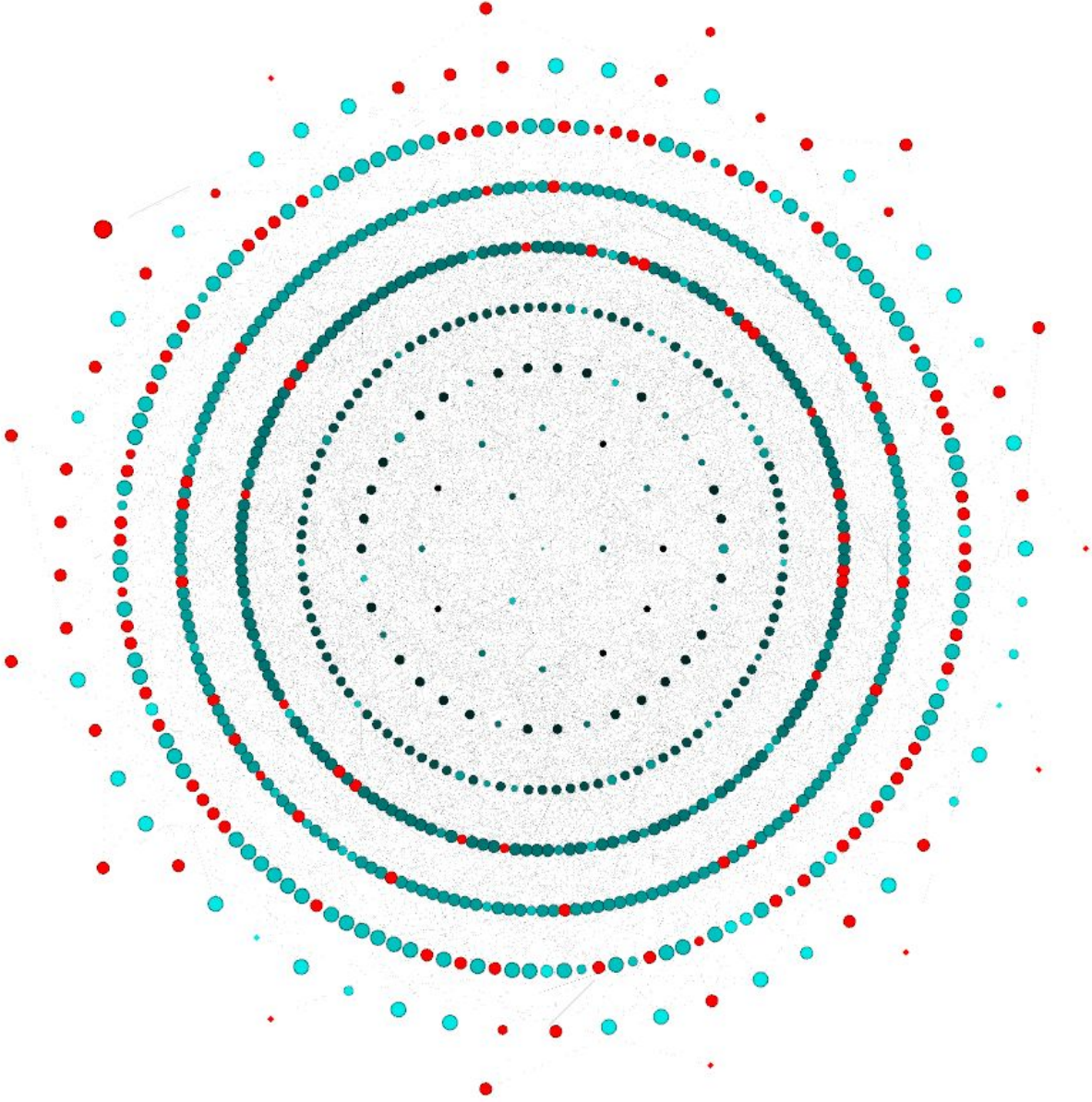


# TicTacToe Graph

Graph



## Description

This graph is from the 2015 Graph Drawing Contest where the data contains all the possible board positions and moves in the game of Tic Tac Toe. This is a tactical 2 player game where players alternate entering "X" or "O" symbols into cells of a 3x3 grid with the end objective being creating a row, column or diagonal of equal symbols.

### How to create

To create this data, the text data from the website was interpreted using Java to a gexf format with the board states (vertices) into the nodes and the edges into edges. The data was then imported to Gephi with the edges kept as directed edges.

This graph was generated using Gephi with the Concentric Circle layout from a Gephi plugin:

<https://marketplace.gephi.org/plugin/concentric-layout/>

In this layout you choose a root node (in this case I choose the empty Tic Tac Toe) board state and the plugin lays out the graph such that nodes that are 'n' hops away from the root lies on the 'n'th circle. The way this layout is done in this graph is as follows:

**Center Node:** "Root" (layer 0) of graph corresponds to empty Tic Tac Toe board state.

**Distance:** The layers of the graph are 140 units separated from each other.

**Circle Layer:** Layers of the graph correspond to a player's move (odd layers are "X"'s move and even layers are "O"'s move). There are 9 layers which corresponds to the 9 turns of a Tic Tac Toe game.

**Node Size:** The nodes are sized according to InDegree, which represents how often that state is accessed. Min size: 5 and Max size: 22

**Node Colour:** Coloured according to OutDegree, where red is for the nodes that have 0 out edges (i.e. the game is finished), blue is the low number of OutDegree (not many choices available) and ranges to black for the most number of OutDegree (most number of choices available).

The edge thickness was then reduced to increase the visibility of the nodes.