Design of a Software Suite to Support Indexing, Annotating, and Analyzing Climbing Videos
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While capturing videos of sport performances is simple, retrieving a video requires an indexing system. Producing data that enable comparing athletes’ performances also requires adapted tools. We collaborated with the French climbing federation to build a software suite that indexes videos, enables to annotate them, and provides interactive means to visualize them.

Metadata and videos
we retrieve or produce data from official events to link to videos captured to facilitate navigation and retrieval challenges include video sizes and format to upload on servers while attending official events

Video indexation

CHALLENGES
large quantities of data to store scattered across multiple devices
ways to link videos with data from performances for quick retrieval
tools for uploading videos in constraining contexts to centralize

SOLUTIONS
dedicated server using MongoDB with constant maintenance, GDPR compliant
923 videos for a total of 43.7 hours and 72GB
42 competitions covered, for 1232 single performances, and 3 disciplines (speed, boulder, and lead climbing)

Data production

CHALLENGES
methods using image analysis still limited, so manual annotation required
tedious task requiring manpower and funds to annotate all performances of competitions
identifying significant factors to annotate to not waste time on unexploitable data

SOLUTIONS
dedicated annotation tool for lead climbing to produce quantitative and qualitative data
498 annotated videos with an average 156 [150, 162] annotations per video
30.3 minutes [28.6, 32.1] on average for annotating performances

Data analysis

CHALLENGES
compare athletes’ data with themselves or others over whole seasons or competitions
identify significant factors influencing the outcome of a performance
identify the benefits of an analytical interactive tool

SOLUTIONS
dashboards in Dash plotly designed in collaboration with the federation’s analysts
support analysts to profile athletes and compare their performances
study competition and season outcomes to adapt training programs

1. SEARCH QUERY

2. PERFORMANCES

3. VIDEO

4. MANUAL ANNOTATIONS

5. DATA ANALYSIS