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PARIS PANTHÉON-ASSAS UNIVERSITÉ
RESEARCH LAB

TOWARDS A MORPHOLOGY ESTIMATION OF HORSES FROM IMAGES USING A DEEP LEARNING APPROACH

Benoît Pasquiet, Bernard Dumont Saint-Priest, Anne Ricard,
Faten Chaieb-Chakchouk

FINANCÉ PAR
LE CONSEIL SCIENTIFIQUE
DE LA FILIÈRE ÉQUINE
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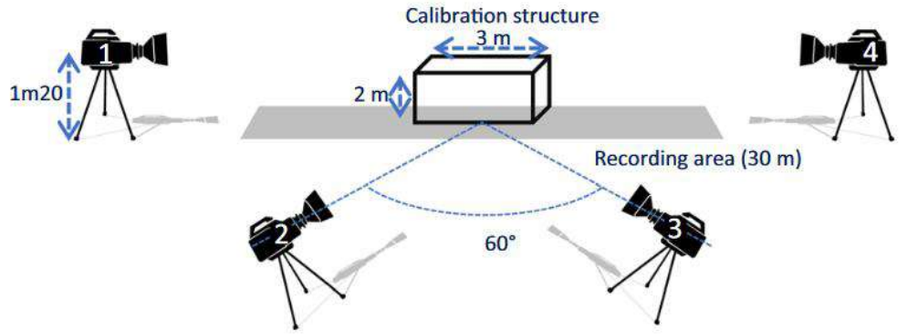
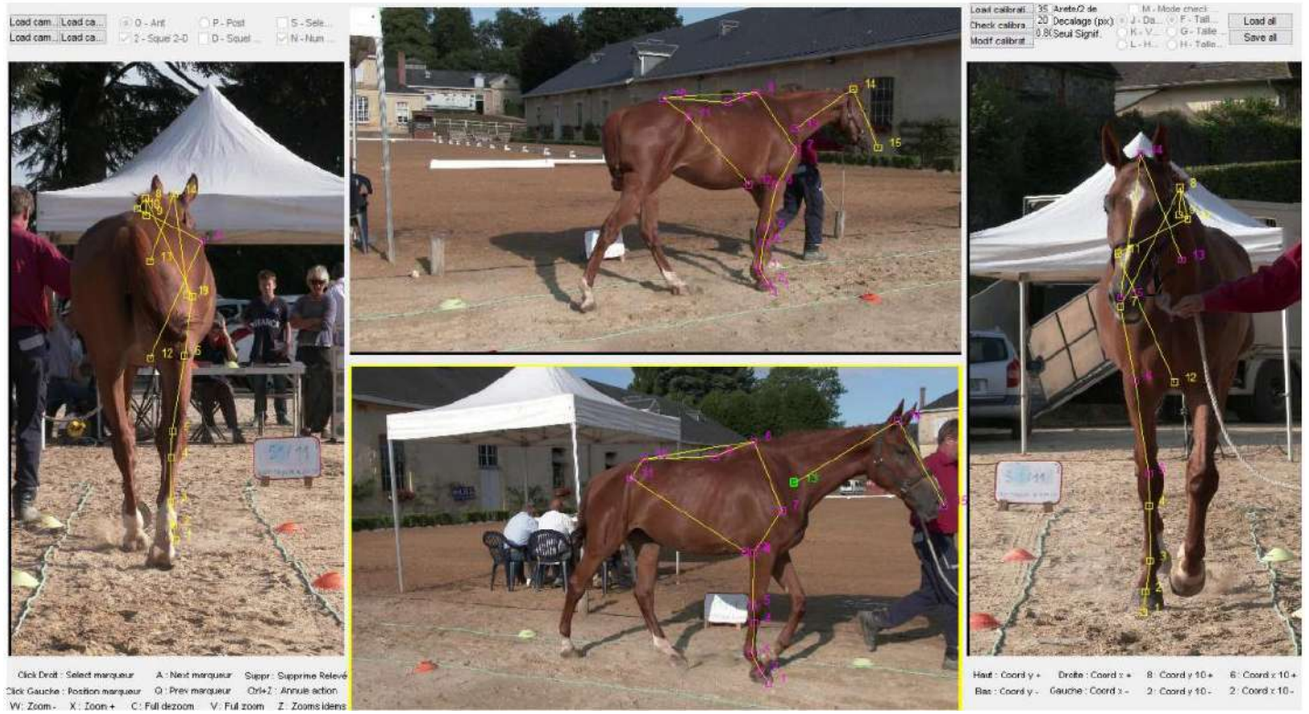
Introduction

P. Pourcelot, F. Audigié, V. Lacroix, J. M. Denoix, et N. Crevier-Denoix, « A 3-D method to measure morphometrical data and standing conformation in horses. », in *28ème journée de la recherche équine, 27 février 2002*, Les Haras Nationaux Direction du Développement, 2002, p. 137-142.



