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Murka's silhouette ^[4]

Murka, (Мурка)
a [Chess Engine Communication Protocol](#) and [UCI](#) compliant [open source chess engine](#) written in [C++](#) by [Igor Korshunov](#). Since his [WildCat](#) sources became no longer maintainable, Igor decided to start a new engine from scratch, first released in May 2010 ^[1]. In July 2013, the significant improved Murka 3.0 was released ^[2], apparently [tuned](#) with a modified [Nelder–Mead method](#) ^[3].

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Description

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Bitboard Infrastructure

Initially starting with [rotated bitboards](#), Murka now uses [magic bitboards](#) to determine [sliding piece attacks](#). [Bitscan forward](#) is either done by even [De Bruijn Multiplication](#) or [x86-64 processor instruction](#) via the `_BitScanForward64` intrinsic [\[6\]](#). However, on [x86-64](#) for scalar integers with appropriate reduced value range, it is not recommended to use [8-bit](#) or [16-bit](#) types, but 32-bit [double words](#).

```
#ifdef _M_X64
inline uint8 LSB(BitBoard b) // Least Significant Bit
{
    register unsigned long index;
    _BitScanForward64(&index, b);
    return index;
}
#else
const uint8 deBruijnIndex64[64] =
{
    63,  0, 58,  1, 59, 47, 53,  2,
    60, 39, 48, 27, 54, 33, 42,  3,
    61, 51, 37, 40, 49, 18, 28, 20,
    55, 30, 34, 11, 43, 14, 22,  4,
    62, 57, 46, 52, 38, 26, 32, 41,
    50, 36, 17, 19, 29, 10, 13, 21,
    56, 45, 25, 31, 35, 16,  9, 12,
    44, 24, 15,  8, 23,  7,  6,  5
};

inline uint8 LSB(const BitBoard b)
{
    return deBruijnIndex64[((b & -b) * 0x07EDD5E59A4E28C2) >> 58];
}
#endif
```

Move Generation

The staged [move generator](#) uses five routines, one for all moves, and further for [captures](#) and [queening](#), [check evasions](#), [quiet moves](#), and finally [checks](#), which has a mask to exclude already generated captures.

Search

Murka applies [fail-soft PVS](#) with [transposition table](#) inside an [iterative deepening](#) framework at the [root](#). [Selectivity](#) is realized by [adaptive null move pruning](#) with [R](#) increased with [depth](#) and on [evaluation score](#) by margin worse than [alpha](#), and [LMR](#) with verification, very aggressively at [Cut-nodes](#). [Checks](#) and [good recaptures](#) are [extended](#) at [PV-nodes](#) only, while [pruning](#) is done at shallow depths in too good and too bad positions. [Move ordering](#) considers [hash move](#), [MVV/LVA](#) for good [captures](#) with [SEE](#) ≥ 0 , two [killer moves](#), [quiet moves](#) by [history heuristic](#), and remaining captures. The [quiescence search](#) looks for good captures in MVV/LVA order and [queen promotions](#). At the [horizon](#), the first ply of quiescence, [check giving moves](#) are tried.

Evaluation Features

- [Material](#) with adjustment
- [Piece-square tables](#)
- Recognizing [draw material](#)
- [Rooks on open/halfopen files](#)
- [Mobility](#)
- [King Safety](#)
 - [Square control](#)
 - [Pawn shield](#)
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 - [Open/closed pawns](#)
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 - Friendly/opponent piece(s) on passer's [frontspan](#)
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 - [King passer tropism](#)
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- [Bad bishop](#)
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- [Side to move bonus](#)

Etymology

Murka (Мурка) is a Russian common pet name for a [cat](#), and one of the most famous [Russian chansons](#) ^[7]. The original version of the lyrics played by [Konstantin Sokolsky](#) was apparently written by [Odessa](#) poet [Jacob Yadov](#) in 1923 .

See also

- [CookieCat](#)
- [Mammal](#)
- [WildCat](#)

Forum Posts

- [Мурка / Murka](#) by [Wildcat](#), [immortalchess](#), May 31, 2010 (Russian) [translated](#)
- [Murka 3.0 released](#) by Günther Höhne, [CCC](#), July 17, 2013
- [You are from Russia !!!!!](#) by [Marco Costalba](#), [CCC](#), July 28, 2013

External Links

Chess Engine

- [Downloads](#) from [sdchess.ru](#)
- [Murka](#) at [CCRL 40/40](#)

Misc

- [Мурка — Википедия](#) (Russian)
- [Мурка \(значения, disambiguation\) — Википедия](#) (Russian)
- [Murka – Wikipedia.de](#) (German)
- [Леонид Утёсов](#): не спетая "Мурка" вторая половина 1920х, ([Leonid Utyosov](#) - Murka, late 20s), [YouTube](#) Video

References

1. [^] [Мурка / Murka](#) by [Wildcat](#), [immortalchess](#), May 31, 2010 (Russian)
2. [^] [Murka 3.0 released](#) by Günther Höhne, [CCC](#), July 17, 2013
3. [^] [Re: Мурка / Murka # 852](#) by [Wildcat](#), [immortalchess](#), December 11, 2011 (Russian)
4. [^] Силуэт сидящей кошки Мурки, [Sitting cat Murka's silhouette](#) by [AVRS](#), January 2007
5. [^] Description based on Murka_3.rar/Murka_3/description_eng.txt
6. [^] [_BitScanForward](#), [_BitScanForward64](#), Visual C++ Language Reference
7. [^] [Мурка \(значения, disambiguation\) — Википедия](#) (Russian)

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