

Visual Planning and Analysis of Latin Formation Dance Patterns

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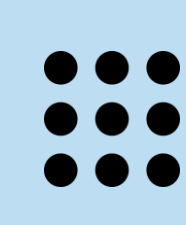
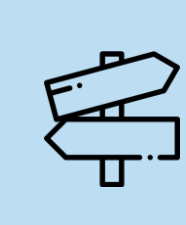
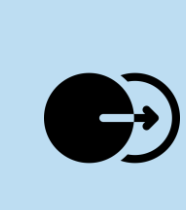
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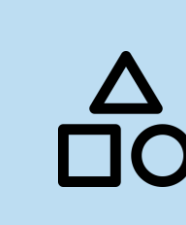


Motivation

Latin formation dancing is a team sport in which up to eight couples perform a coordinated choreography. A central part are the patterns formed by the dancers on the dance floor and the transitions between them. They make up a large part of the choreographic performance and must be coordinated with the actual dance steps and figures. Planning and practicing patterns are some of the most challenging aspects of Latin formation dancing. Due to the limited functionality of the few existing software solutions, little use of digital tools has been made for these tasks so far. Instead, patterns are often still planned on paper, making it difficult to update them and to analyze them for potential problems.

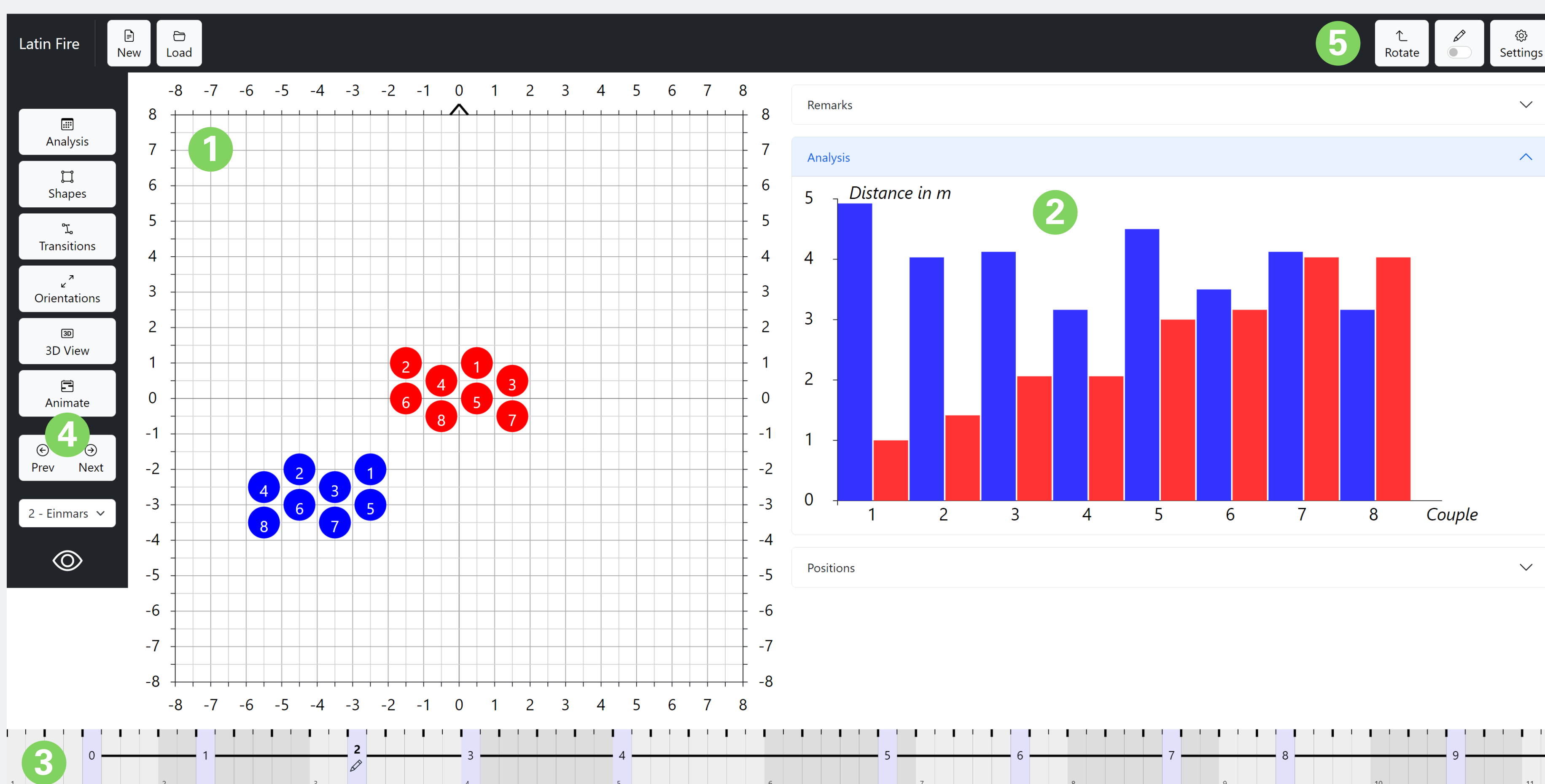
Contribution

Together with formation instructors we developed and evaluated a responsive web-based prototype that includes interactive visualizations for the following tasks:

-  Creation and visualization of patterns
-  Orientation of heads and bodies
-  Visualization of transitions between patterns

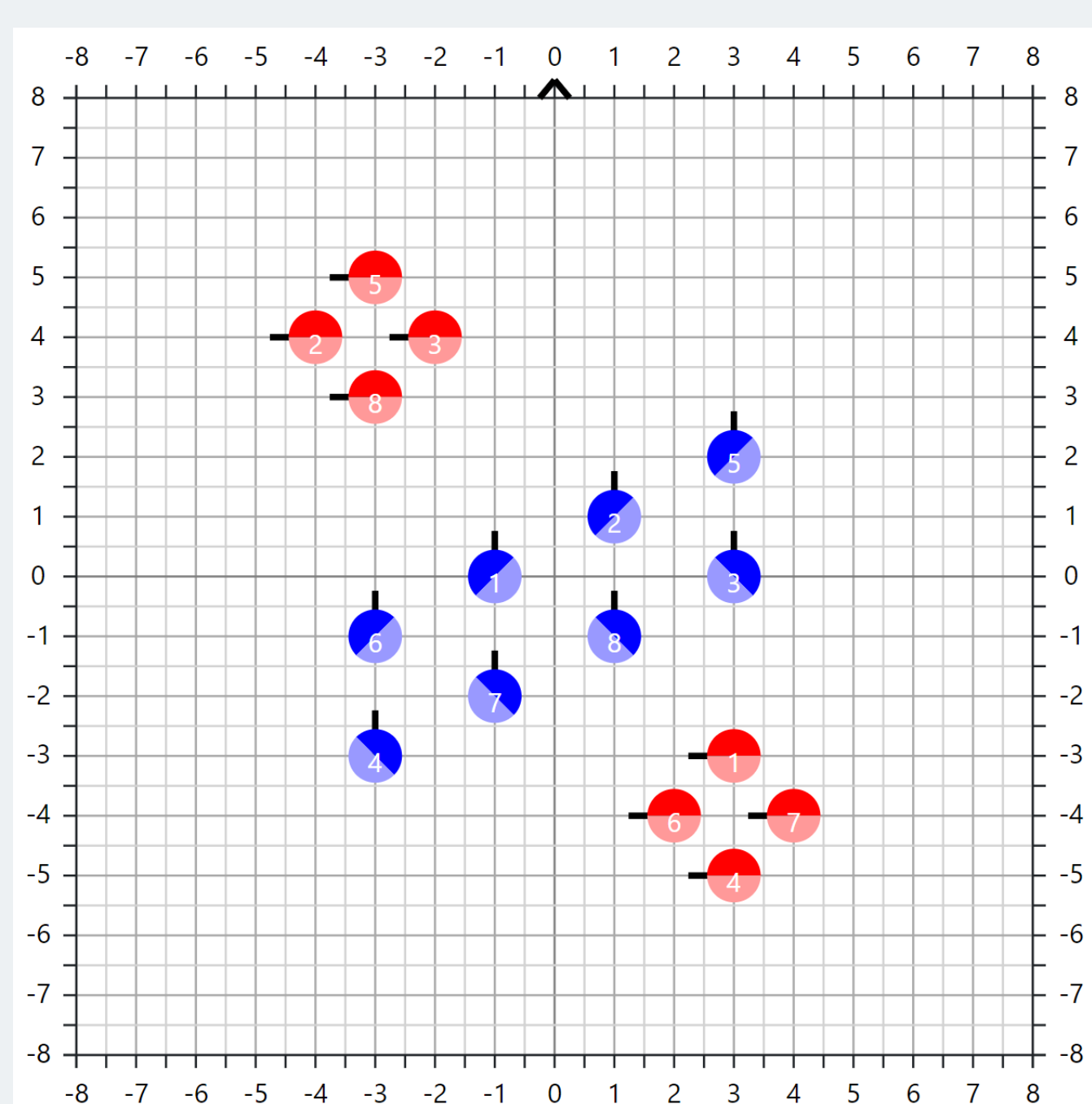
-  Abstraction of patterns into shapes
-  Analysis of patterns across choreography
-  3D view of patterns and dancer poses

