ANIMATING VIRTUAL SIGNERS : THE ISSUE OF GESTURAL ANONYMIZATION

PhD project

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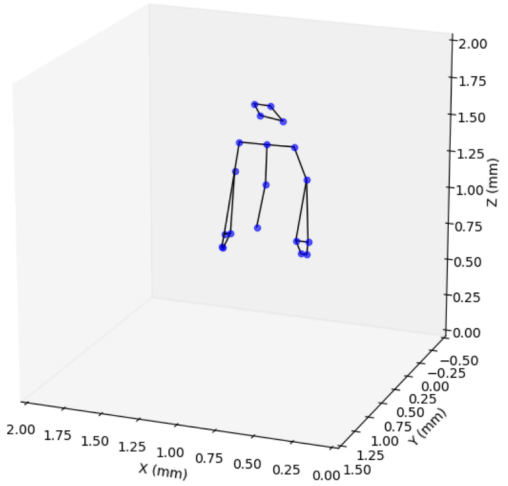
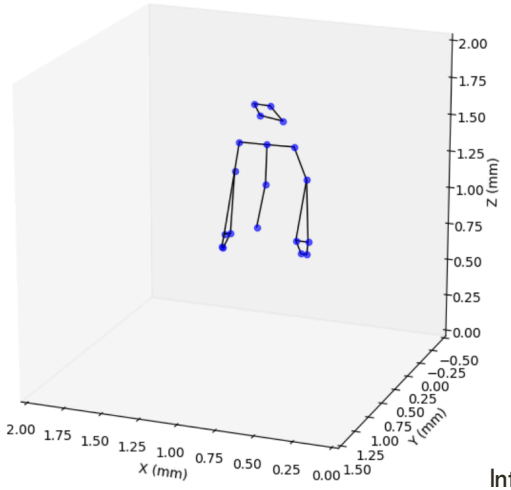
INTRODUCTION



