Data-driven Bike Fitting

Automatic bike fitting based on novel data-driven decision making processes

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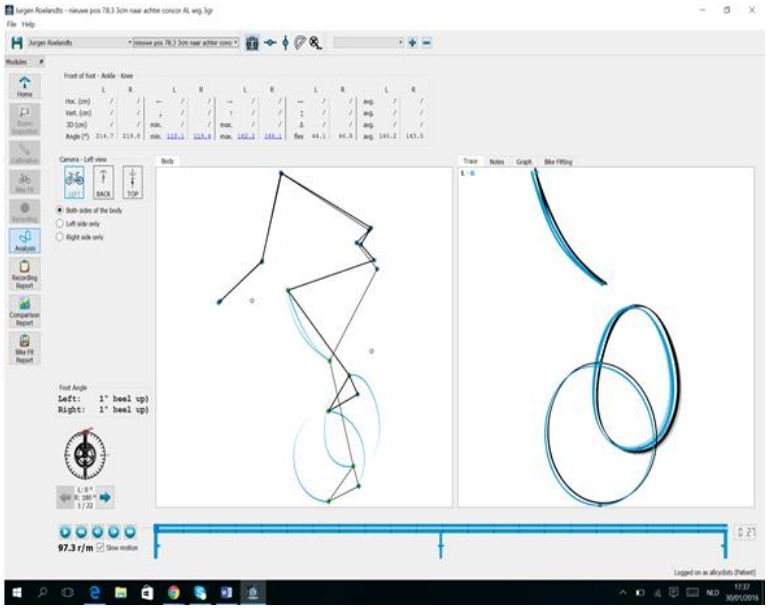
BIO RACER motion

TRADITIONAL BIKE FITTING

During bike fitting sessions, the optimal bicycle rider position is determined by expert scoring.

motion capturing system

BIKEFITTING EXPERT



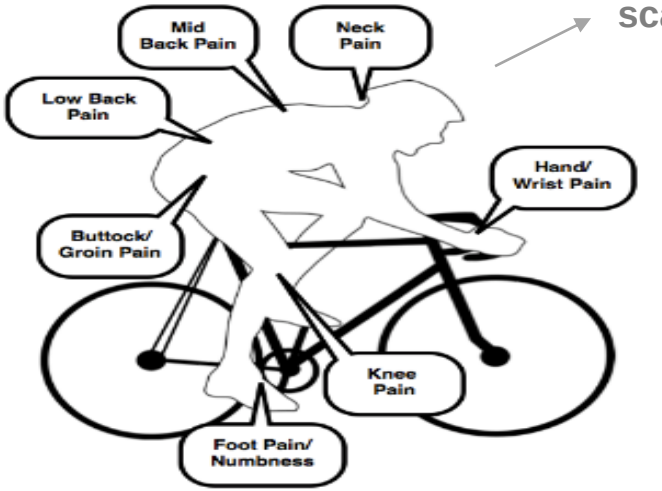
120 fps, 6 cameras, 20 markers

TRADITIONAL BIKE FITTING: PROBLEMS

Expert subjectivity

Time-consuming, labor-intensive process.

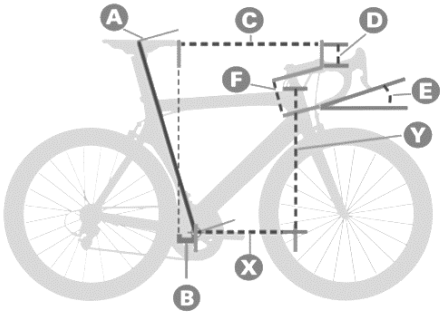
Comfort | Performance | Injury prevention



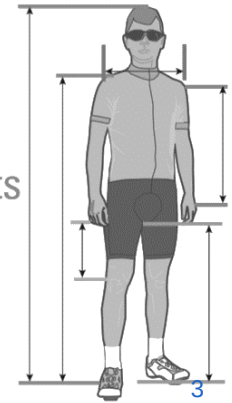
scattered & random remedies

group of experts – consensus?

Bike Sizing



& Body Measurements



Subjectivity within the group of experts

- different bikefitters
- different bikefitting systems
- different “optimal” position?
  - knowledge
  - background
  - system
- analyzing differences
- what is really optimal?