Approach



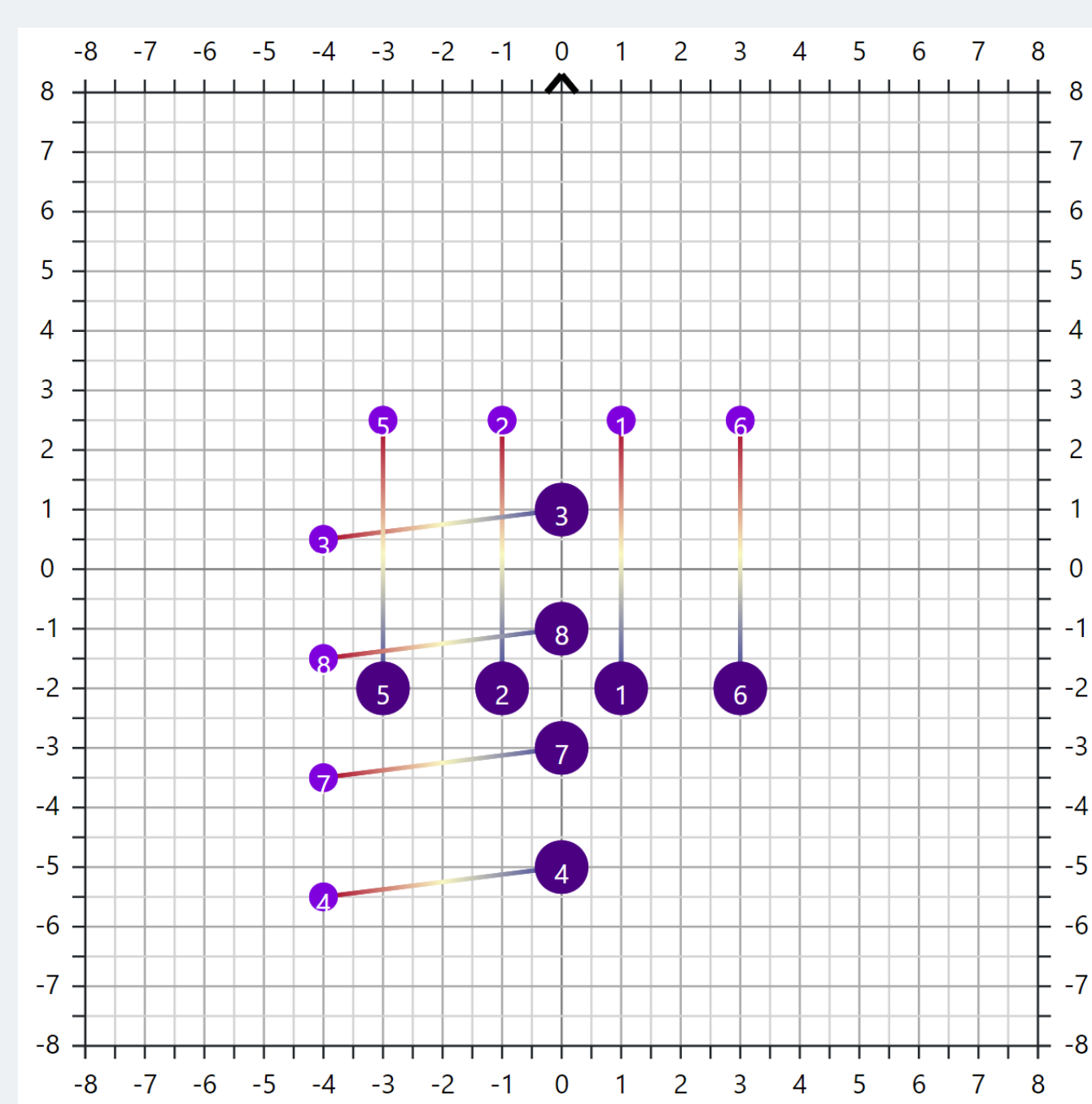
To support instructors and dancers respectively, the tool can be operated in an editing and a viewing mode. It has the following components:

- Dance floor view** shows the dancers' positions in a 2D coordinate system.
- Side panels** give additional information like the distance moved between patterns for each dancer.
- Timeline** shows the temporal arrangement of the patterns and can be used for navigation.
- Toolbar** allows navigation between patterns and changing of viewing modes.
- AppBar** contains buttons for loading and saving choreographies, switching between viewing and editing modes, and settings.



