Leids Universitair Medisch Centrum

THE HAGUE UNIVERSITY OF APPLIED SCIENCES

Ortho Eyes

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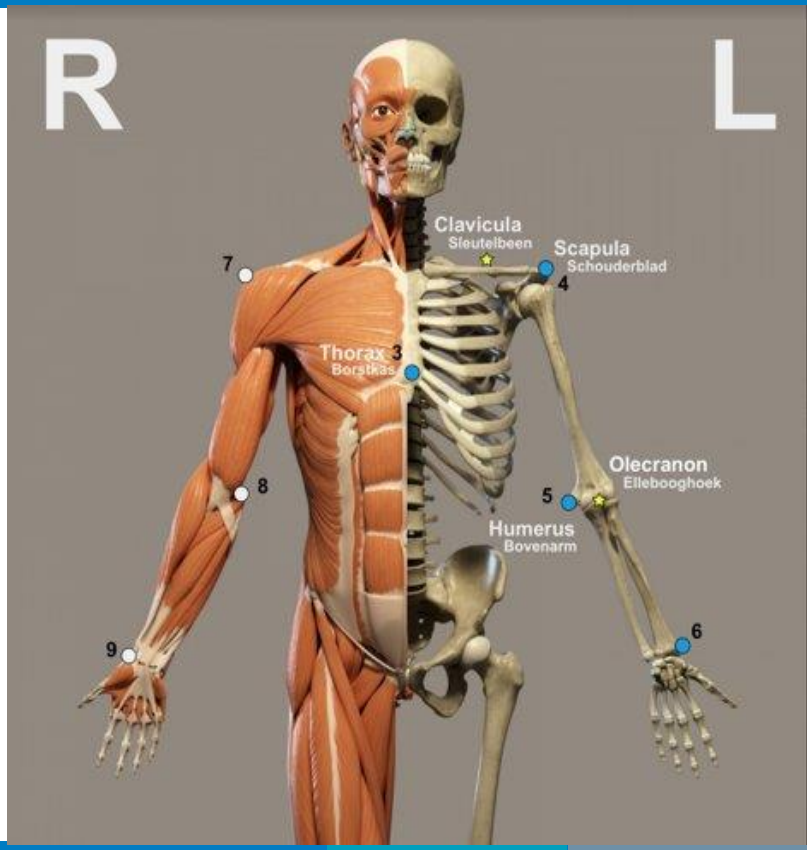
Raphael, Brice, Eddie, Hassan, Arjun, Lennart, Rachelle



Long-term plan

Until week 8

Data visualization.

Reproducing work from last group.

Develop our skills in machine learning.

Literature research study.

