

# Demo: Recognizing Humans without Face Recognition

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## 1. INTRODUCTION

We envision augmented-reality applications in which an individual looks at other people through her camera-enabled glass (e.g., Google Glass) and obtains information about them. While face recognition would be one approach to this problem, we believe that it may not be always possible to see a person's face. Our technique is complementary to face recognition, and exploits the intuition that human motion patterns and clothing colors can together encode several bits of information. Treating this information as a “temporary fingerprint”, it may be feasible to recognize an individual with reasonable consistency, while allowing her to *turn off* the fingerprint when privacy is of concern. We develop *InSight*, a system implemented using Android Galaxy smartphones and videos taken from Google Glasses. Results from real world experiments involving up to 21 people show that 8 seconds of their motion patterns together with their clothing colors can discriminate them. These results suggest that face recognition may not be the only option for recognizing humans; human diversity lends itself to sensing and could also serve as an effective identifier.

Imagine a near future where humans are carrying smartphones and wearing camera-embedded glasses, such as the Google Glass. This work intends to recognize a human by looking at him from any angle, even when his face is not visible. For instance, Alice may look at people around her in a social gathering and see the names of each individual – like a virtual badge – suitably overlaid on her Google Glass display. Where revealing names is undesirable, only a tweet message could be shared [1]. People at the airport could tweet “looking to share a cab”, recruiters in a job-fair could tweet “seeking app developers”, and Alice could view each individual’s tweet above their heads (Figure 1). In general, we intend to extend augmented reality [2] [3] to humans and the key challenge pertains to differentiating individuals. We explore options outside face recognition [4] [5].

Evaluations from real world experiments involving up to 21 people show that, 5 to 8 seconds of their motion patterns along with

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**Figure 1: An example scenario with InSight. Alice views the tweets of other people displayed on her Google Glass. The whole operation is orchestrated by the *InSight* server running in the cloud.**

their clothing colors are sufficient for *InSight* to correctly recognize them in more than 80% of the cases.

On the day of the demonstration, we will invite participants to keep Android phones installed with our system in their pockets or hands to gather sensor readings. One user will take a short video of the participants with Google Glass or Android phone. Our system will process the video and sensor data to deliver the recognition results.

## 2. REFERENCES

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