Motion

Virtual Signer

INTRODUCTION



Emotions

Gender

Gestural

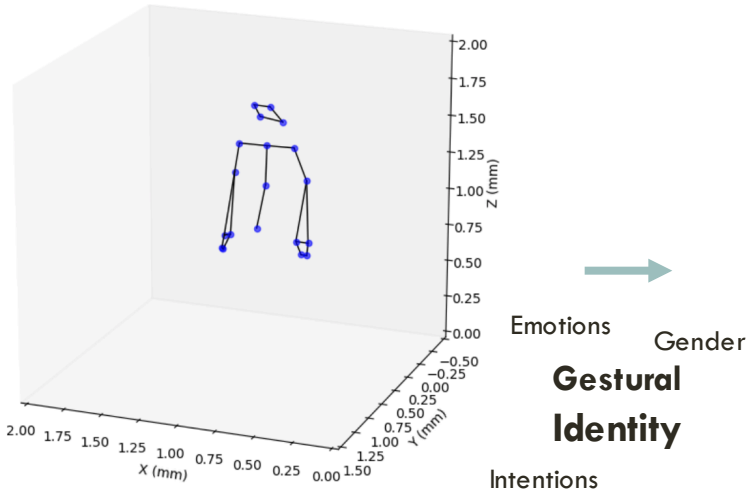
Identity

Intentions

Motion

Virtual Signer

INTRODUCTION

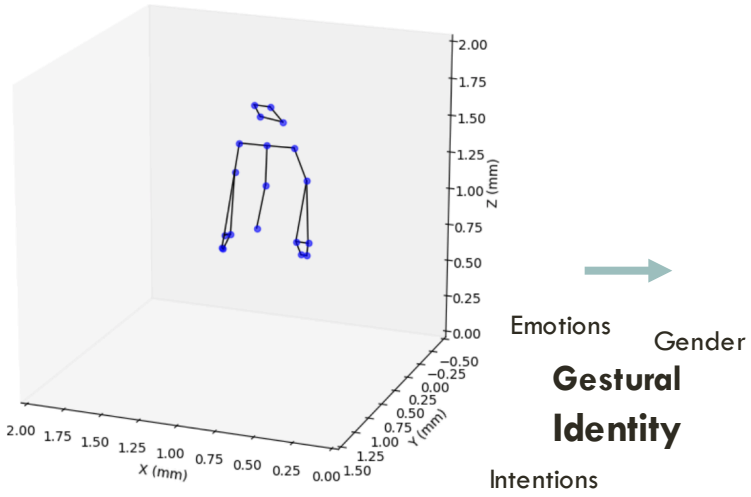


Motion

Virtual Signer

1. Better understand the perception of gestural identity in French Sign Language (LSF)

INTRODUCTION



Motion

Virtual Signer

1. Better understand the perception of gestural identity in French Sign Language (LSF)

2. Design a model to control the gestural style of virtual signers

PLAN

I. **Introduction**

II. **Background and motivation**
   a. Virtual signers for anonymized content in LSF
   b. Mapping movements on signers : the issue of gestural identity

III. **Proposed methodology**
