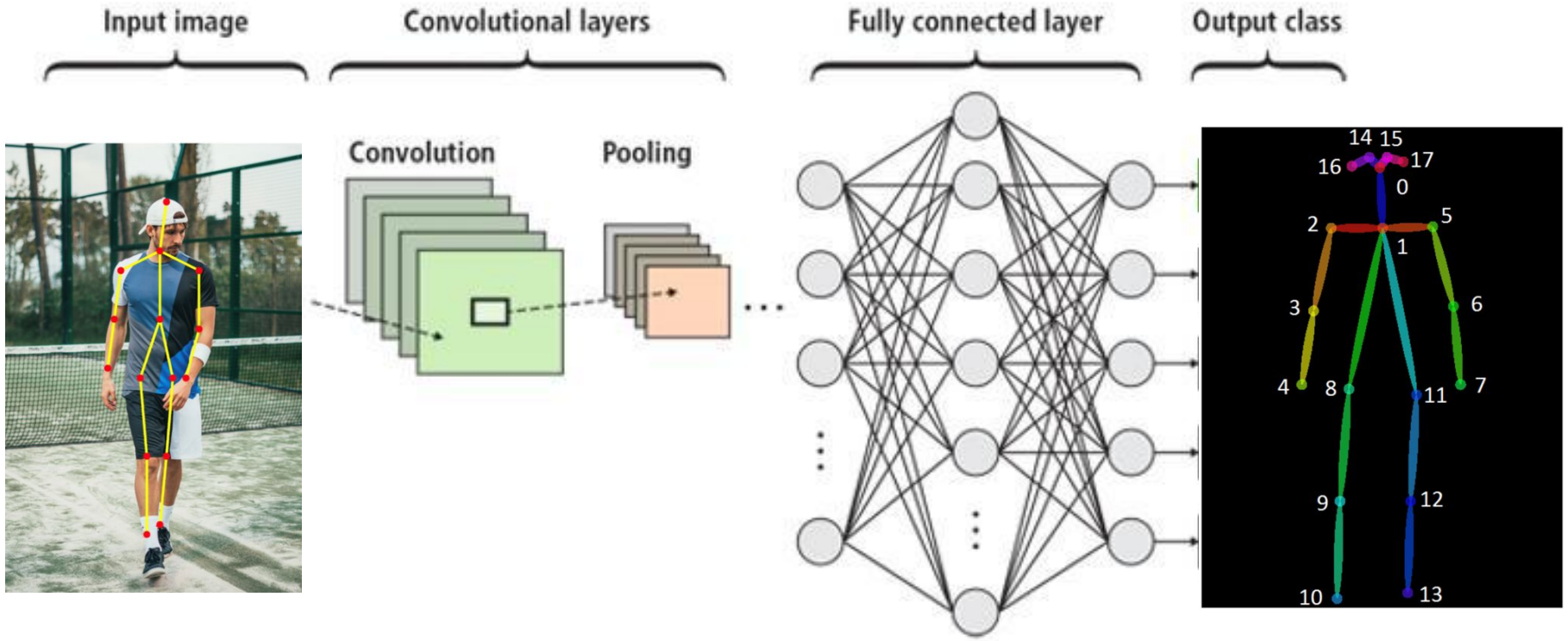


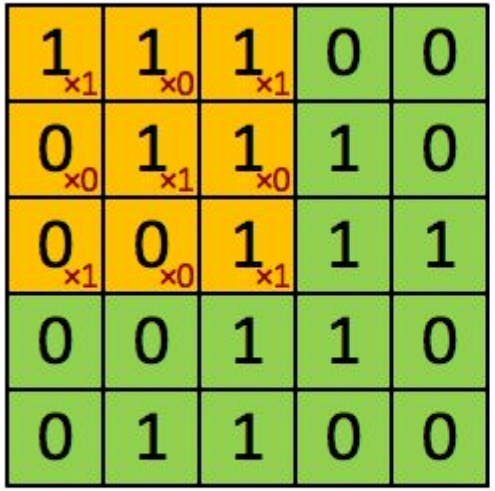
System Architecture



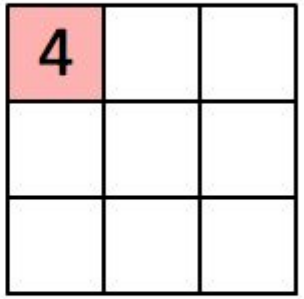
System Architecture



