LINCE PLUS

Open-source software for observational analysis in fencing

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THE TOOL

What is LINCE PLUS?

Free, open-source, cross-platform

Video-based observational analysis for sport (Soto et al., 2022, Behavior Research Methods).

Two synchronized screens

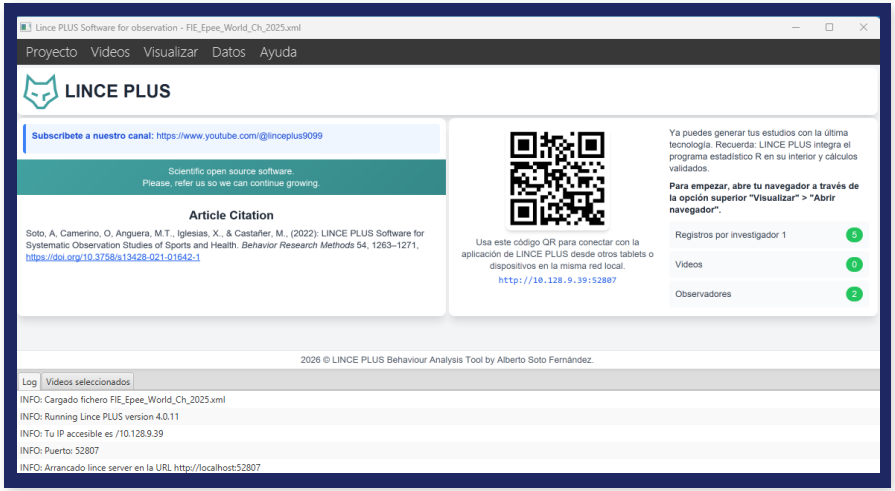
- Desktop window: project and video management.
- Web-browser window: workspace for coding and creating analysis tags.

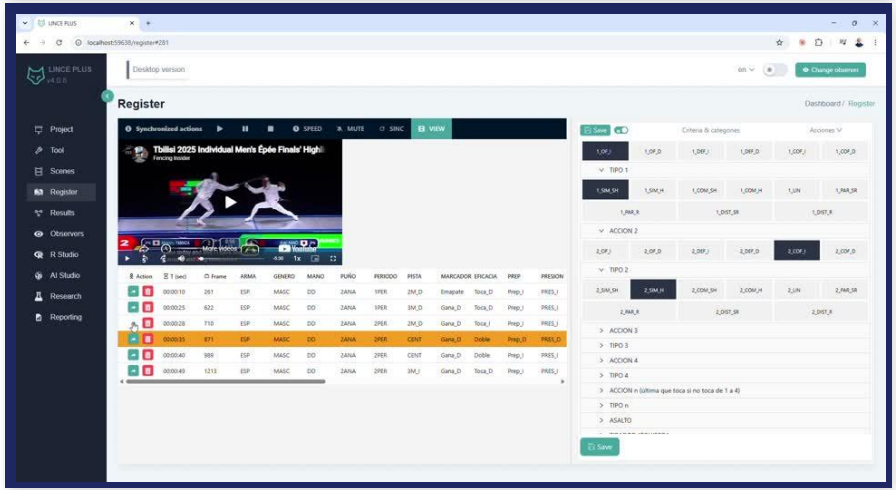
Local videos or YouTube

Analyse any online bout or your own recordings: LINCE PLUS works in .mp4 and automatically converts all other formats.