28 landmarks, manually annotated



Figures from Ricard 2023

Introduction

Anatomia Histologia Embryologia
World Association of Veterinary Anatomists
Association Mondiale des Anatomistes Vétérinaires
Weltvereinigung der Veterinäranatomen
Asociación Mundial de Anatomistas Veterinarios

Comparison of the Comformation of 20 International Level and the 20 Low Level Jumping Horses Using a 3-D Video Morphometric Measurement Method

N. Crevier-Denoix, P. Pourcelot, D. Erlinger, D. Concordet, C. Lagache, A. Ricard, L. Tavernier, J. M. Denoix

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Livestock Science 158 (2013) 12–23

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Livestock Science

journal homepage: www.elsevier.com/locate/livsci

Objective quantification of conformation of the Icelandic horse based on 3-D video morphometric measurements

T. Kristjansson [a,*], S. Bjornsdottir [b], A. Sigurdsson [a], N. Crevier-Denoix [c,d], P. Pourcelot [c,d], T. Arnason [a]

Ricard et al. Genetics Selection Evolution (2023) 55:63
https://doi.org/10.1186/s12711-023-00837-8

Genetics Selection Evolution

RESEARCH ARTICLE Open Access

Genetic analysis of geometric morphometric 3D visuals of French jumping horses

Anne Ricard[1,2*], Nathalie Crevier-Denoix[3], Philippe Pourcelot[3], Harmony Crichan[1], Margot Sabbagh[1], Bernard Dumont-Saint-Priest[1] and Sophie Danvy[1]

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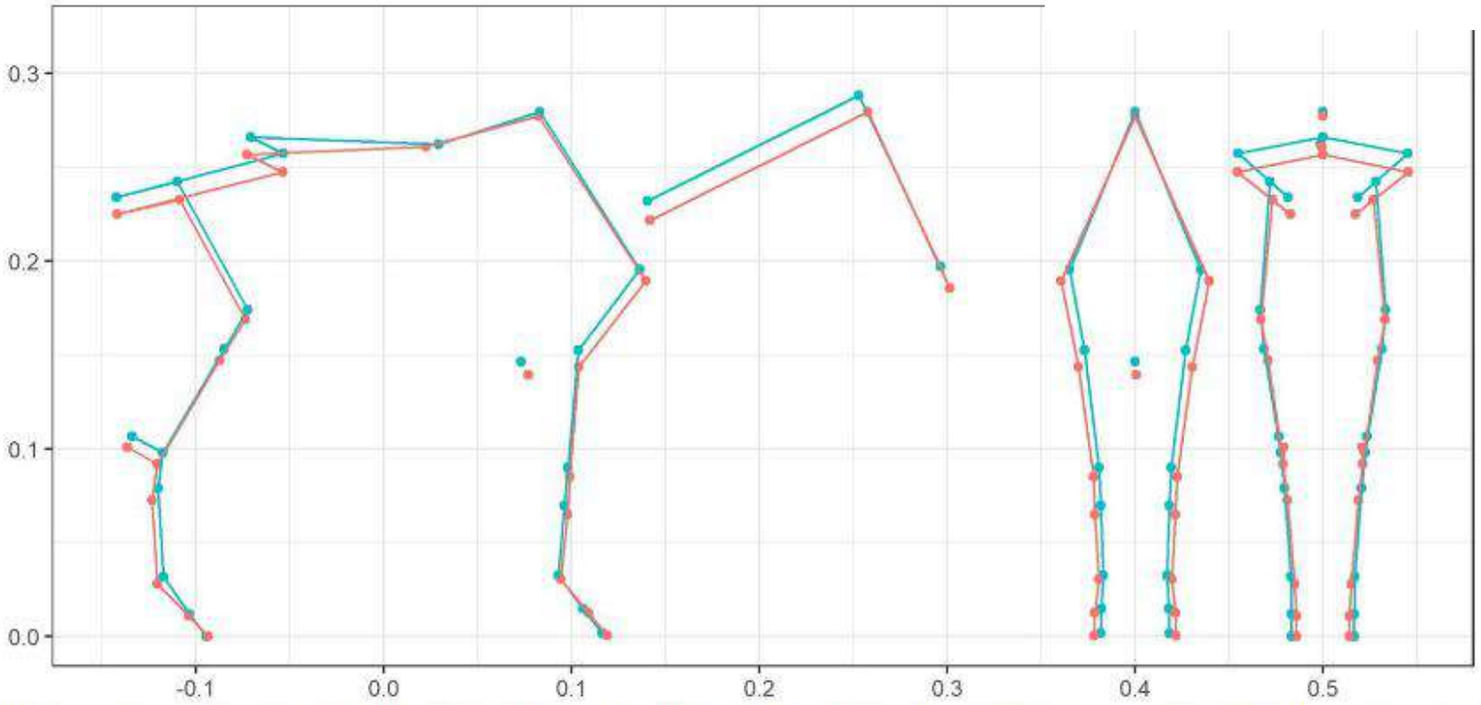
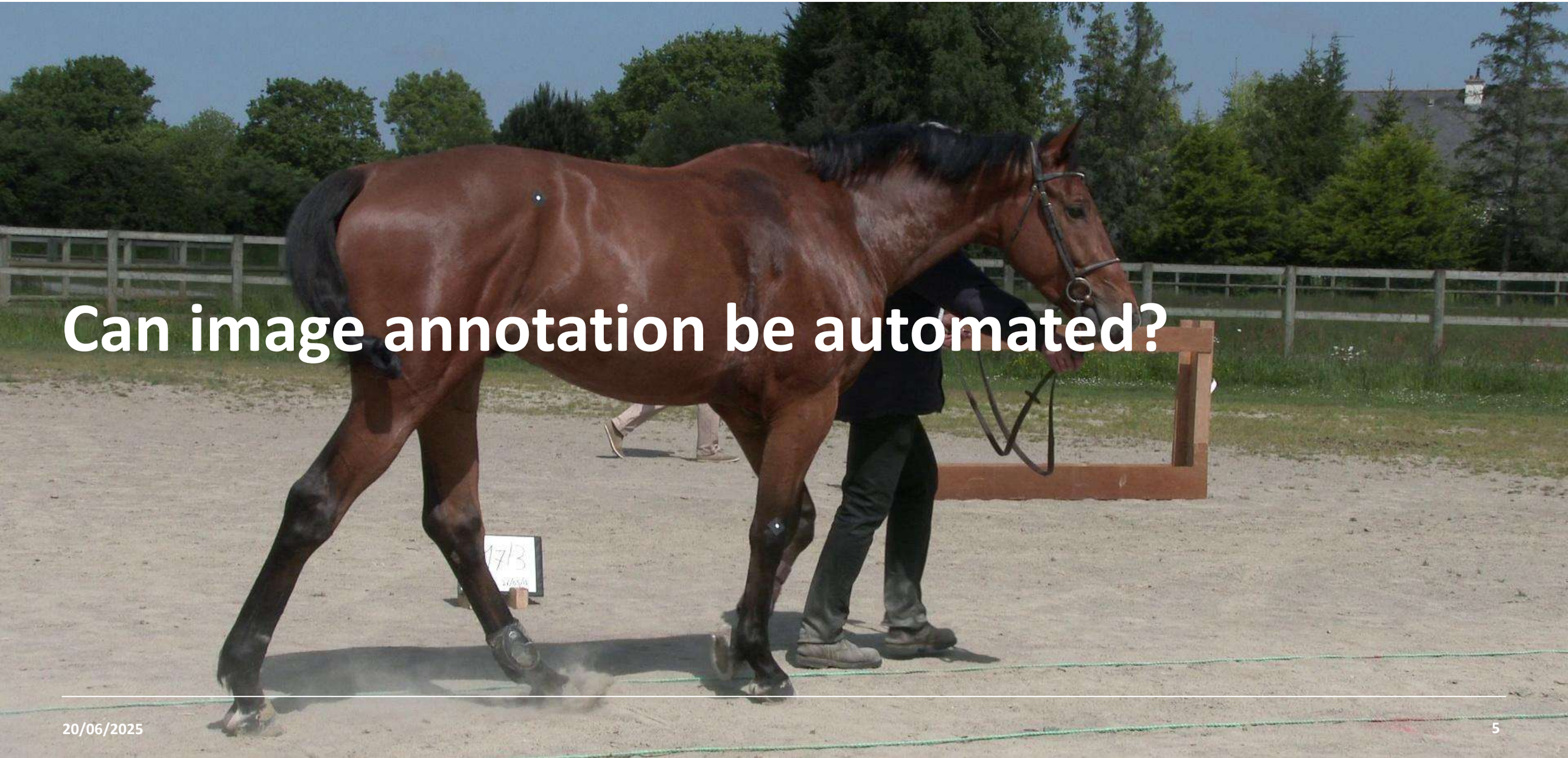
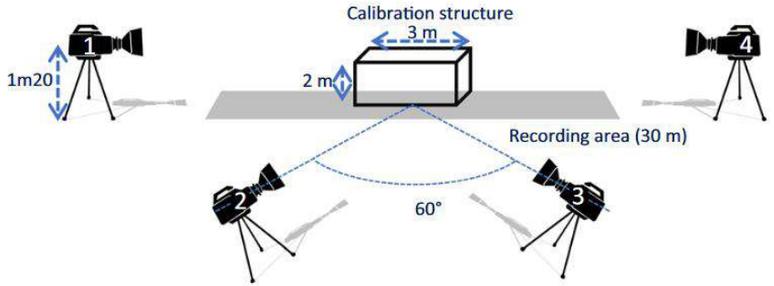