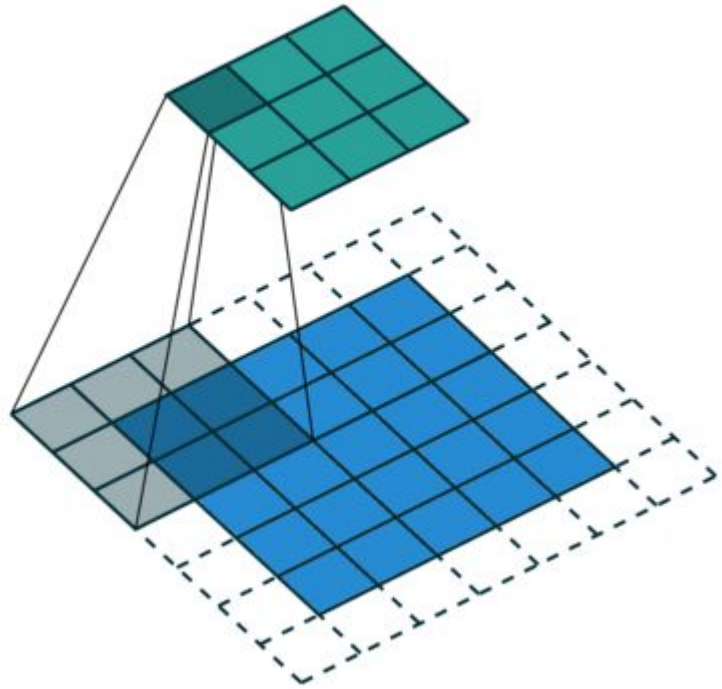
Convolution



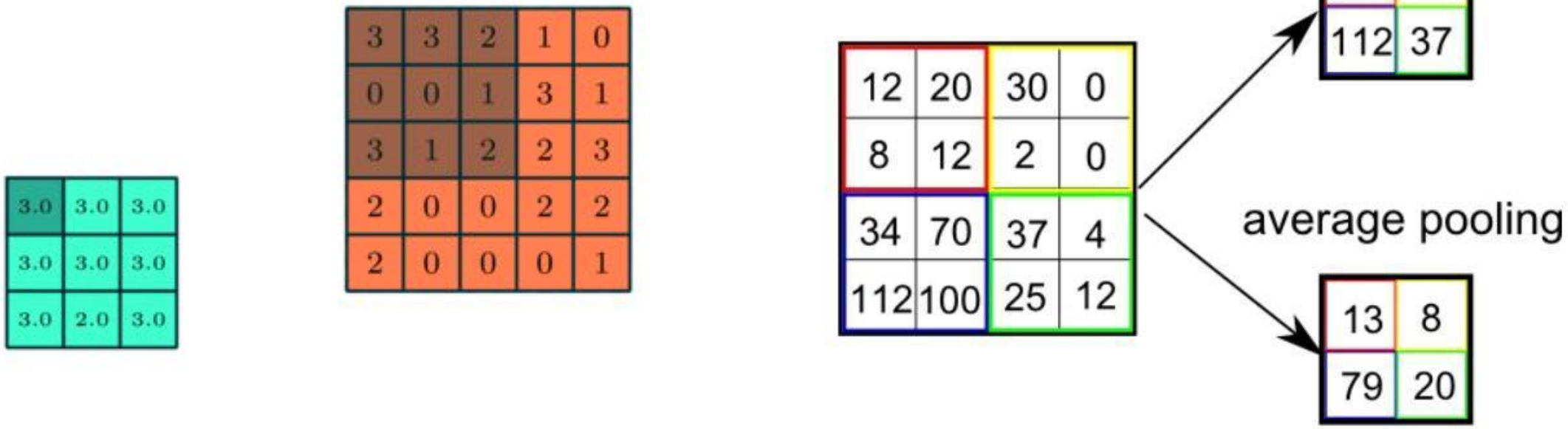
Image



Convolved Feature



Pooling


3.0 3.0 3.0
3.0 3.0 3.0