You design the observational instrument

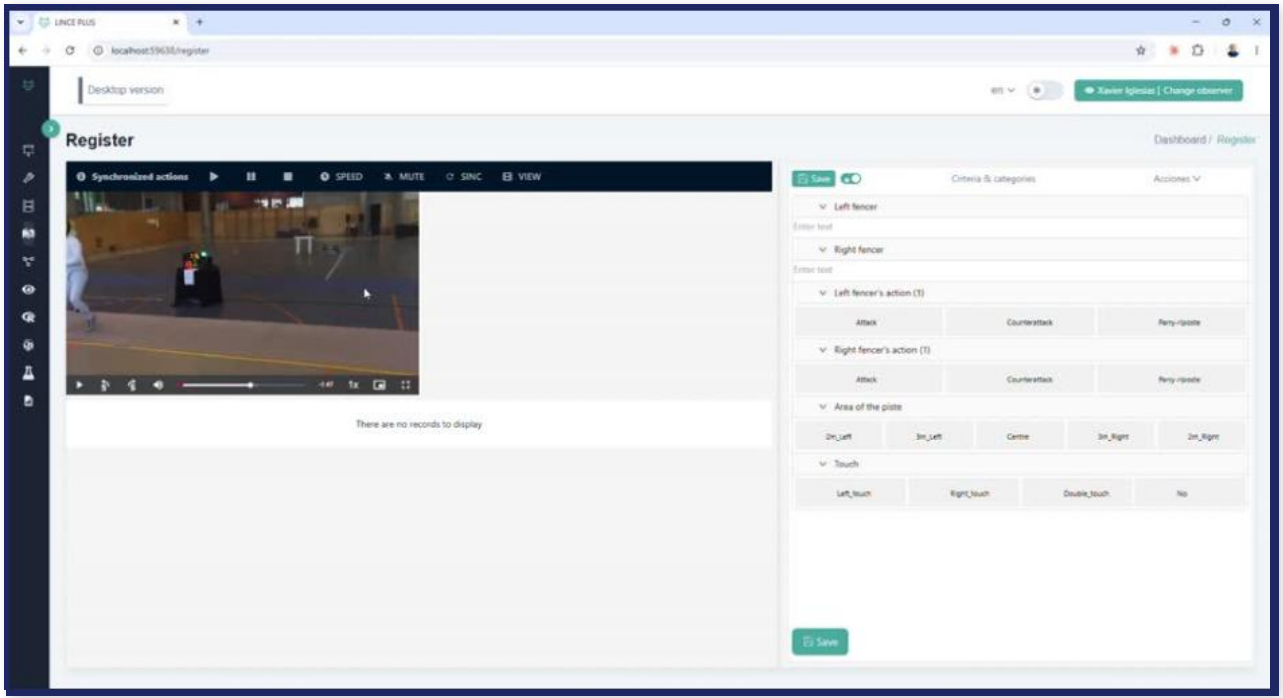
Piste zone, technical-tactical action, preparation, final action, touch outcome, laterality…





TACTICAL ANALYSIS

From introductory tactical analysis…



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Watch and tag in real time

Actions are recorded on the tagging panel while the bout plays.