Fig. 6 Estimated breeding value of the stallion APACHE D'ADRIERS (SF). Estimated breeding values in red compared to the population mean in blue



Can image annotation be automated?

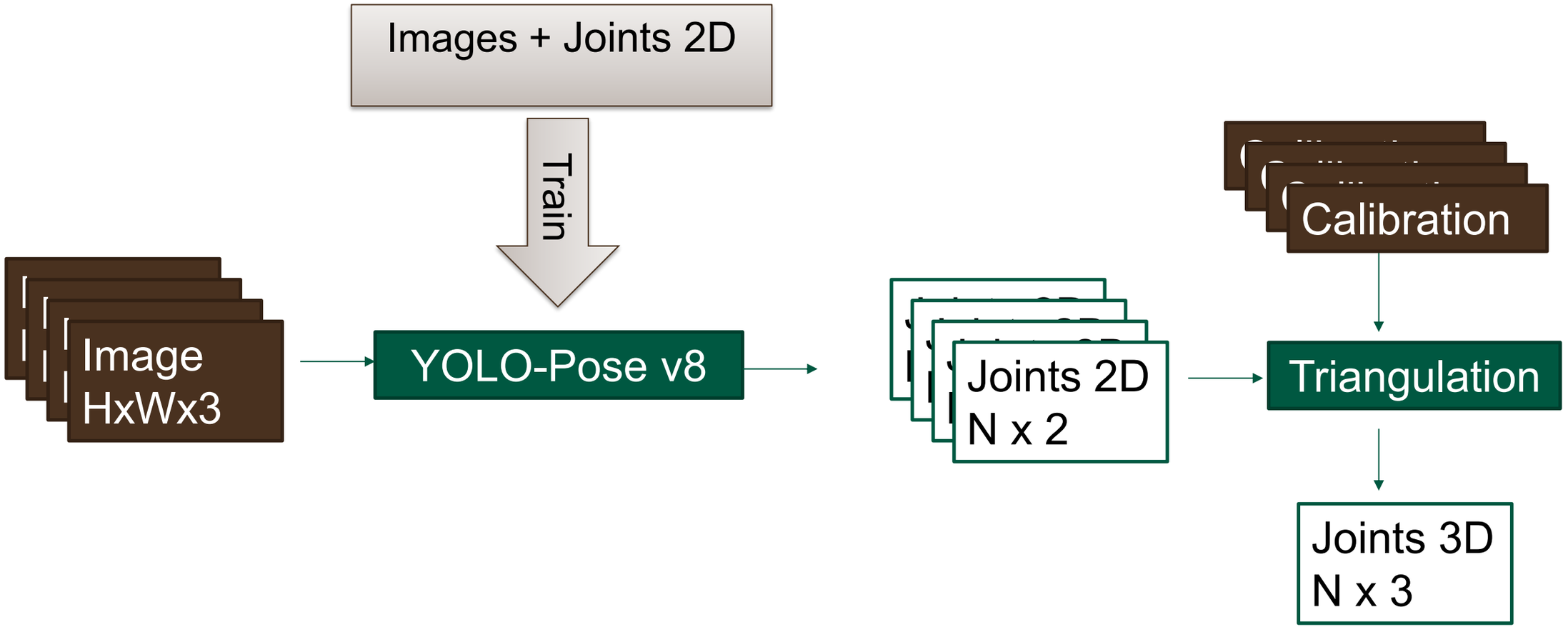
Material & Methods



Forehand dataset
- 502 train samples
- 245 test samples

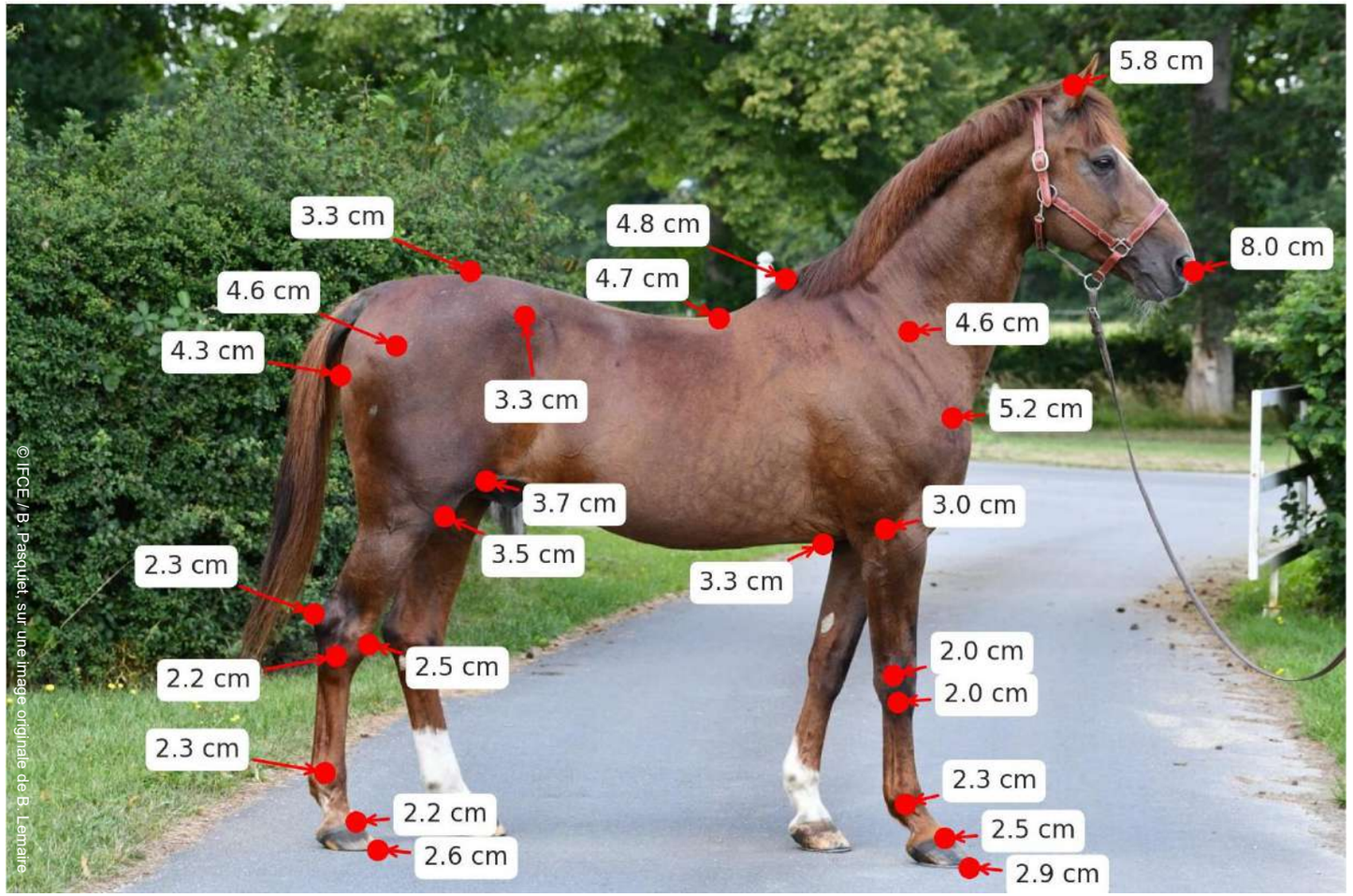
Hindquarters dataset
- 499 train samples
- 245 test samples

