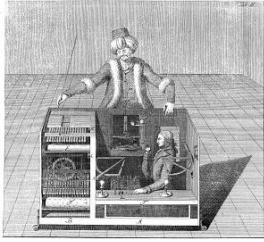


[Home](#) * User Interface



User Interface of [The Turk](#) ^[3] ^[4] ^[5]
^[6] ^[7]

The **User Interface** is the space where [Human-computer interaction](#) takes place ^[1]. The [user interface](#) includes [hardware](#) (physical) and [software](#) (logical) components, and allow users to manipulate a system ([Input](#)), i.e. to [enter moves](#) inside a chess program, and the system to indicate the effects of the users' manipulation ([Output](#)), i.e. display moves and [positions](#). Chess programs require support by the underlying [BIOS](#) and [operating system](#), accessible by embedded [programming language](#) features, or via an [Application programming interface](#) (API) of a [standard](#) or external [library](#).

[Dedicated chess computers](#) have their own proprietary [Input/output](#) systems and programs, a [robot](#), a mechanical [intelligent agent](#), may interact like an human player, recognizing the moves either by incorporating a [sensory board](#), or more sophisticated by [computer vision](#) ^[2] and [real-time](#) video [image processing](#), and moving [pieces](#) with a [mechatronical actuator](#) and [end effector](#).

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The Game Loop

Early chess programs, running on [mainframe computers](#), like [The Bernstein Chess Program](#) on an [IBM 704](#), used a simple sequential control structure to play the whole [game](#). As feedback for user interactions or indicating state transitions, for instance if the [search](#) finished with a move played on the internal board, [ASCII diagrams](#) and [move lists](#) were printed or displayed on a [teleprinter](#), [CRT \(cathode ray tube\)](#) or any other [Computer terminal](#), to prompt [input](#) which the user had to [enter](#) by a dedicated or standard teletype [\[8\] keyboard](#). Initially, after start of the program, or during game play, while prompting a move, certain [commands](#) may be entered, either to switch modes, to set the game level, to start the game, to force or take-back a move, to switch sides, and whatever else. The usual syntax to input moves is to enter [algebraic coordinates](#), that is [file letter](#), [rank number](#) of [origin](#) and [target square](#) of a move to play, confirmed and sent to the program after entering [carriage return](#).

MVC

The chess program and its [user interface](#) can be interpreted as a [Model–view–controller](#) (MVC), an [architectural pattern](#) that isolates [business logic](#) f.i. game administration, [time management](#) and searching a move inside a chess program from input and presentation. The game model represents the domain-specific [data](#) on which the application operates - Inside a chess program, the information about the [initial position](#) and the game record to reproduce the current positions, likely subject of [search](#) or [pondering](#) during game play. The model and controller implement a [finite-state machine](#) which controls the game, its [states](#), state transitions and actions considering various [modes](#). The view displays the [game notation](#), a [list of moves](#), and likely the board with the current [position](#), suitable for [interaction](#) inside a [user interface](#). The controller receives input from various sources and devices, such as [keyboard](#), [mouse](#), [serial port](#) and [internet socket](#), and initiates a response by making calls on model objects.

CLI

see main article [Command Line Interface](#).

Most current chess engines communicate via a sequential [command-line interface](#), available in all common [operating systems](#). [Pondering](#) and the need to enter moves and commands even if the program is "thinking", requires a more complicated control structure and an interruptible search routine. Often engines used [coroutines](#) to implement internal [context switching](#) between search and user interaction. Today, it is more common to rely on [multithreading](#) abilities of recent operating systems, and to use an explicit [I/O-thread](#), while the search routine is regularly pondering whether it needs to be interrupted by pending input received by another thread, with the option to asynchronously stop the search.

Event driven GUIs

see main article [Graphical User Interface](#).

With the advent of operating systems with [graphical user interfaces](#), also encouraged by additional input devices such as a [computer mouse](#) for asynchronous user interaction, the embedding of a chess engine with a classical CLI inside the [event-driven architecture](#) of a graphical user interface became more difficult. Today, most programmers rely on an external event driven [graphical user interface](#) applications using [standard streams](#) or [pipelines](#) to communicate with the GUI via [protocols](#) such as the [Chess Engine Communication Protocol](#) and the [Universal Chess Interface](#). The external GUI application constitutes the MVC view and controller, and more or less even parts of a (redundant) game model (or even multi-game model), to make the GUI aware of its own game states to even make decisions on behalf of the engine, such as move selection from opening books and [endgame tablebases](#), draw claims and offers and to finally declare the game over. These game interacting features of the external GUI application in conjunction with certain protocols such as UCI by far exceeds what a pure chess user interface was initially designed for - controller and view only, enter legal moves and render the state of the game, which has become disputed issue in playing official [tournament](#) games.

UI Topics

- [Command Line Interface](#)
- [Graphics Programming](#)
- [Entering Moves](#)
- [Graphical User Interface](#)
- [Piece Recognition](#)
- [Sensory Board](#)
- [Voice User Interface](#)

See also

- [Chess Game](#)
- [Dedicated Chess Computers](#)
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- [Robots](#)
- [Square Off](#)

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- [Voice synthesis, part 1](#) by [Steven Edwards](#), [CCC](#), March 29, 2011
- [Engines with interfaces for slightly nerdish people](#) by [Peter Berger](#), [CCC](#), February 26, 2016

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10. [^ Object-oriented user interface - Wikipedia](#)

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