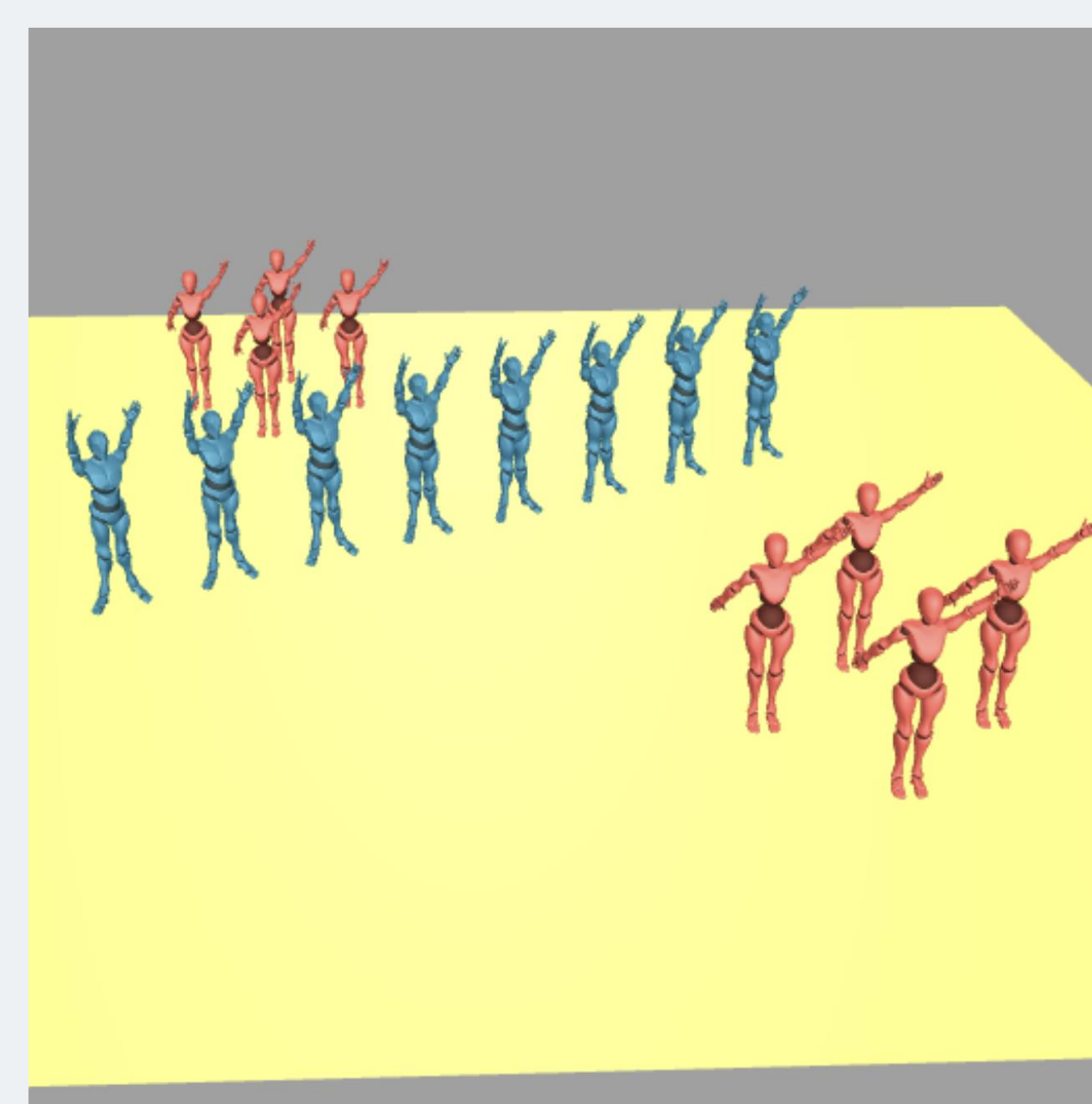
Orientation mode

Head and body orientations represented as glyphs.