SOLUTION – DATA-DRIVEN BIKE FITTING

SOLUTION – DATA-DRIVEN FITTING

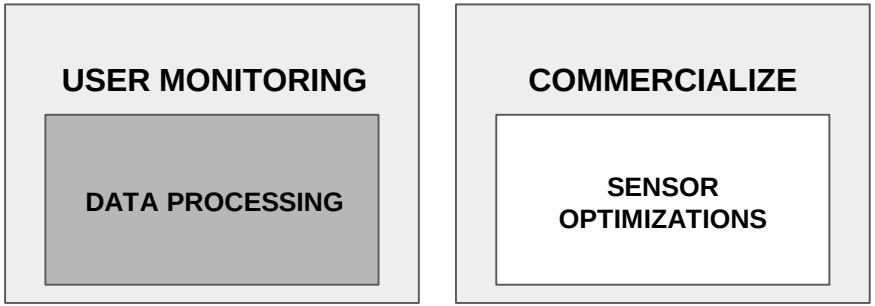
CHALLENGE
How to make sense
of the data for non-experts?

Efficient, accurate, fast and user-friendly fitting

FOCUS #1 - **data processing**

FOCUS #2 - **user feedback/experience**

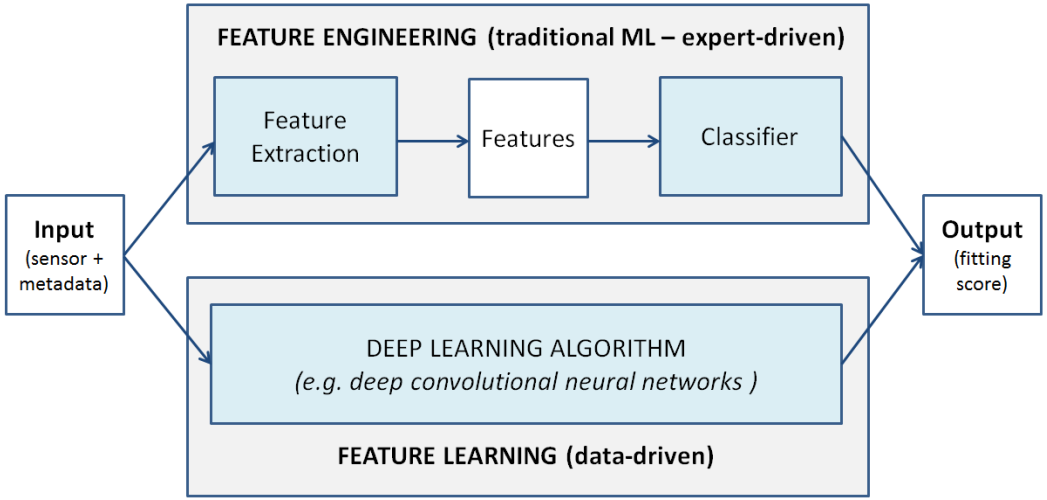
FOCUS #3 - **sensor optimizations**
(complementary activity of Bioracer Motion)