Coach-built panels

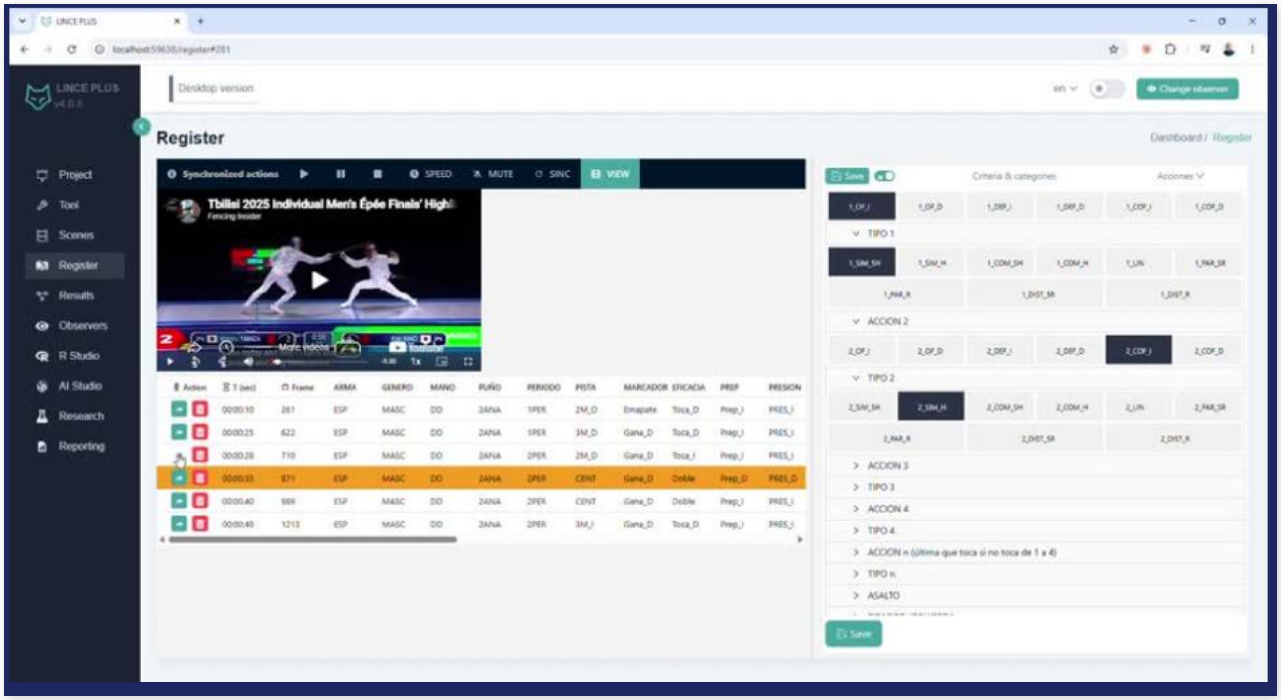
Each coach creates the panel that fits their group and goals.

Predefined or free-text labels

Closed categories for systematic data, free text for qualitative notes.

TACTICAL ANALYSIS

...to the 2025 World Championships



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Frame-accurate records

Supports any video with ms precision with a slow motion video player with keyboard rendering control.

Edit and correct

Any record can be reviewed and fixed, nothing is lost.

Playback speed control

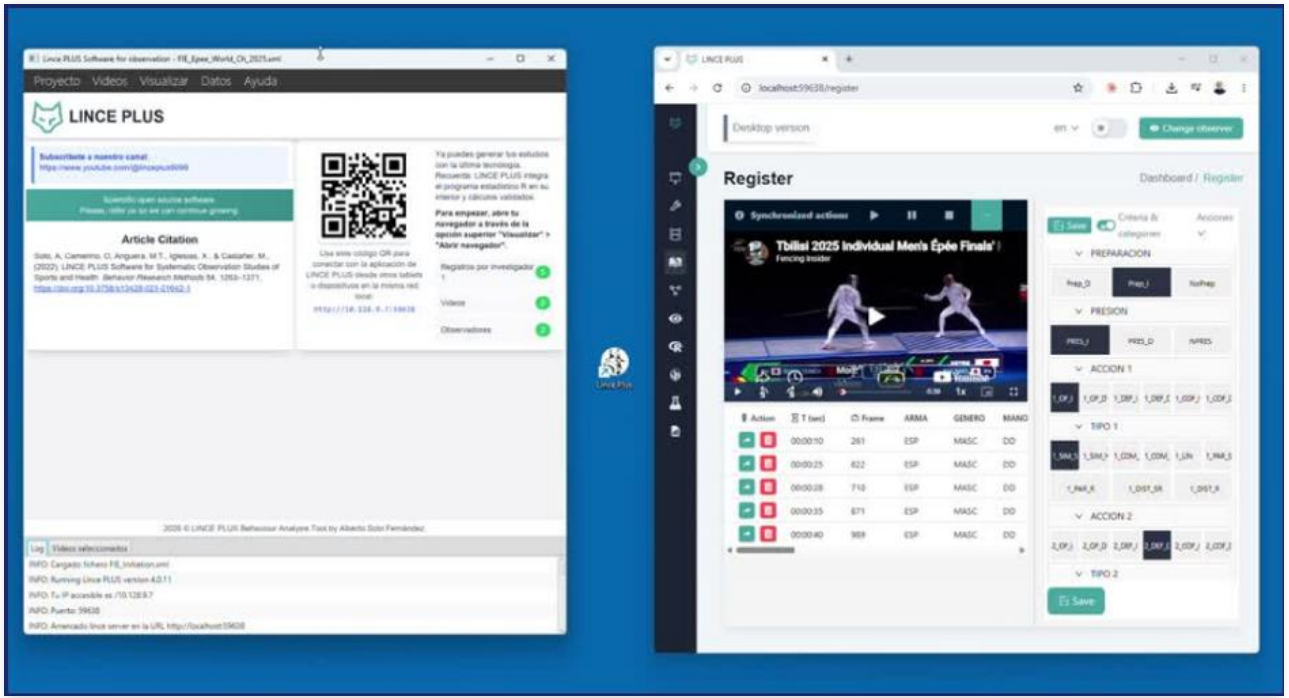
Slow motion for dense sequences, fast for preparation phases.