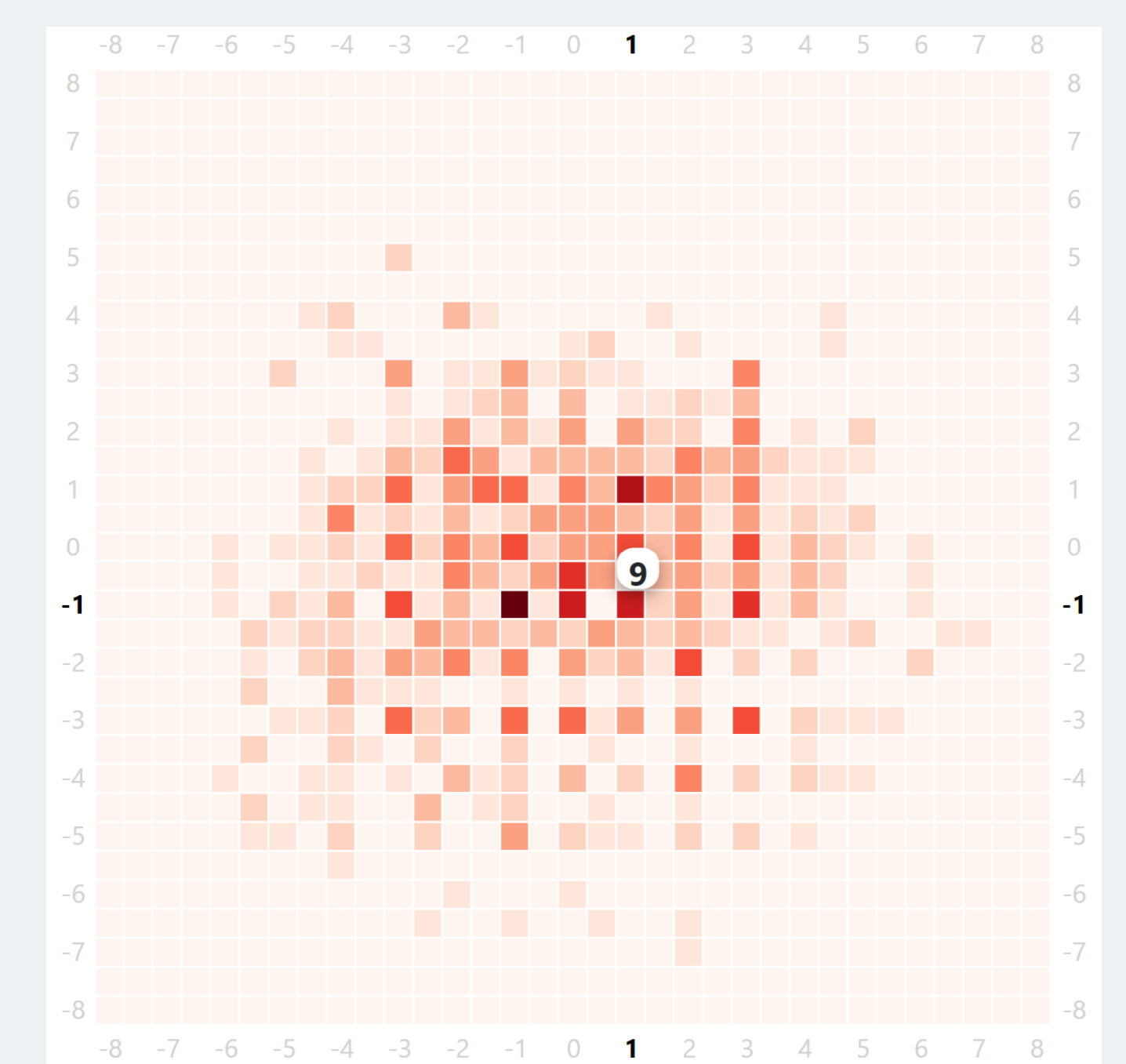
Transition mode

Visualization of paths between current and previous pattern with temporal encodings.



3D mode

Modeling of dancer poses in addition to positions.



Analysis mode

Heatmap visualizes utilization of dance floor and bar chart plots dancers' movement distances.

Expert Study



Four formation instructors



Think Aloud method

The visual encodings, the separation into modes, and the clear user interface were regarded especially positively.

Analysis features like the heatmap and the 3D mode for modeling poses add value beyond existing tools.

The prototype has some usability issues like missing guidance for the temporal color encoding in the transition mode.

Overall, instructors and dancers were enthusiastic about the developed visualization approach.

Future Work

More extensive evaluation in a larger case study.

Visualize patterns directly on the dance floor using augmented reality.

Analyzing real performances by visually comparing tracked and defined dancer trajectories.

Contact

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Prototype

<https://botafigure.web.app/>

Try out the
prototype