   a. Person identification task
   b. Animating signers with a gestural style control

Conclusion

ANONYMIZED CONTENT IN LSF

→ Main accessible content : VIDEO

→ Anonymity ? → **Virtual signers**

e.g. Segouat & Braffort 2009, Benchiheub et al. 2016, Gibet 2018, Filhol & Mcdonald 2018

ANONYMIZATION : ANIMATING VIRTUAL SIGNERS

MOCAP : Very **accurate**
(ex : spatial acc. 0.5 mm // temporal res. 250 Hz)

ANONYMIZATION : THE ISSUE OF GESTURAL IDENTITY

Humans can recognize

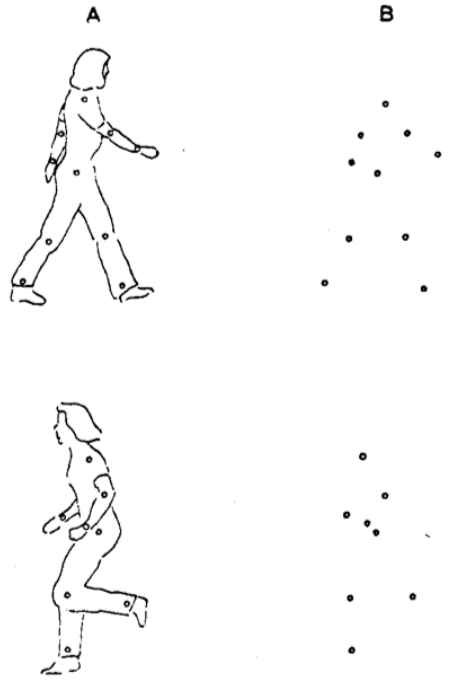
- Actions (e.g. walking, running)

  e.g. Johansson 1973, 1976

- **Identity** (friends vs. strangers)

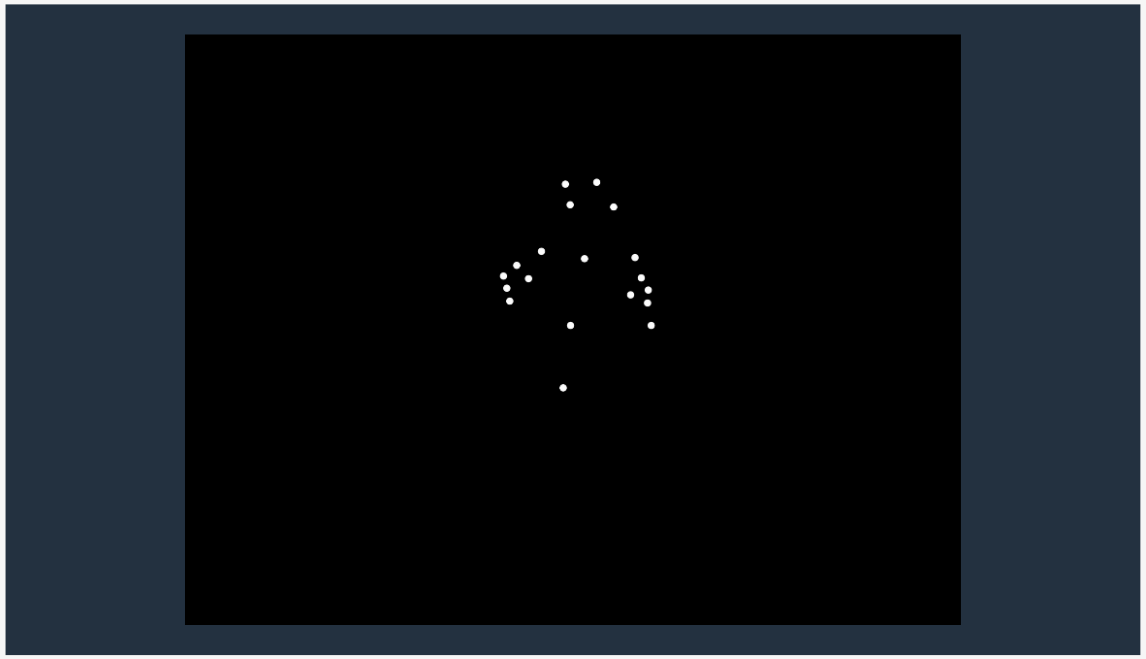
  e.g. Cutting & Kozlowski 1977, Jacobs 2004, Loula 2005, Troje 2005…

