

Flexible matching of ear biometrics



Bronselaeer A. ¹, De Winne J. ², De Tré G. ¹,

¹ Dept. of Telecommunications and Information Processing, Ghent University

² Disaster Victim Identification Team, Federal Police Belgium

E-mail: Antoon.Bronselaeer@UGent.be



Introduction

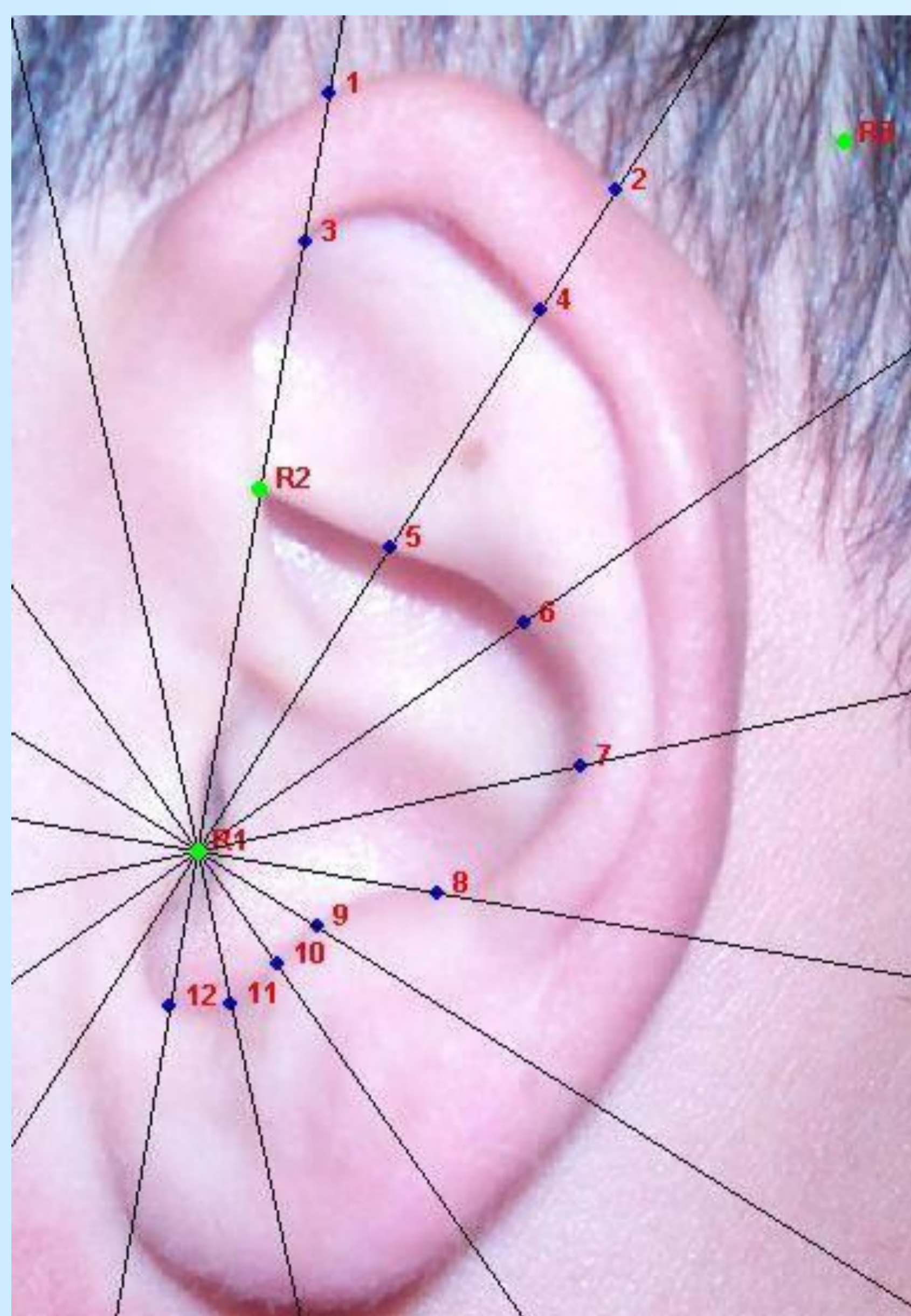
- DVI: Disaster Victim Identification
- Identification of victims
- Ears are unique
- Other applications such as video registration of bank robbers

Mission statement

- Tool for identification based on pictures of ante and post mortem ears
- Fast and flexible
- Dealing with low picture quality (noise, blur, angle of view,...)

