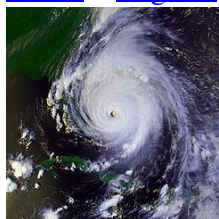


[Home](#) \* [Engines](#) \* **Floyd**



Hurricane Floyd <sup>[3]</sup>

**Floyd**,  
an [UCI](#) compliant [open source](#)  
[chess engine](#) for study purposes  
and prototyping of new ideas by  
[Marcel van Kervinck](#), written in [C](#),  
and first released in October 2015  
<sup>[1]</sup> with a permissive license <sup>[2]</sup>.  
Floyd can be build to run under  
[Windows](#), [Linux](#) and [Mac OS](#).  
Floyd had its over the board  
tournament debut at the [IGT 2016](#)  
with a 50% score.

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## Description

## Board Representation

Floyd uses an [8x8 Board](#), agnostic to [square indexing](#), in the sense that it can be adapted to any of the eight possible board geometries with just a local change <sup>[4]</sup>. It uses an [attack table](#), for each side an array of 64 [bytes](#), with following one- or two-bit attack counters per square ...

```
+-----+-----+-----+-----+-----+-----+-----+-----+
|  Pawns   |  Minors  |  Rooks   | Queen | King  |
+-----+-----+-----+-----+-----+-----+-----+
          7..6         5..4         3..2         1     0
```

... as used in [move generation](#), [SEE](#) and [evaluation](#).

## Search

The [search](#) is a classical [PVS iterative deepening](#) approach with [Zobrist key transposition table](#), [quiescence search](#), [null move pruning](#) and [mate distance pruning](#). [Move ordering](#) considers [SEE](#) and a simple [killer heuristic](#).

## Evaluation

Floyd's [evaluation](#) employs a vector of feature and weight pairs to calculate a [score](#) as [weighted sum](#). In conjunction with a draw model <sup>[5]</sup> using [sigmoid functions](#), the score is mapped to [winning probabilities](#), suited for [logistic regression](#) tuning.

```
def evaluate(board, wiloVector, drawVector):
    wiloScore = ...snip... // a weighted sum of board features
    drawScore = ...snip... // another weighted sum of board features

    return sigmoid(drawScore) * 0.5
        + sigmoid(wiloScore)
        - sigmoid(wiloScore) * sigmoid(drawScore)
```

## Misc

Floyd provides a [Python API](#) for search and evaluation functions <sup>[6]</sup>, i.e. for [automated tuning](#) <sup>[7]</sup>. It generates a compact [KPK tablebase](#) to deal with [perfect knowledge](#), also available as stand alone project <sup>[8]</sup> <sup>[9]</sup>.

## See also

- [Mathematician - Robert W. Floyd \(1936 - 2001\)](#)
- [Meteorology](#)
- [MSCP](#)
- [Rookie](#)

## Forum Posts

- [Floyd 0.5 released](#) by [Marcel van Kervinck](#), [CCC](#), October 11, 2015
- [Floyd 0.6 released](#) by [Marcel van Kervinck](#), [CCC](#), October 17, 2015
- [Floyd 0.7 released](#) by [Marcel van Kervinck](#), [CCC](#), November 15, 2015
- [Floyd 0.8 released](#) by [Marcel van Kervinck](#), [CCC](#), March 31, 2016
- [Floyd 0.9 released](#) by [Marcel van Kervinck](#), [OpenChess Forum](#), August 20, 2016

## External Links

### Chess Engine

- [kervinck/floyd · GitHub](#)
- [Download page - Floyd chess engine - /etc/marcelk](#)
- [Floyd 0.6 64-bit](#) in [CCRL 40/4](#)

### Misc

- [Floyd from Wikipedia](#)
- [Hurricane Floyd from Wikipedia](#)
- [Robert W. Floyd from Wikipedia](#)
- [Floyd's cycle-finding algorithm from Wikipedia](#)
- [Floyd–Hoare logic from Wikipedia](#)
- [Floyd–Steinberg dithering from Wikipedia](#)
- [Floyd–Warshall algorithm from Wikipedia](#)
- [Pink Floyd - High Hopes, The Division Bell, 1994, YouTube](#) Video

## References

1. <sup>^</sup> [Floyd 0.5 released](#) by [Marcel van Kervinck](#), [CCC](#), October 11, 2015
2. <sup>^</sup> [floyd/LICENSE at master · kervinck/floyd · GitHub](#)
3. <sup>^</sup> Hurricane Floyd near peak intensity on September 14, 1999 at 2030 UTC. This image was

produced from data from [NOAA-14](#), provided by [NOAA](#), [Wikimedia Commons](#), [Hurricane Floyd from Wikipedia](#)

4. [^ floyd/geometry.h at master · kervinck/floyd · GitHub](#)
5. [^ floyd/drawModel.txt at master · kervinck/floyd · GitHub](#)
6. [^ floyd/README.md at master · kervinck/floyd · GitHub](#)
7. [^ floyd/tune.py at master · kervinck/floyd · GitHub](#)
8. [^ Yet another KPK endgame table generator: pfkpk](#) by [Marcel van Kervinck](#), [CCC](#), September 05, 2015
9. [^ kervinck/pfkpk · GitHub](#)

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<a href="#">IGT 2016</a>	Nov 23, 2016
<a href="#">IGWT IV</a>	May 17, 2017
<a href="#">Marcel van Kervinck</a>	Dec 6, 2017
<a href="#">MSCP</a>	Nov 28, 2015
<a href="#">Rookie</a>	Jan 7, 2016

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