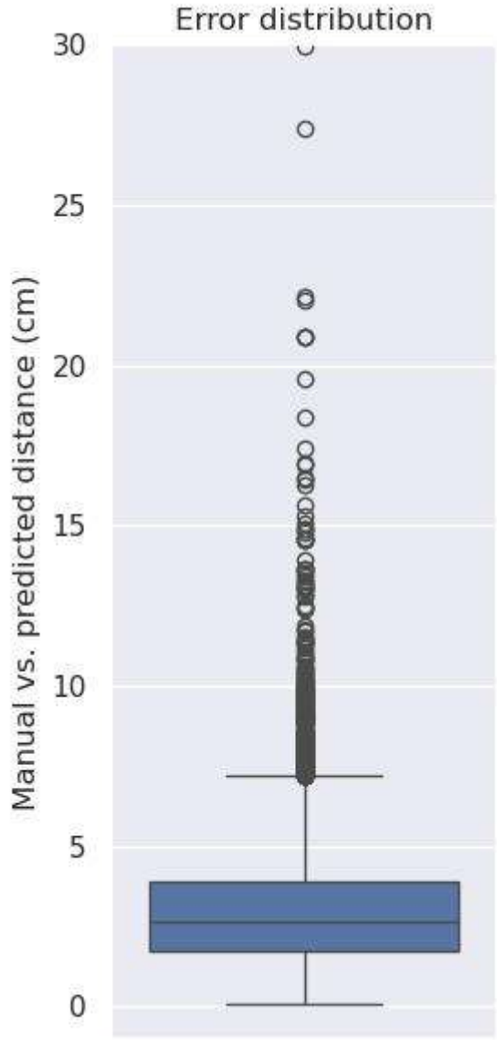
Architecture



Results

Root-Mean-Square error per point

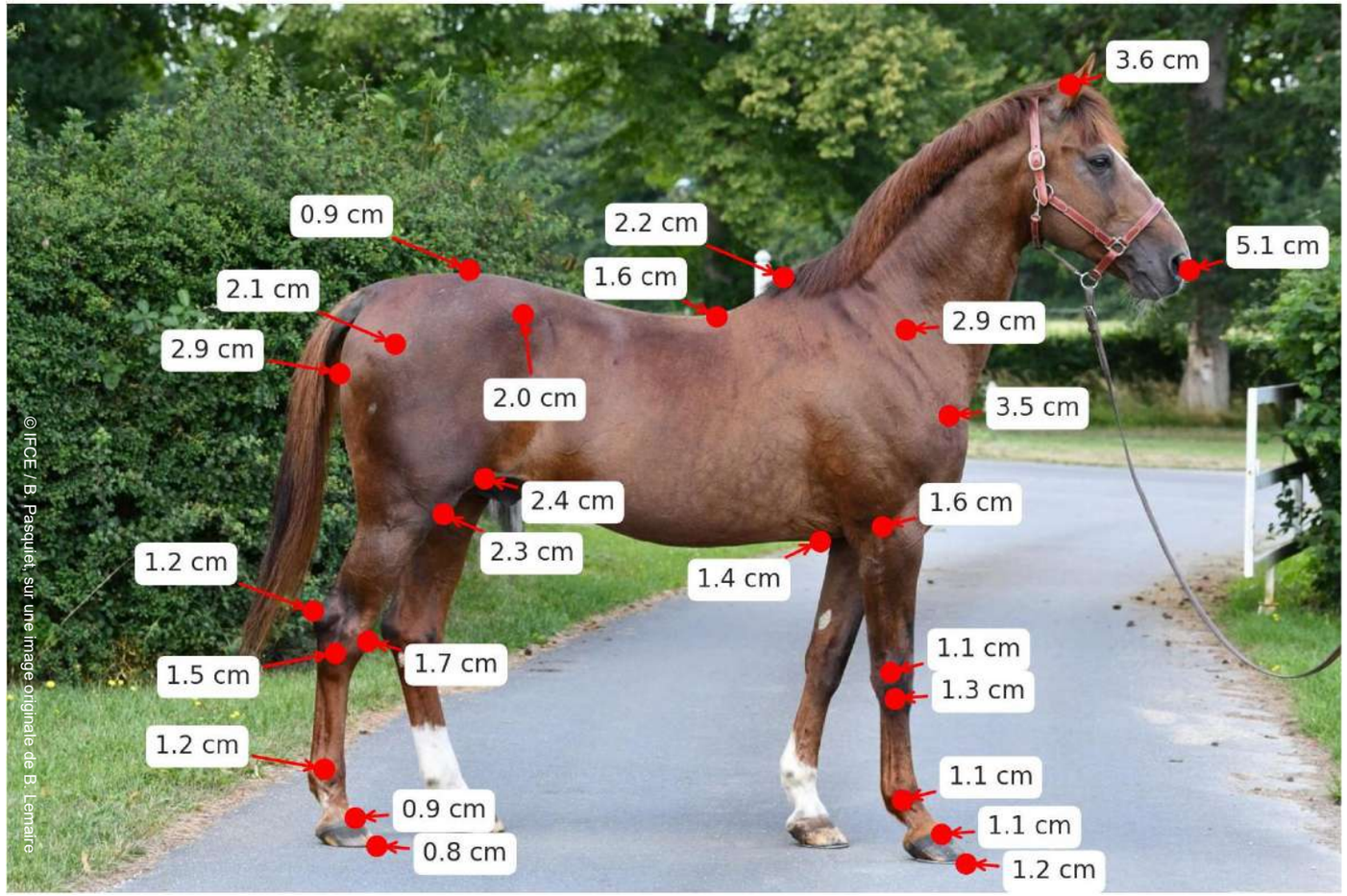


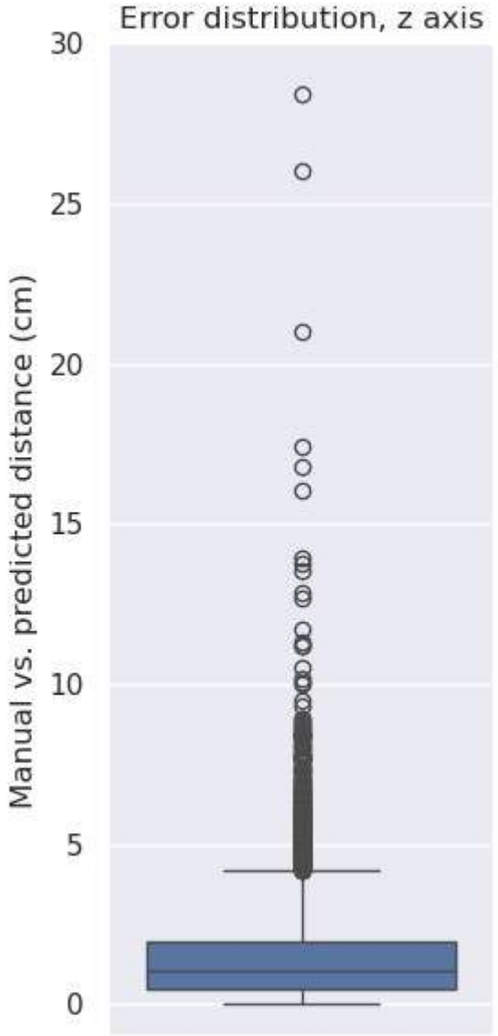


RMSE: 3.8 cm