Ear Identification System (EIS)

- (1) Collect ante mortem and post mortem pictures of ears
- (2) Extract features from pictures and store in database records



- Gender
- Ear
- Race
- List of Points

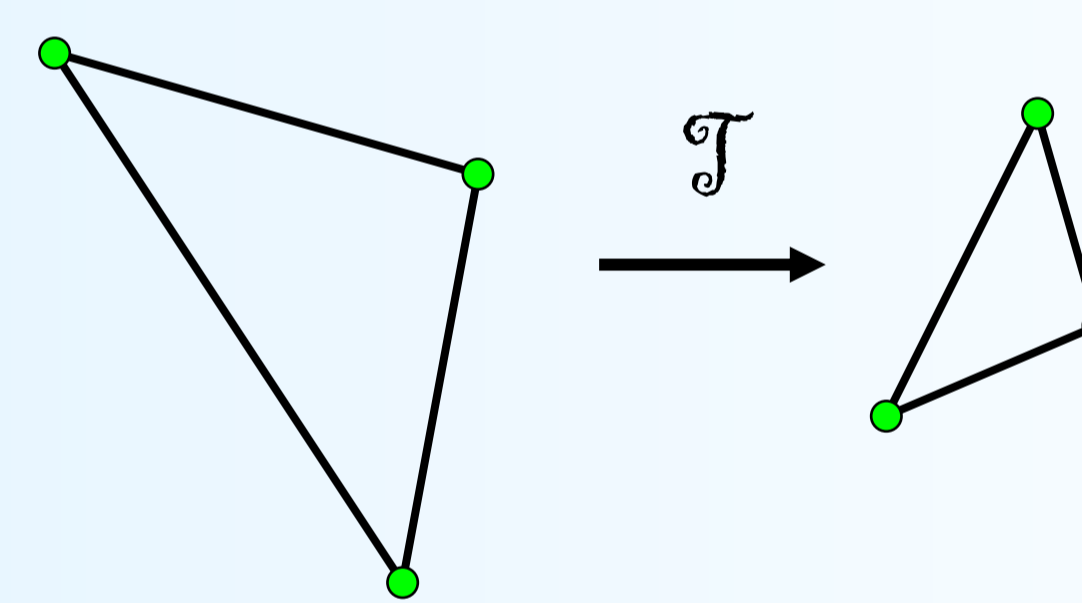
- Green points: transformation
- Blue points: comparison

- (3) Find records that describe same person

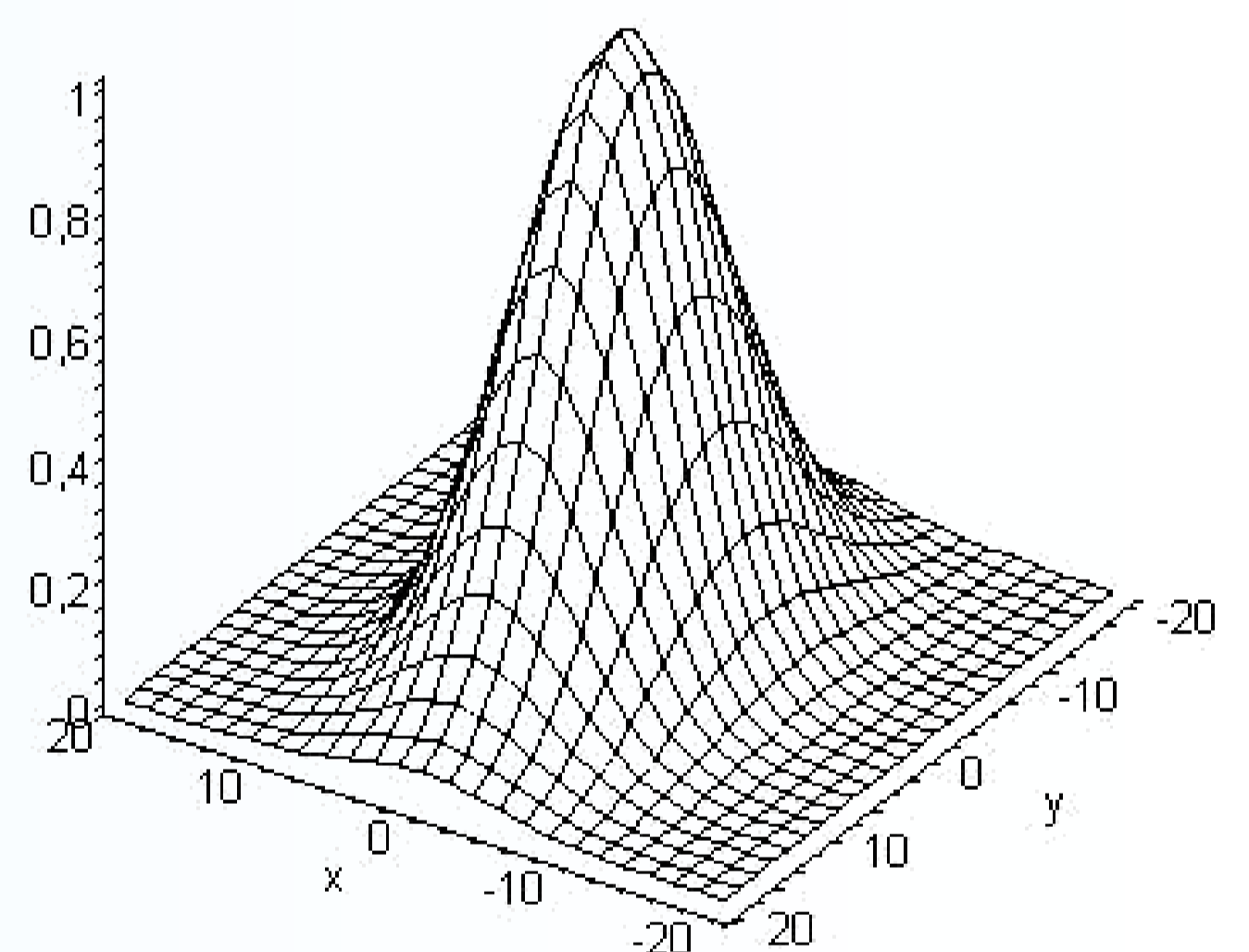
- comparison of attributes
- aggregation of results