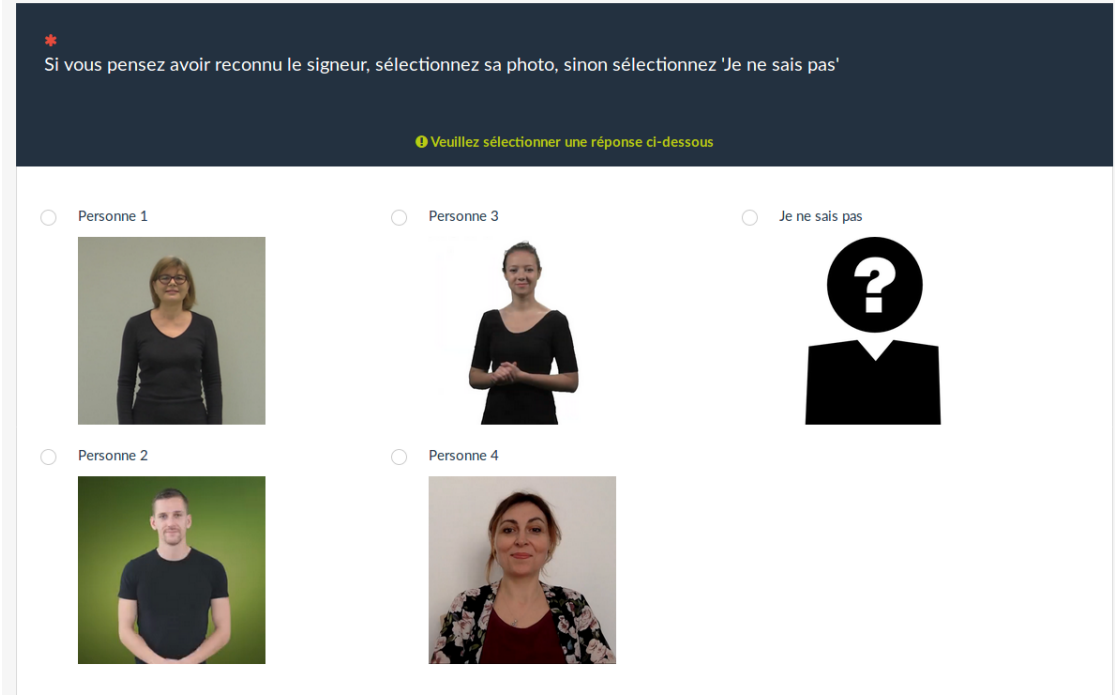
→ **In LSF ?**



Johansson 1973

PERSON IDENTIFICATION TASK IN LSF

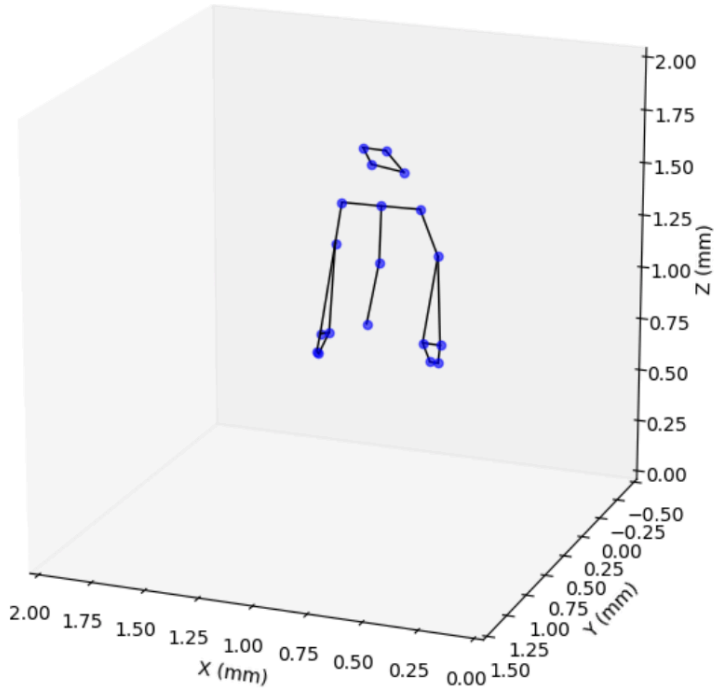




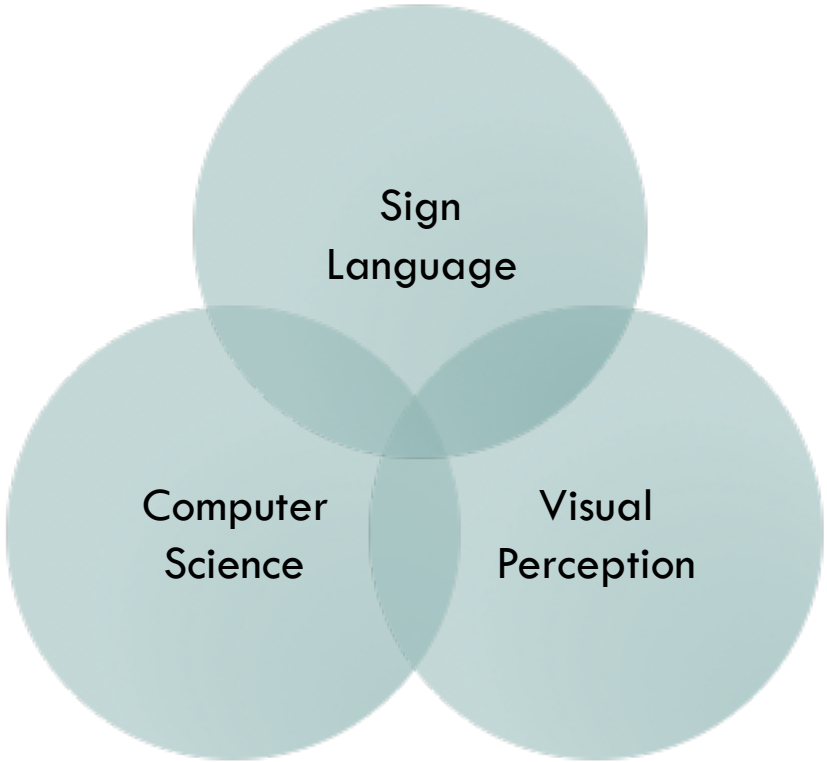
GESTURAL IDENTITY AND MACHINE LEARNING

→ A model to control gestural style and reconstruct LSF motion animations

→ Statistical methods (PCA, Gaussian Models, HMMs)



CONCLUSION



→ Multidisciplinary research work which furthers our understanding of gestural identity for both SL research, visual perception and computer science.

THANK YOU FOR YOUR ATTENTION!