Elite-level template

A far more complex instrument for high-performance analysis.

FROM VIDEO TO DATA

One click to Excel



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Direct export to Excel

The full record matrix: tactical effectiveness, temporal control, opponent profiling…

R & Python

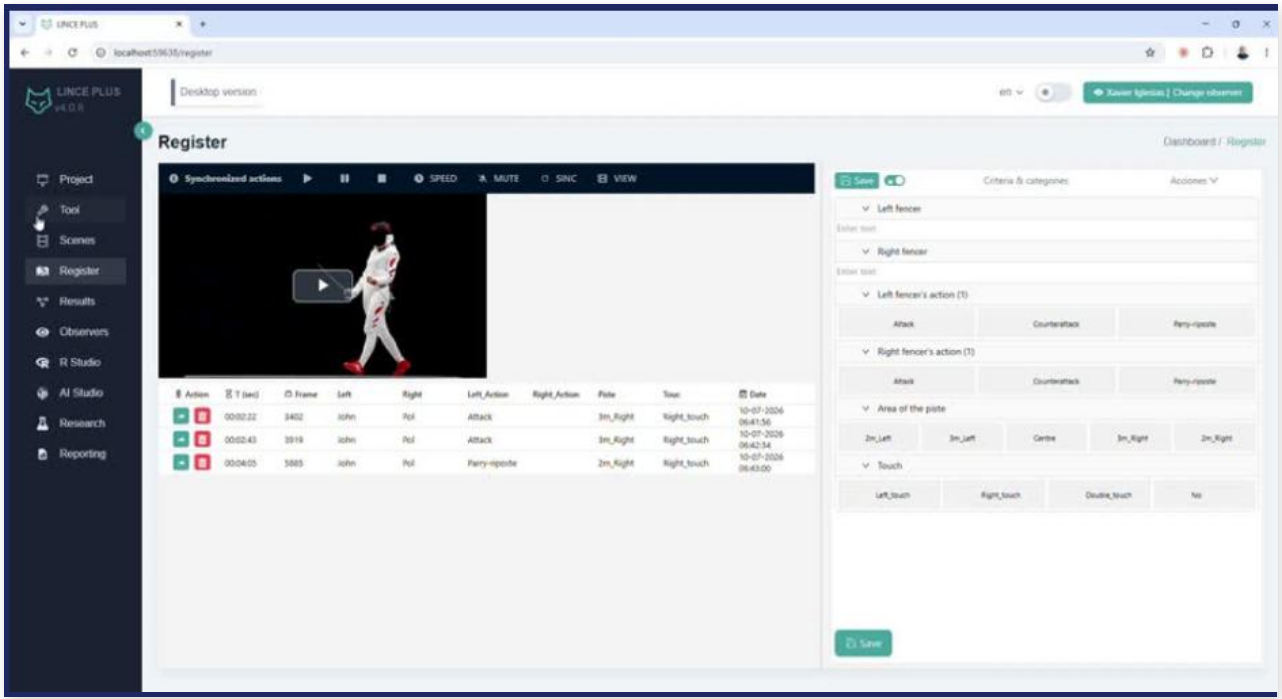
You can program with r and Jupyter inside the application or connect externally using a rest api.