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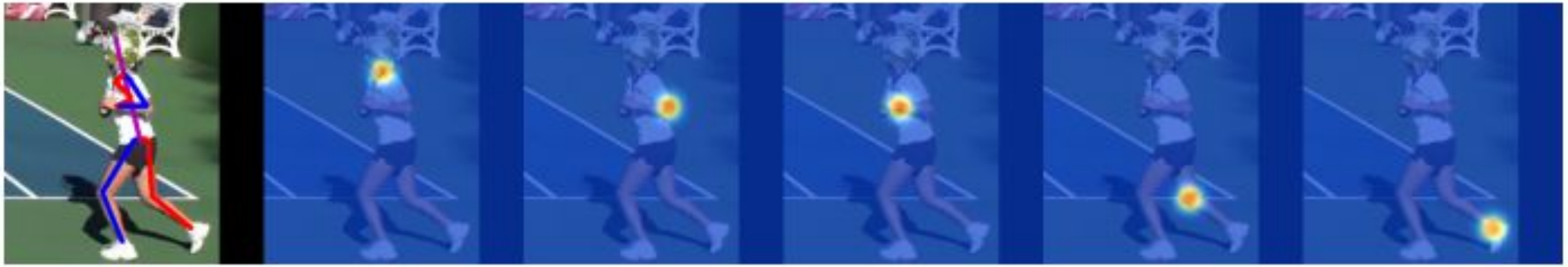
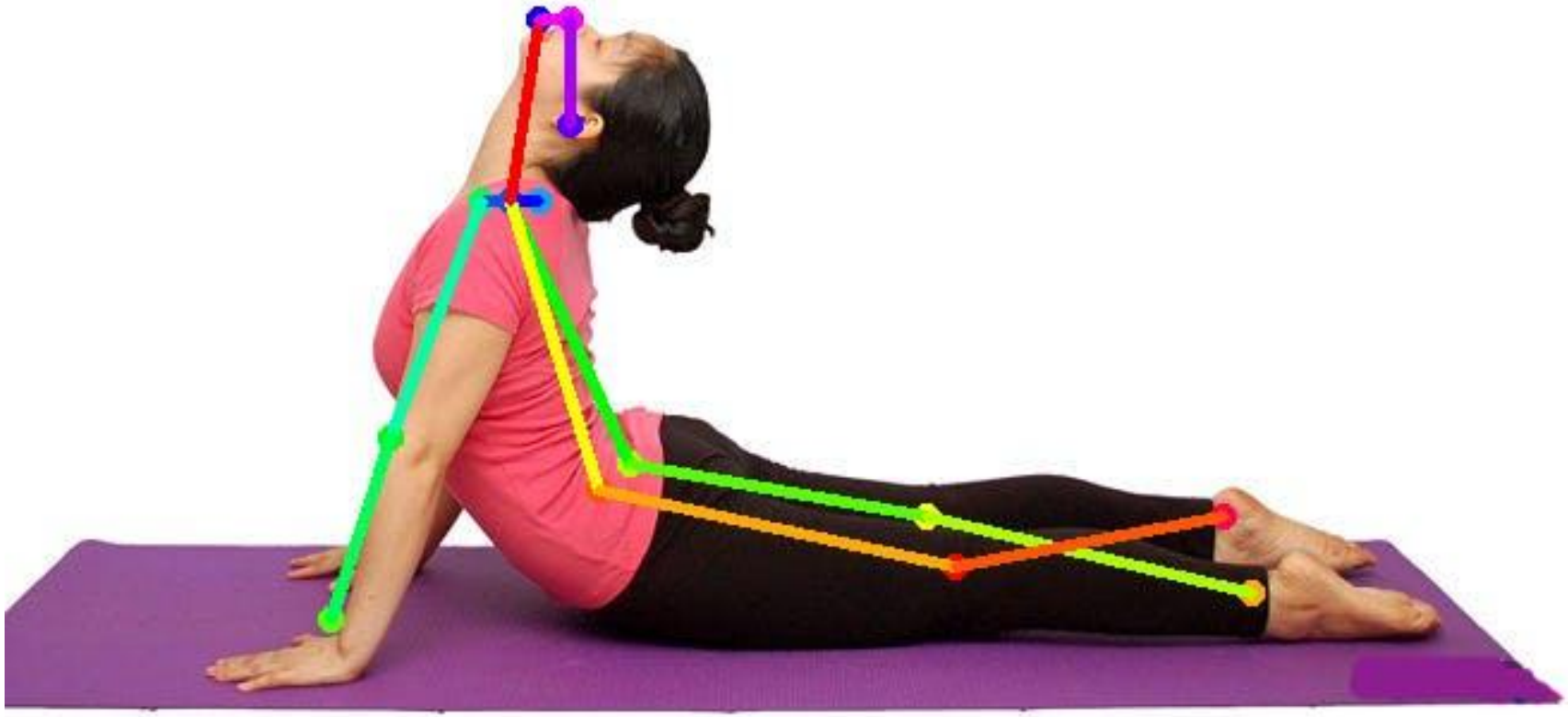
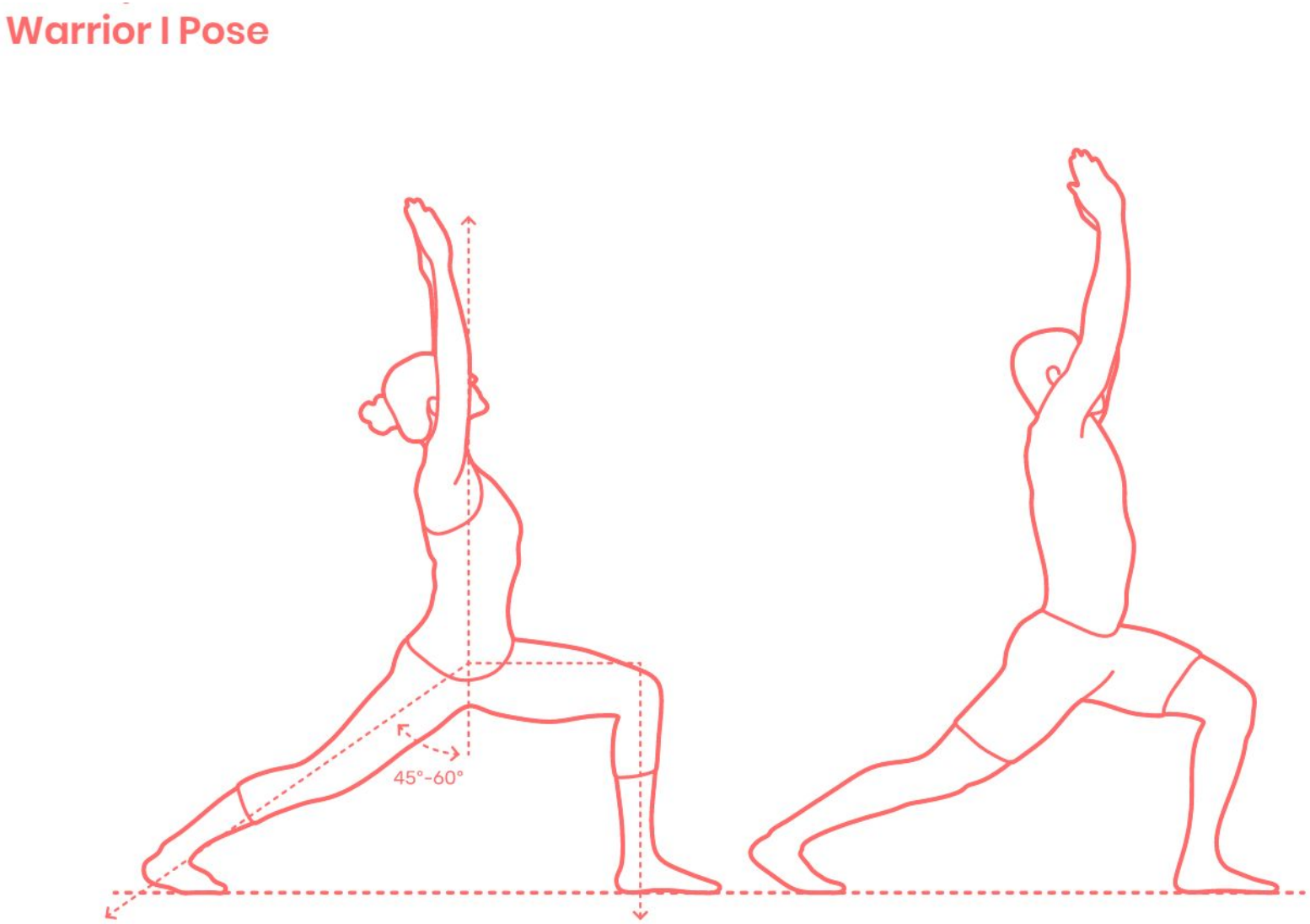
3 3 2 1 0
0 0 1 3 1
3 1 2 2 3
2 0 0 2 2
2 0 0 0 1
12 20 30 0
8 12 2 0
34 70 37 4
112 100 25 12
max pooling
20 30
112 37
average pooling
13 8
79 20