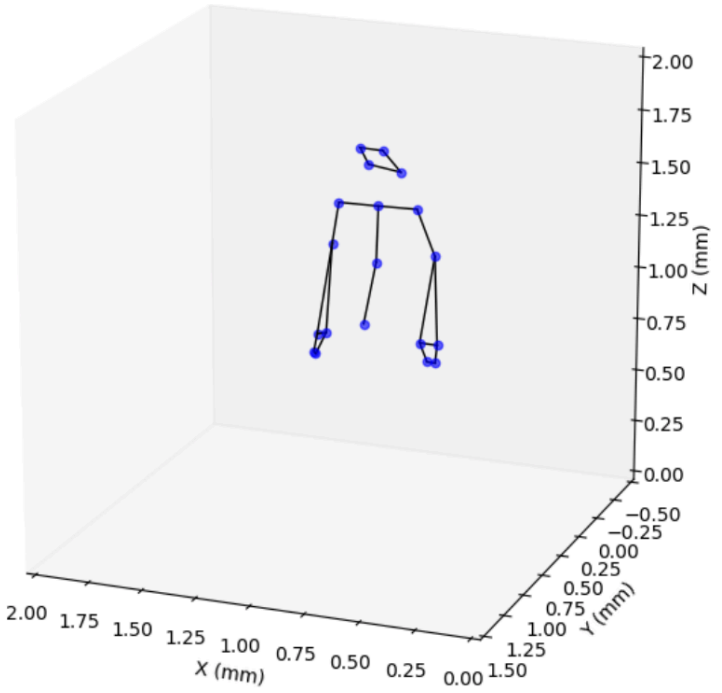
GESTURAL IDENTITY AND MACHINE LEARNING

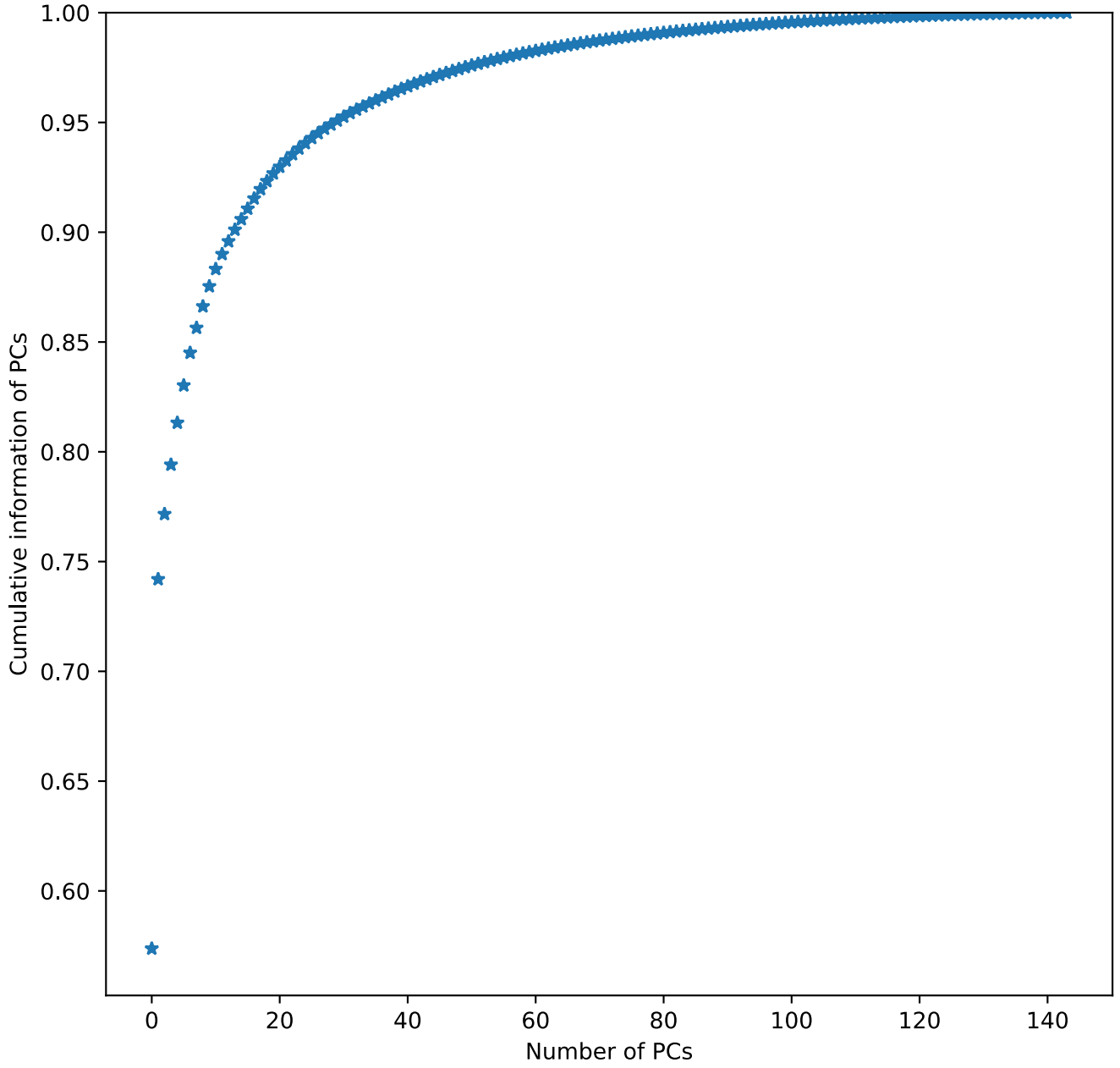
→ 10-15 repetitions of gloses/forms per signer

