

The SoccerTacTikZ Package for L^AT_EX*

— version 0.9 —

Ulrik Brandes, ETH Zürich

2024-10-01

Abstract

The SoccerTacTikZ package provides macros for association football (soccer) pitches and tactical diagrams. It includes standard player and interaction symbols and supports multiple vendor-specific coordinate systems.

Contents

*SoccerTacTikZ has been developed originally for illustrations in a course on *Soccer Analytics*, and has evolved into an attempt to define graphical conventions.

1 Introduction

The SoccerTacTikZ package was implemented to create illustrations for *Soccer Analytics*, an annual course at ETH Zurich, but it is increasingly used for other purposes such as theses, articles, and coaching materials.

Therefore, the package is now made available for general use, and this documentation explains its underlying rationale. As the name suggests, SoccerTacTikZ adds some football-related features to the graphic might of the TikZ [?] package. As a byproduct of facilitating visual representations, we hope to establish conventions for tactical diagrams. A number of design choices have been made specifically to promote accurate depictions and a standardized visual language.

Obviously, football is played between two teams, and we refer to them generically as the home and away team. Since tactical analyses are usually focused on one of them, we refer to the focal team as the home team. The denominations home vs. away thus take the role of us vs. them, or focal team vs. opposition and should not be interpreted literally.

2 Using the Package

The SoccerTacTikZ package provides ...

2.1 Loading and Options

To make use of SoccerTacTikZ, the file `soccertactikz.sty` should be obtained from <https://github.com/ubrandes-ethz/soccertactikz> and placed in a directory searched by the L^AT_EX installation. It is loaded by placing

```
\usepackage[\langle options \rangle]{soccertactics}
```

in the preamble of a L^AT_EX document. Several other packages will be loaded automatically, not least because SoccerTacTikZ requires TikZ [?], which has its own dependencies.

The following package options allow to set initial parameter values, but can be adjusted separately for each diagram.

scale The unit of measure for pitch coordinates is the SI unit meter. `\scale` defaults to 1000, yielding a scale of 1:1000, so that 1m on the pitch corresponds to 1mm in the diagram.

Options can be combined arbitrarily. Declaring, for instance,

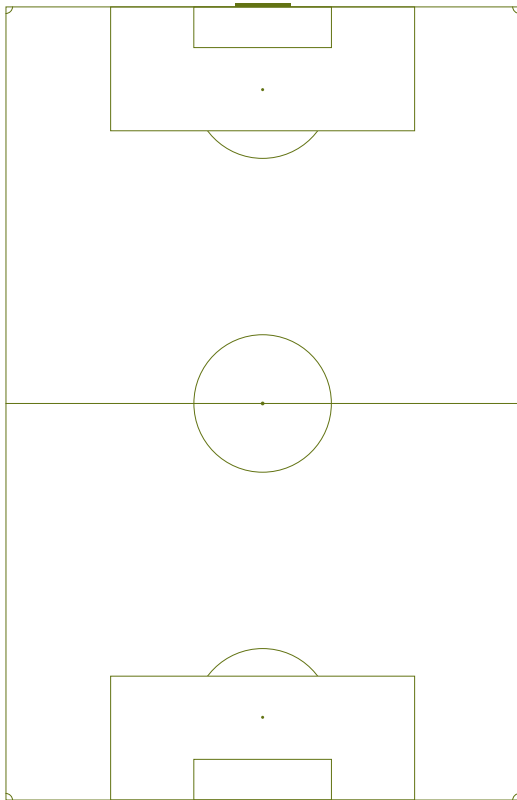
```
\usepackage[scale=1050,XXX]{soccertactikz}
```

scales a standard pitch of 105m length to 10cm, and ...

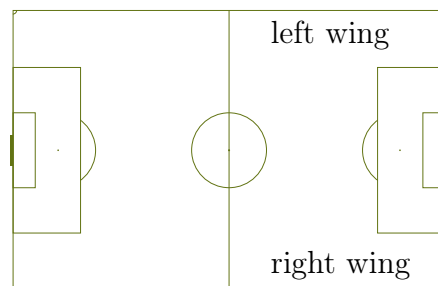
2.2 Pitches

Since we are taking the perspective of one of the two teams, this team also defines a direction of play, i.e., which of the two goals are to be defended and attacked, respectively.

To reduce cognitive dissonance between graphical depictions and spatial orientation on the pitch, tactics boards are generally set up such that the longer side is vertical. This way, left and right retain their usual meaning, vertical passes are indeed vertical, and dropping midfielders are actually moving to a lower location.



By default, pitch diagrams are therefore oriented so that the direction of play is upward for the focal team. If context requires, they can still be oriented horizontally, but for the reasons stated above this is discouraged.



In addition, pitch dimensions, markings, and other elements are drawn to scale to convey an accurate sense of space no matter the actual size of the diagram.

2.3 Players

While any symbol could be used to represent players, we assign the two most common ones to players of the home \bullet and away \times team.

These symbols can be colored to match shirts \circ , shorts \circ , and shirt numbers \circ .

Since there

with and without numbers

in \bullet and out-of possession \circ

in team colors \bullet

and in the same spot \times









2.4 Interactions

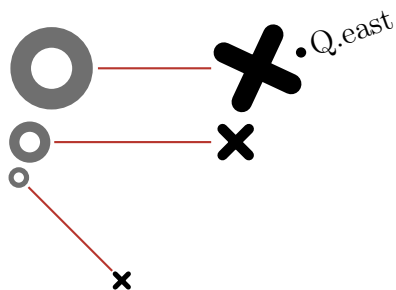
styles for passing, dribbling, running

\longrightarrow pass
 \rightsquigarrow dribble
 $---\rightarrow$ run

2.5 Placing Players and the Ball

home and away, attacking and defending, numbered and labeled, scaled and colored

	<code>\pic[home]{player}</code>		<code>\pic[home,number=7]{player}</code>
	<code>\pic[away]{player}</code>		<code>\pic[away,number=11]{player}</code>
	<code>\pic[home,shorts=green]{player}</code>		<code>\pic[home,shorts=green,number=7]{player}</code>
	<code>\pic[away,shorts=purple]{player}</code>		<code>\pic[away,shorts=purple,number=11]{player}</code>



player pictures?

2.6 Routing Passes, Dribbles, and Runs

straight, bend, concatenated, labeled,

2.7 Annotations

areas, comments

training equipment?

3 Animations

For now, example use of regular TikZ features. Macros for moving players planned.

4 Playing out from the Back