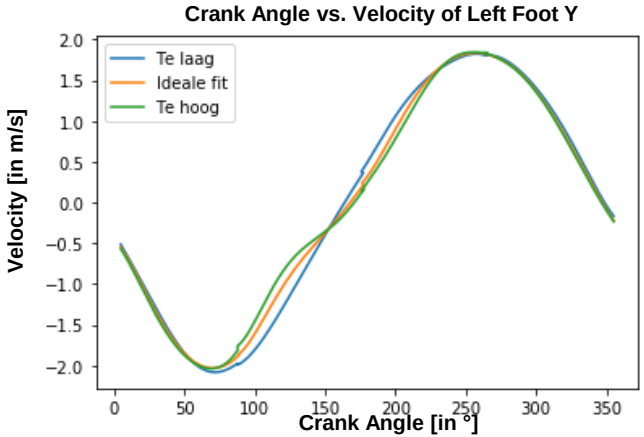
SOLUTION – DATA-DRIVEN FITTING

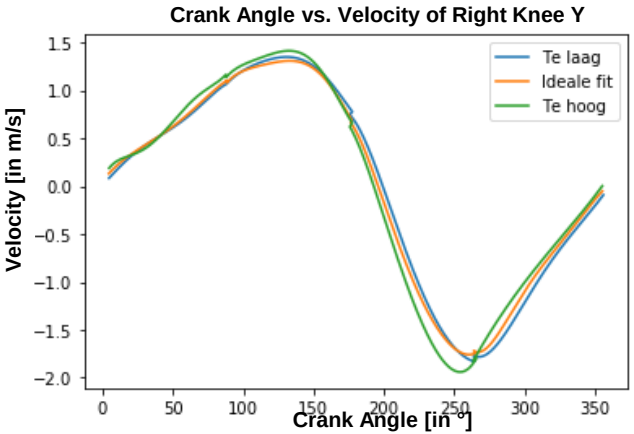
Feature engineering vs. feature learning

Annotated datasets and meta-data

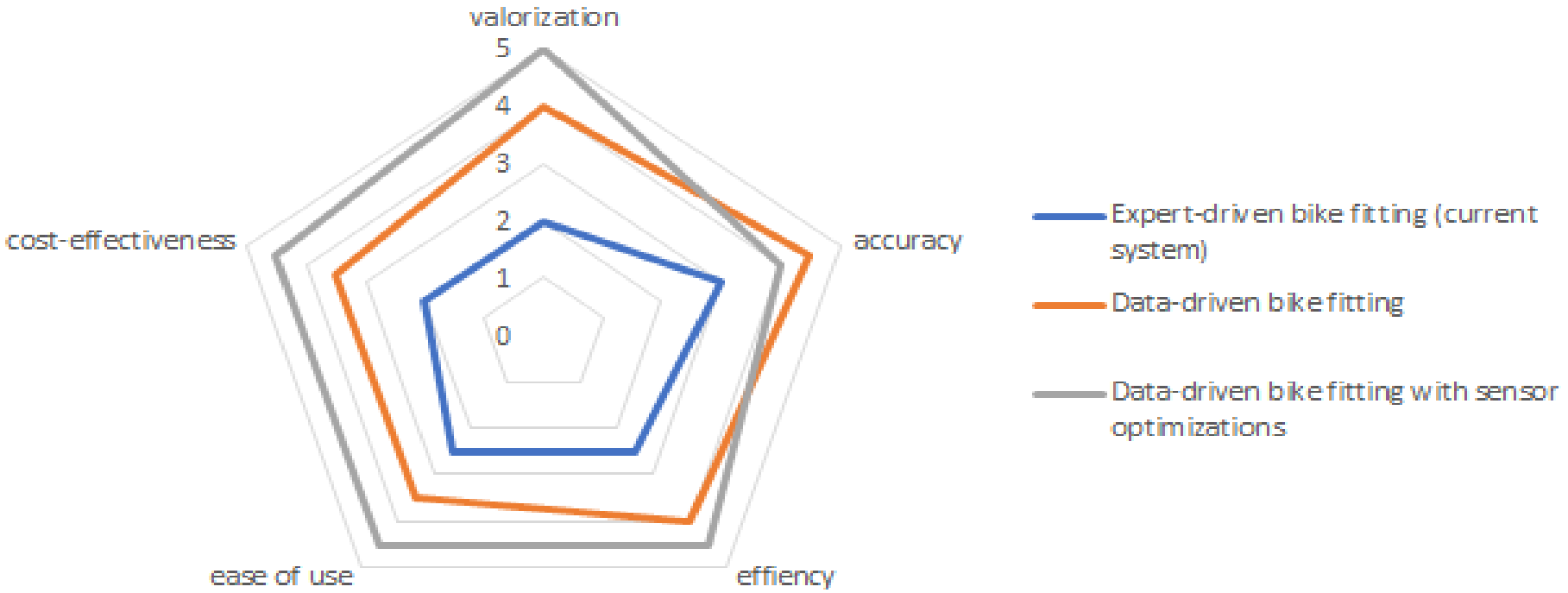


➔ feature understanding





DATA-DRIVEN FITTING – IMPACT



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