Results

Root-Mean-Square error per point – vertical axis

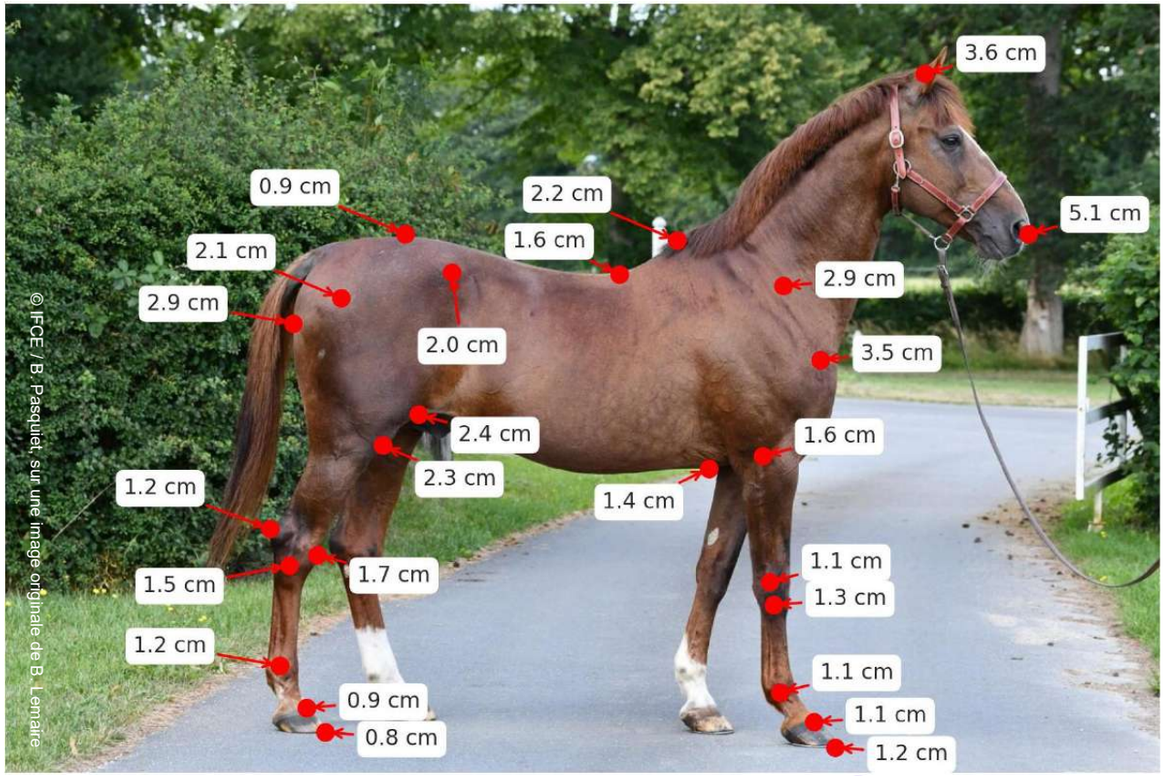




RMSE: 2.1 cm

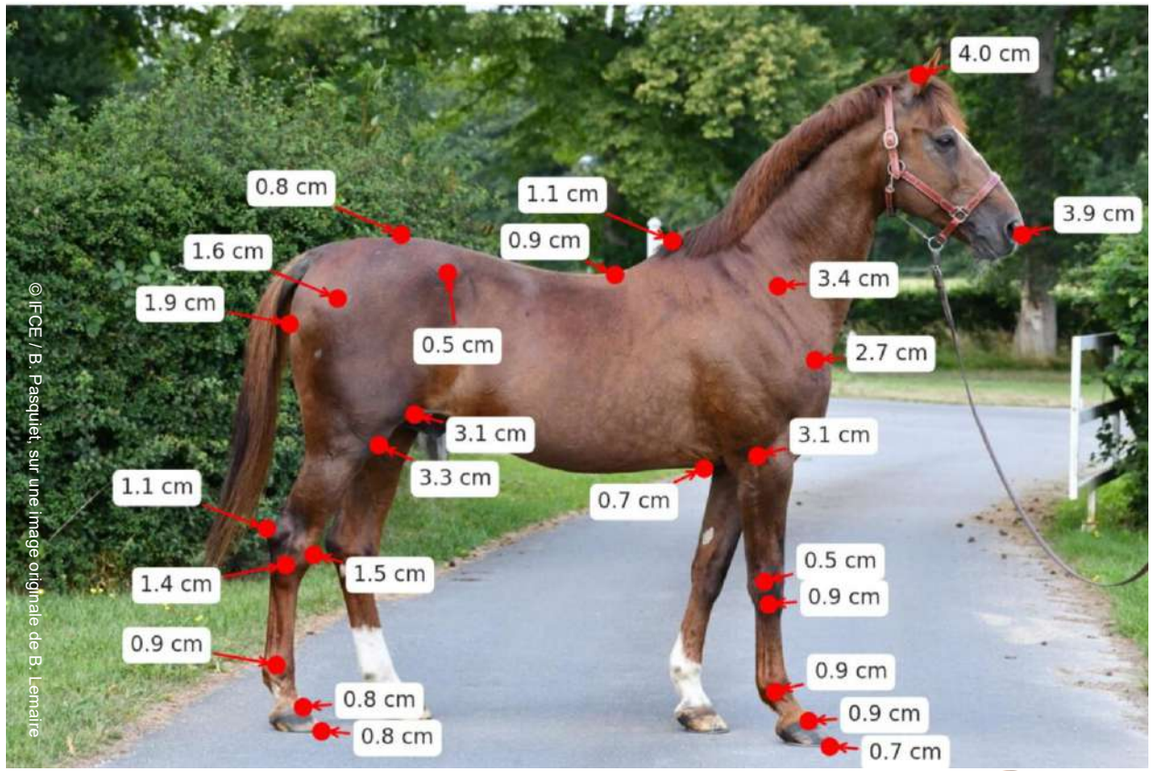
Results