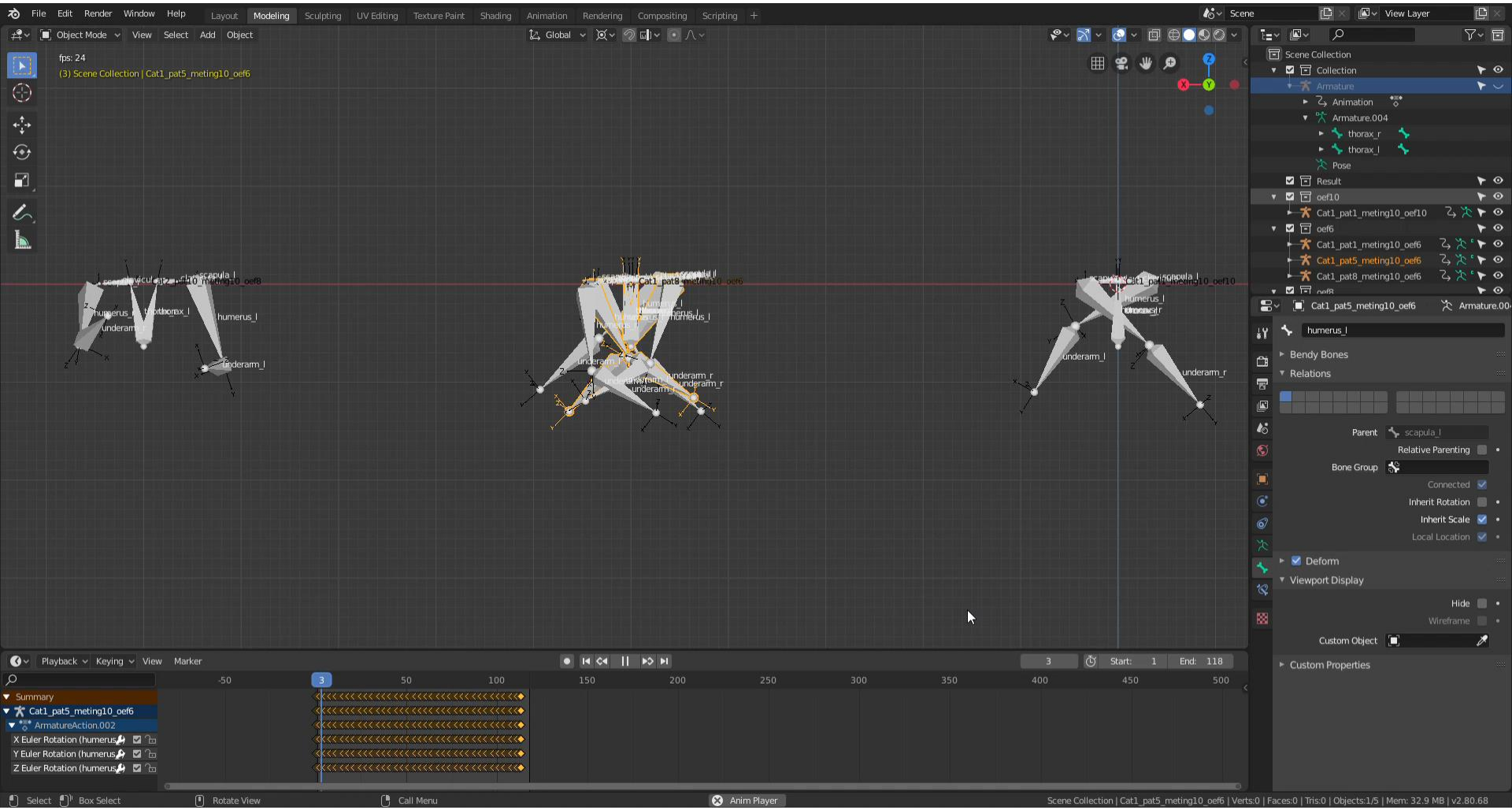
Week 8-18

Research on new techniques to categorize the patient groups.

Find out new parameters

Write a research paper.

Modified visualization



Reproducing work from last group

Subtasks	Eddie	Lennart	Hassan	Arjun	Brice	Raphi
Read in a simple dataset in python.						
2D visualisatie maken						
Train a simple model (lin. correlation) - For example.						
Lineair correlation on left vs right humerus.						
Understand the results from the analysis.						
	Doing					
Read in a dataset (incl. patientgroups in python.						
Train a classification model - That is... Try to predict the correct patient groep.						
Understand the results from the analysis.						
Split all data in a new trainset and a testset						
Redo the analysis from last year with the new split datasets						

Research Question

To what extent and way can different unsupervised data science techniques be used on kinematic recordings to contribute to a more valid and reliable diagnosis made by doctors on shoulder disabilities?

Sub-questions

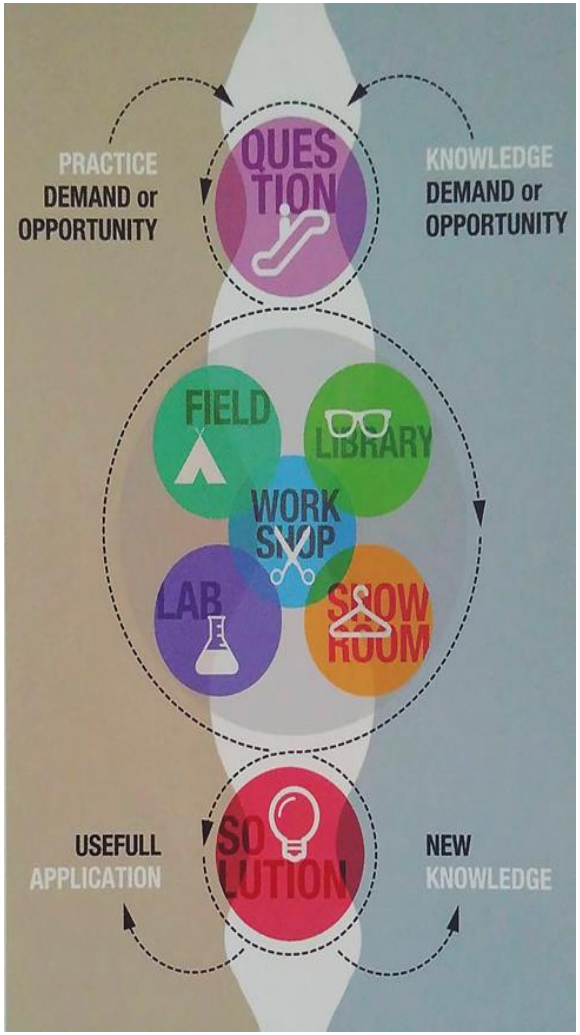
- [library] What kind of different methods of unsupervised machine learning models are there?
- [Library] What is a kinematic recording, how must the data be interpreted?
- [library] Can an expert help me validate what I found out on Kinematic analysis?
- [library] How is this kinematic data recorded / converted?
- [Library/Field] How are kinematic recordings used by the doctors?
- [Library] Is data science used earlier to analyse medical data?
- [Library] Understand the results from last group, who used supervised methods.

- [Field] What kind of parameters are (ideally) used by the doctors / researchers?
- [Field] In what setting can new techniques be used?

- [Workshop] Analyze the results of previous research to: Validate their result Find a minimal set of parameters.
- [Workshop] Can new parameters be found? (easier to measure, more meaning) T-SNE (combine parameters to get new meaning out of them)
- [Workshop] Can kinematic analysis tell something about the entropy?
- [Workshop] Can unsupervised models find the 'bad' arm?
- [Workshop] Test different clustering techniques, with different parameter sets. (what groups do the different models create for us)

- [Lab] Do the groups found in the workshop have a meaning in medical sense?
- [Lab] What (new) parameters do have value for doctors?

- [Showroom] Write an article with the validated results of the supervised models.
- [Showroom] Write an article with the results of the unsupervised models.
- [Showroom] Present the results of the unsupervised models on the symposium (of the data science minor)



Meeting at LUMC

- Open Questions for LUMC
- See the whole process from exercises to the transformed data we have
- Verify Visualization with newly created data

Obstacles on the way!

- Reconstructing the different data sets used last year.
- Find a better way to clean data

Questions & Suggestions