…or use AI to simplify the analysis

Hand the exported data to AI tools for faster answers.

FLEXIBILITY

Your analysis, your variables



The fencing coach determines the level of analysis

Criteria and categories are fully user-defined.

Any weapon, any level, any question

The same tool adapts to foil, épée or sabre, from club to national team.

Works offline

Browser-based, no internet required (*).

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(*) Internet is only required for multiple observers working synchronously on the same project

COLLABORATION

One analysis, many eyes



Individual or team work

From one coach on a laptop to a full staff.

Multi-device

Computer, tablet and phone connect to the same project.

Multi-observer, synchronous

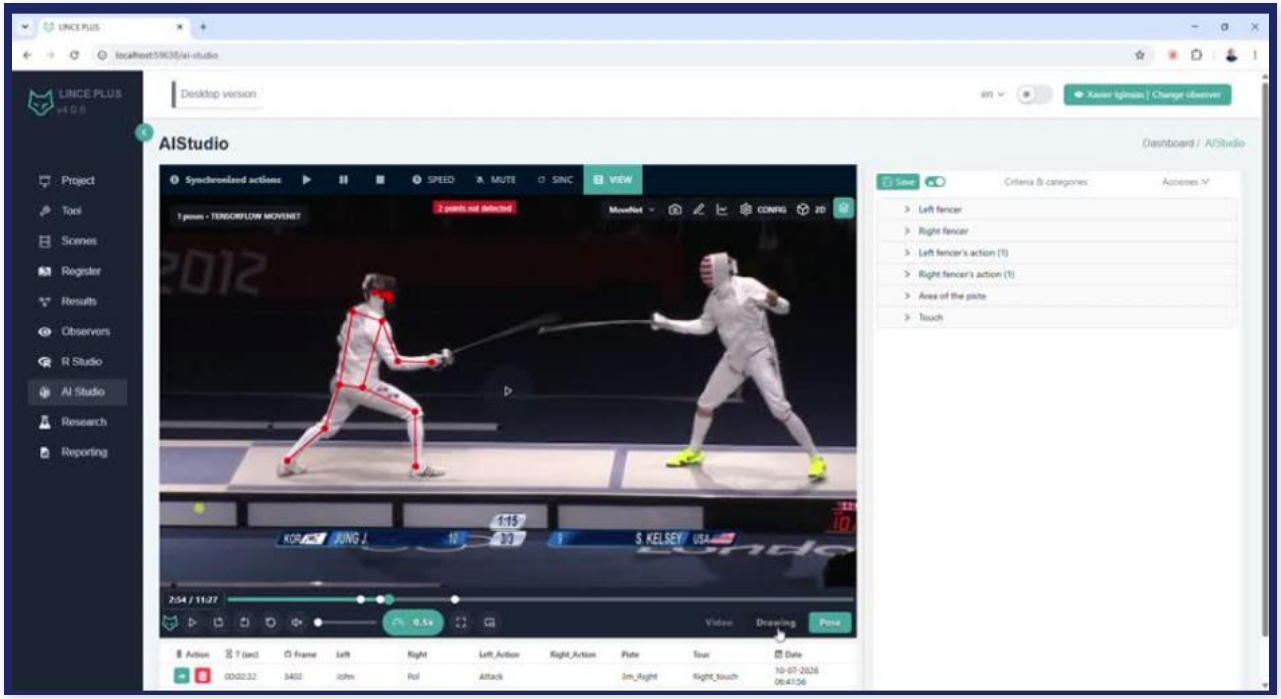
Several observers tag the same bout at the same time (shared session).