Joints / keypoints identification





What we are trying to implement



Advantages

- Provoke to do Yoga
- Pocket friendly
- Human independent
- Expert guidance
- Injury prevention

Limitations

- Web enabled device required
- Device must be kept near work area

Applications

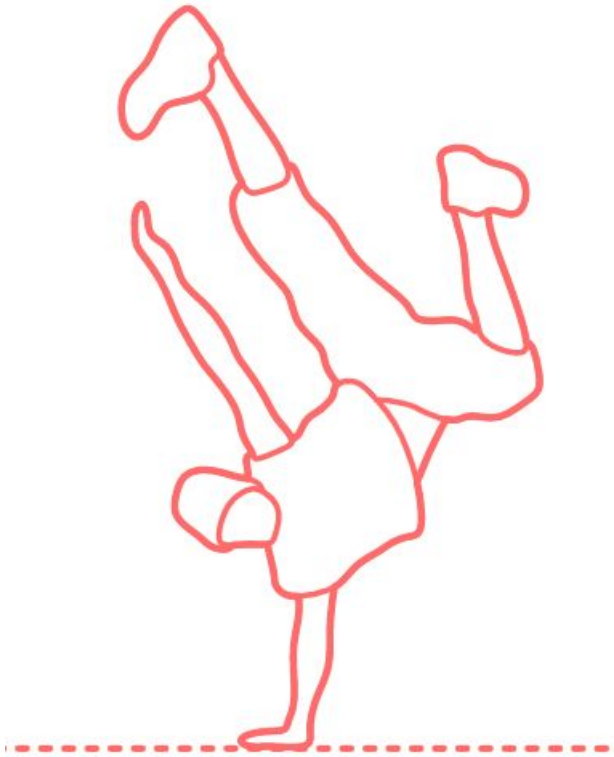
- Personal Yoga Trainer
- Knowledge about yoga

Conclusion

- Using Human pose estimation methods we implemented a real time pose corrector for yoga.

Future scope

- Dance step learning
- Gym steps correction
- Martial Arts
- Cross-fit Workouts



References

[1] Alexander Toshev and Christian Szegedy. DeepPose: Human Pose Estimation via Deep neural network. In CVPR, 2018.

[2] Tomas Simon, Yaser Sheikh. Realtime Multi-Person 2D Pose Estimation using Part affinity fields. In CVPR, 2017.

[3] JVarun Ramkrishna, Takeo Kanade. Convolutional Pose Machines. In COLT. ACL, 2016.

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