→ Extract low-dimensional features to disciriminate gestural styles

→ PCA, Gaussian Modeling, HMMs…

→ Need for a specific corpus (limitations of MOCAP1), redundancy etc

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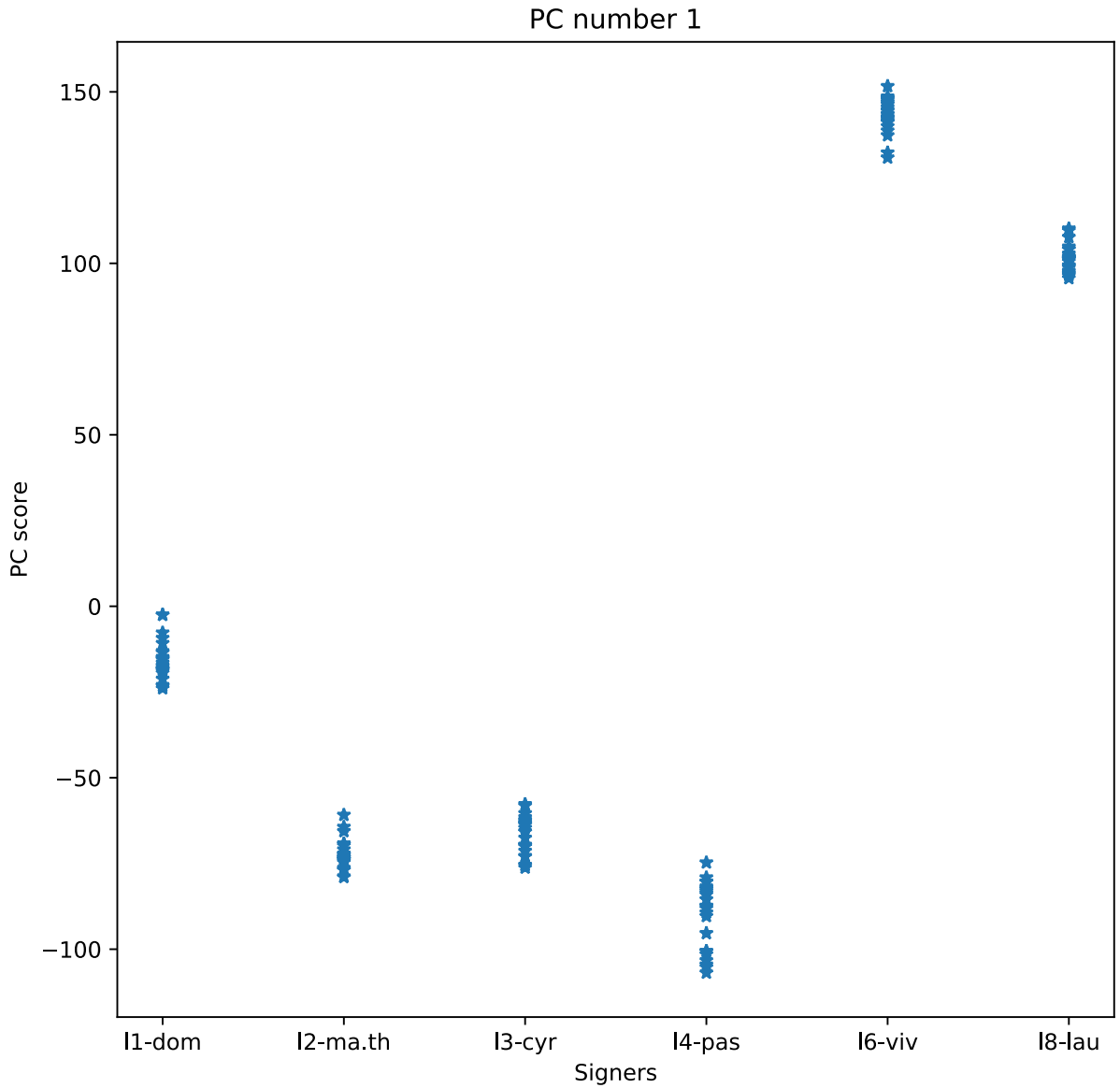