…or asynchronous

Each fencer analyses their bouts at home; the coach merges all records.

TECHNICAL ANALYSIS

Draw, annotate, AI pose detection



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Drawing and writing tools

Lines, circles, angles, text and grids over the video.

AI pose estimation

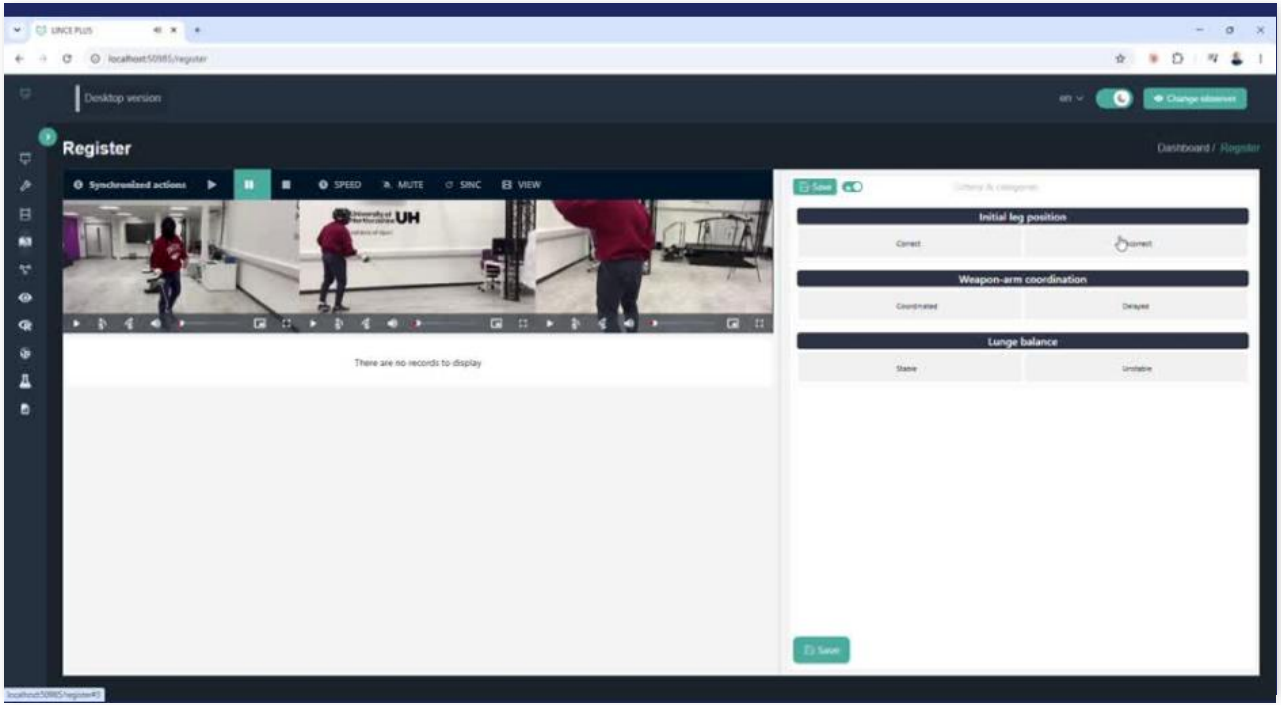
- Automatic body-point detection for angular analysis of fencing actions.
- Human validation: you can correct AI generated errors and export the pose data accordingly

Capture and record the screen

Create annotated images and clips for instant feedback to the fencer.