Comparison of points

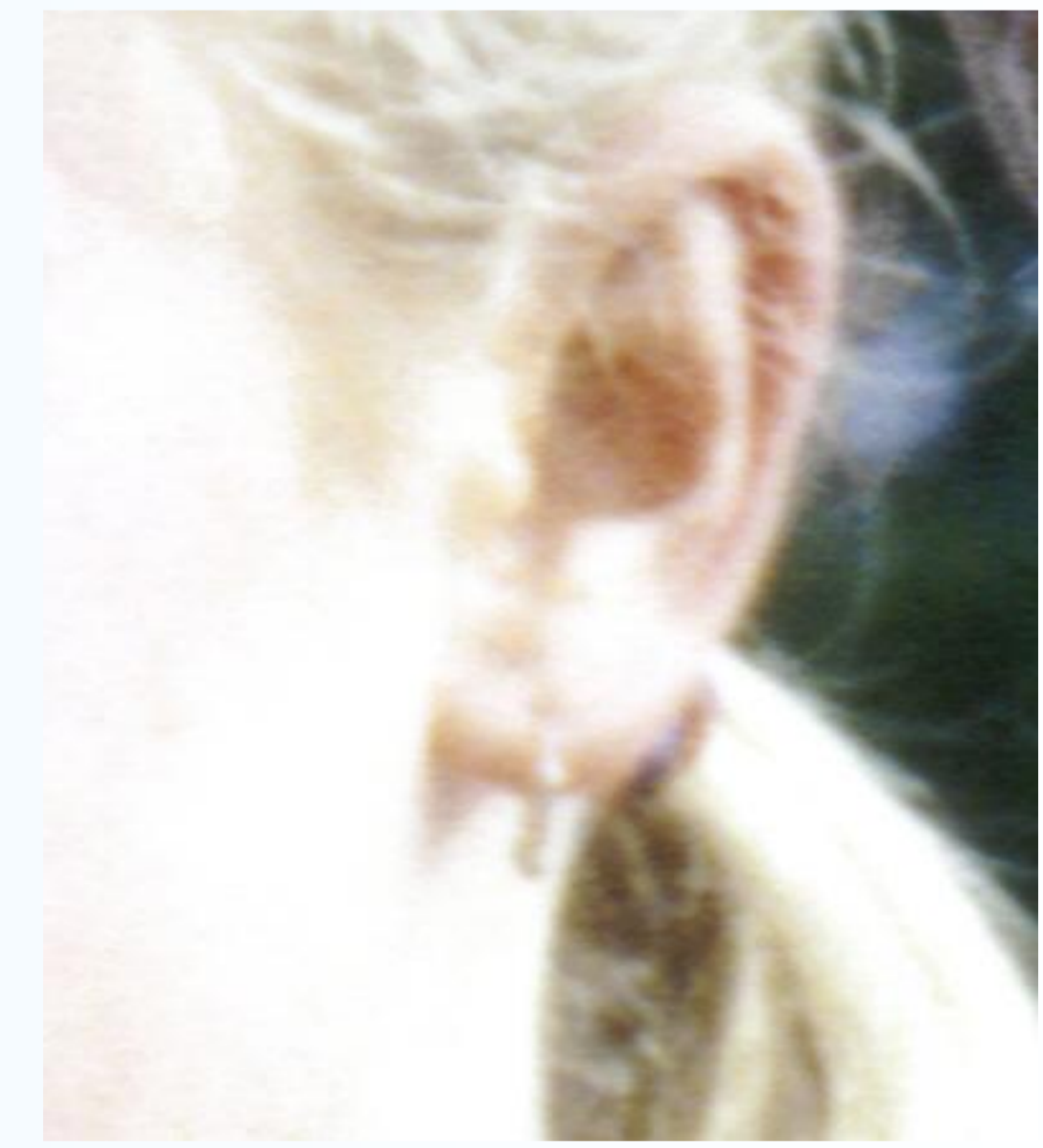
(a) Transformation



(b) Comparison



Challenges



Results

- Small scale test (20 cases)
- 65% perfect matches
- 90% top-3 matches
- Method works fine with 'in profile' pictures
- Out-of-profile pictures require more research
- Future work might include extra attributes (piercing,...)

Conclusion

- Tool for identification based on pictures of ears
- Fast and flexible searching
- Extremely low picture quality implies serious challenges
- More advanced techniques are in development