YOGA ASANAS RECOGNITION APP

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INTRODUCTION:

Yoga as an asrequirea mindful focus on body alignment and breathing. Yoga sessions usually include a series of posetransitions.

A constant practice refines known asanas and enables new
postures to mature.

The presented iOSappaimsto allow beginners to assess the shape of the irasanasandto improve over time. (However, the yogin should separately control breath, mind, and inner feelings.)

During yogin's practice, the app collects data and images of body position and au- tonomously organizes them for later assessment.

Before starting her practice, the yogin points the camera to the practice area. Then, during her asana flow:

The app tracks the yogin in the physical environment and visualizes their motion by applying the same body movements to a scaled 1:1 virtual character. At this stage,the yogin can optionally pause the virtual character and tour with the camera in an Augmented Reality scene to examine the clonedpose

1.While practicing, they oginremotelytakesa snap shot of herasana.
2.Foreach snap, the app collects time and 3D body position data, together with the picture of theasana.

3.Collected data feed them a chine learning model forasana recognition. Themo delruns with in the Turi Create frame work and applies deep learning tools to accomplishing the image classification task. For the training step, them odeltakes advantage of anad-hoc dataset of (3D data + images) optimal postures.

4. The app takes milliseconds for classifying the posture. The images are then duly organized by both asana andtime.

5. Once ended the practice, the yogin can compare poses of the same asanas over time. The appalso contains an innovative but simple tool for posture comparison.

The appimplements the body recognition feature introduced
by Appleduring WWDC 2019

(session 609). It differentiates from others for the presence of a virtual character in an Augmented Reality scene, for the possibility of freely setting a selection of asanas, and for remotely taking pictures with a voicecommand.

The next improvements will affect the speech recognition feature (step 2) and the en- largement of the optimal posture dataset (step 4).

BIOGRAPHY:

Pietro Scabellone Pietro Scabellone is an independent research erinthe field of applied artificial intelligence, with a comprehensive data science ex-perience lending to an aptitude for integrating computer vision and deep learning. Pietro is passionate about autonomous driving and related fields, such as body recognition and imagesegmentation. Pietro has been a mentor and project reviewer of the Udacity's Self-Driving Car Engineer Nanodegree, providing students with actionable and personalized feedback. He has also worked at the Italian Banking Association (ABI) as Head of both the Analytics and Impact Assessment Departments. The main tsks of the Departments being delivering studies based on economic modeling and network analysis. Pietro has additional experience as a Visiting Professor of Statistics and Senior Financial Analyst.