TECHNICAL ANALYSIS

Synchronized multi-video analysis



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2-3 videos playing in sync

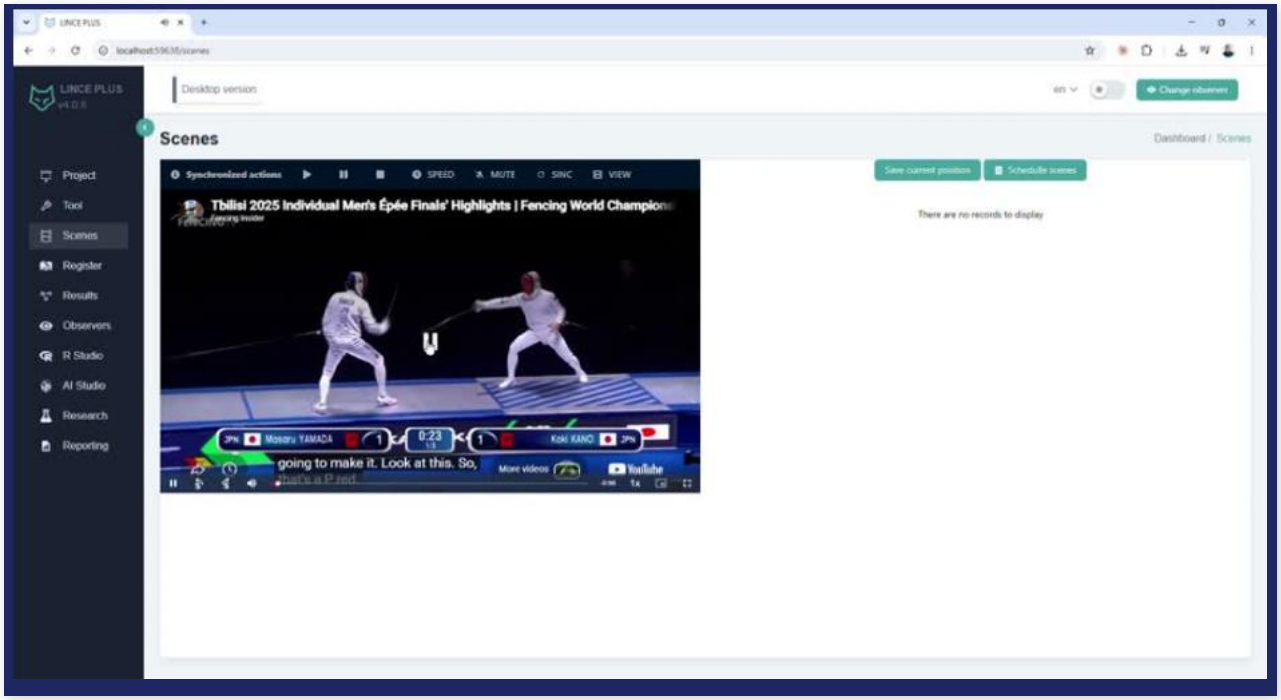
Compare angles or repetitions of a technical execution.

A complement in fencing

More central in other sports, but useful for lesson and footwork work.

SHARING

Templates: build once, share with everyone



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Generate project templates

Instrument, episodes and settings packed in one file, ready to share with your team.