Number of PCs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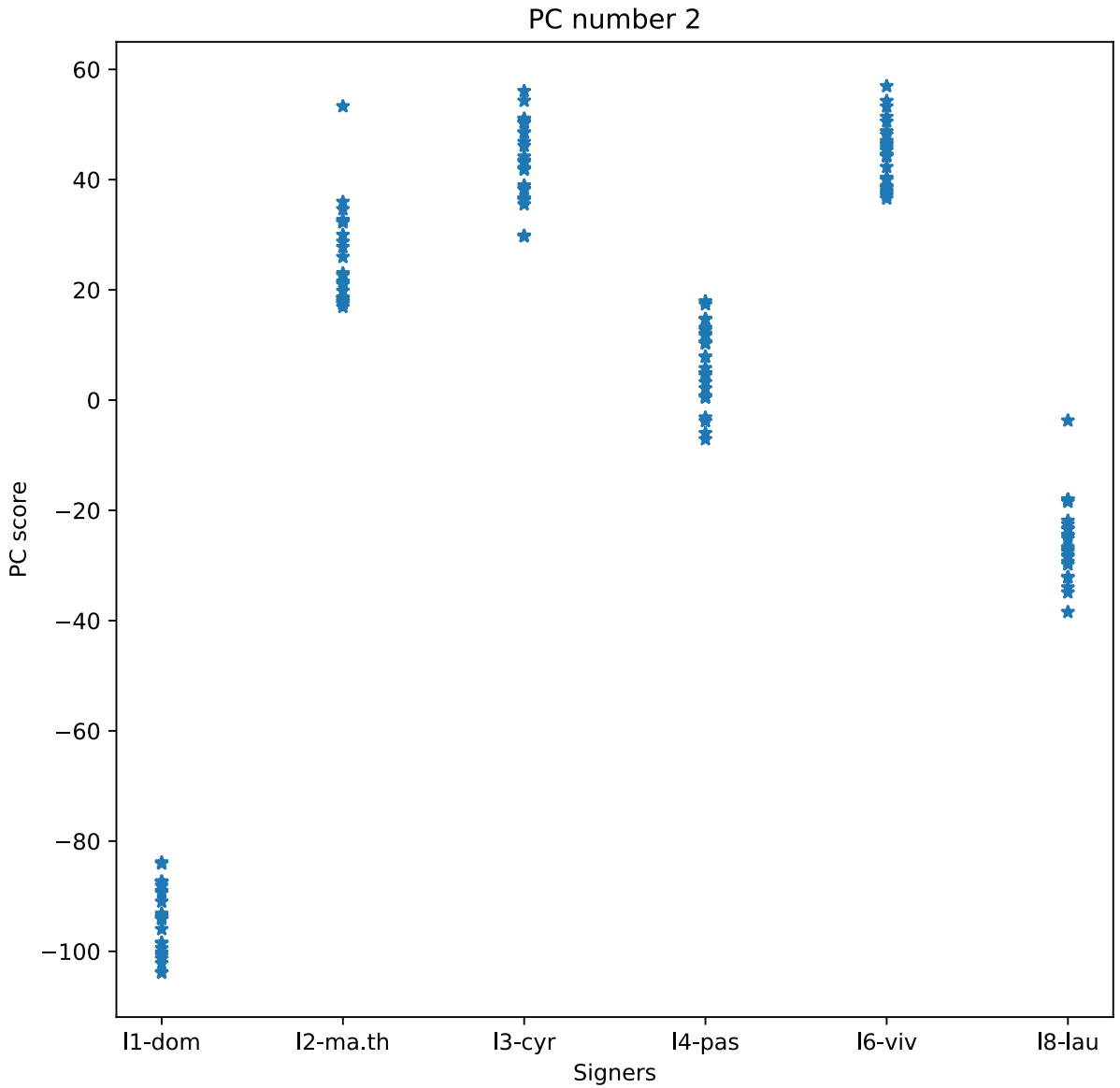
I3-cyr
I4-pas
I6-viv
I8-lau
Signers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I2-ma.th
I3-cyr
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I6-viv
I8-lau
Signers