Root-Mean-Square error per point – vertical axis



Manual vs. predicted

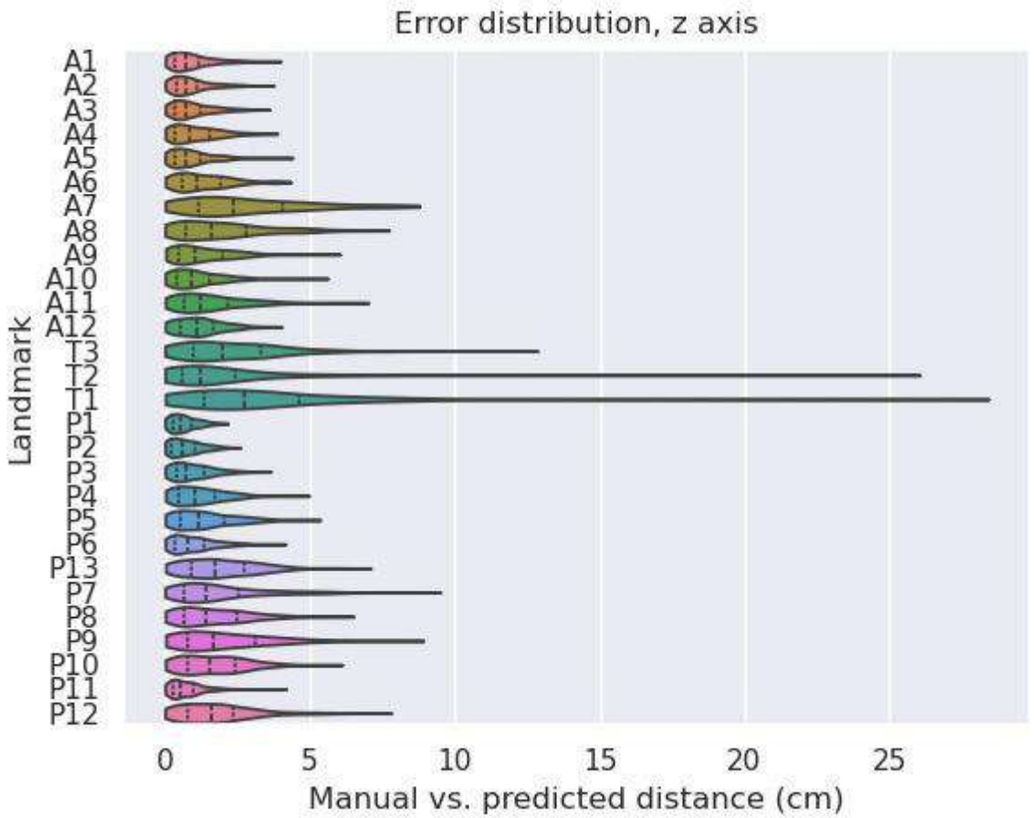
RMSE: 2.1 cm



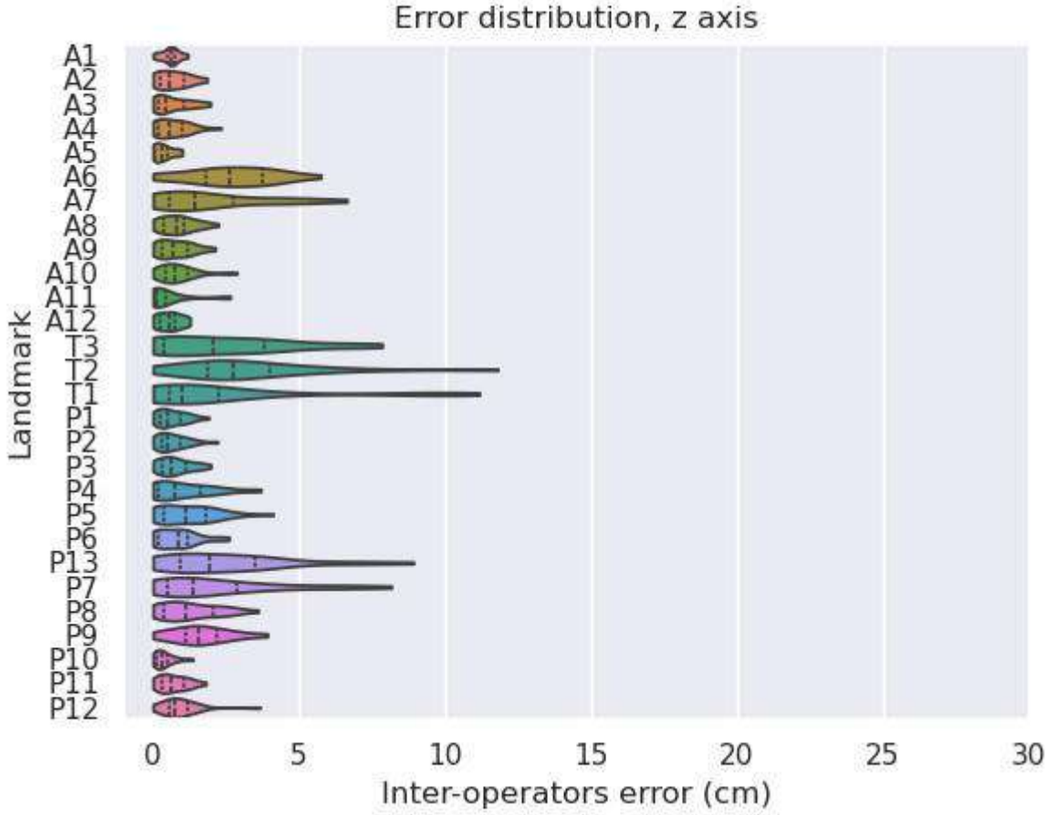
Between two operators (30 horses)

RMSE: 1.9 cm