Choose which actions to analyze

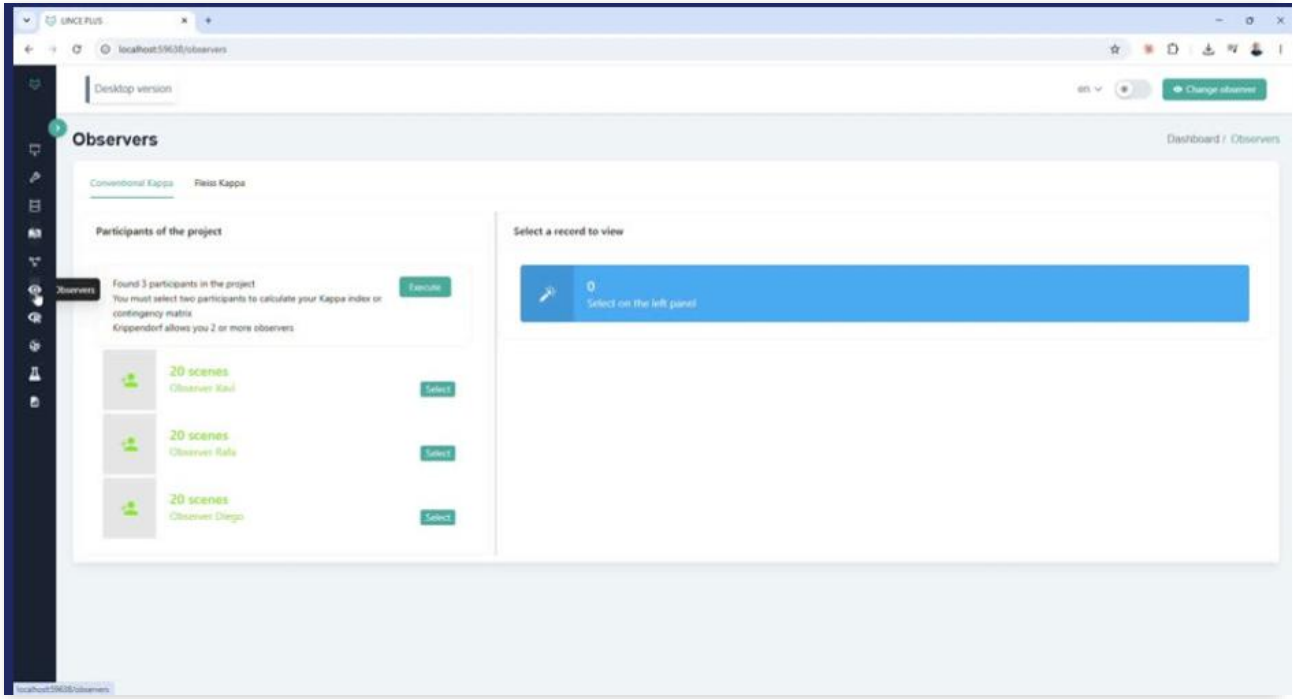
Using the template, you can indicate which actions your student or another coach should analyze.

Compare the results

By coding with the same template, we can compare the results.

RELIABILITY

Do we see the same bout? Inter-observer agreement



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Built-in Cohen's kappa

Analyze inter-observer agreement directly within the application, immediately and using scientifically validated methods.

A training tool

Contrast each pupil's record with the master's: fencers and referees learn to read the bout.

RESOURCES

Try it today

Download (all platforms)

https://github.com/observesport/lince-plus/releases

Fencing research group

https://inefc-grceib.cat/fencing-project-eng/

Reference paper

Soto, A., Camerino, O., Anguera, M. T., Iglesias, X., & Castañer, M. (2022). LINCE PLUS software for systematic observation studies of sports and health. *Behavior Research Methods, 54*, 1263–1271. https://doi.org/10.3758/s13428-021-01642-1

Soto-Fernández, A., Camerino, O., Iglesias, X., Castañer, M., Lapresa, D., & Anguera, M. T. (2026). Towards predictive analysis of behavior and sports using LINCE PLUS 4 software. *Apunts. Educación Física y Deportes, 164*, 92-97. https://doi.org/10.5672/apunts.2014-0983.es.2026.164.09

Official site

https://www.lince-plus.com

Project, tutorials & cases

https://inefc-grceib.cat/lince-plus-project-eng/

LINCE PLUS summary

1. **Free & open source** Our desktop application will remain always free
2. **Any level** From the first fencing lesson to the World Championships
3. **Your instrument** Coach-defined tactical and technical analysis
4. **Multi-device & multi-observer** Synchronous or asynchronous collaboration
5. **From video to evidence** Frame-accurate data, Excel/R/Python, reliability (kappa), AI tools



Thank You

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