Results

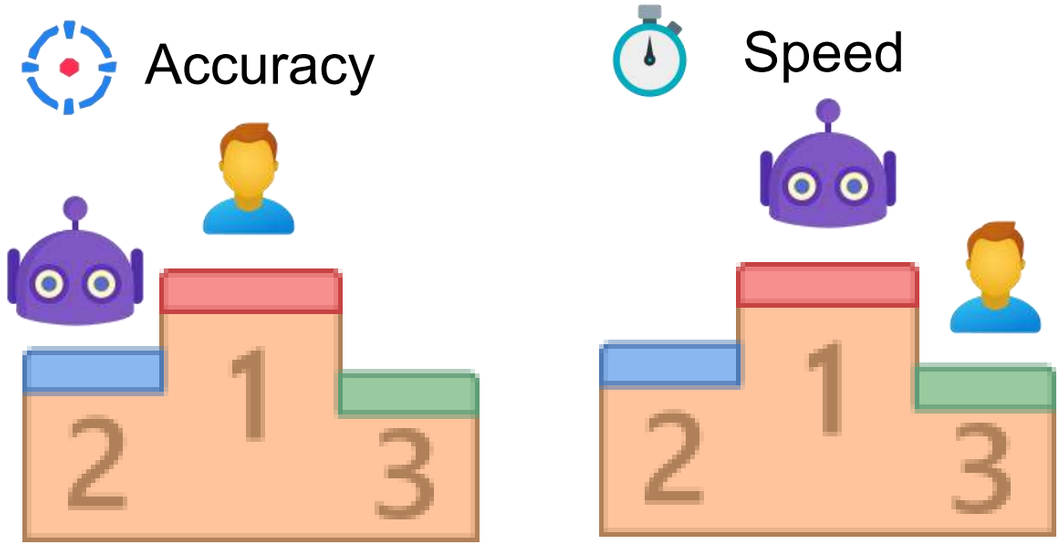


Manual vs. predicted



Between two operators (30 horses)

Discussion



Towards a pre-annotation?

More than your eyes?

Perspectives

Thank you