

New PGNviewer3D in Godot

Short preamble

I'm a mediocre chess player with a passion for graphics, computer and modeling even with Blender.

About the latter, a few months ago I modeled a chessboard and a set of chess that I also published on my website (<http://www.avelino.it/wa/scacchiera/>).

Among the comments there was one that among other things said: "*...how nice it would be to create the animation of a game ...*". This comment impressed me and made me think; an animation? Too trivial, ... of a game ..., and then, given what remains ...

The days went by, but that thought didn't go away, and that's how I started thinking about writing a program that would read a game in PGN format and re-propose its moves on the screen. There are a large number of programs of this type, certainly very sophisticated but the idea of building something from me stimulated me.

For those who do not know, it must be said that the PGN (*Portable Game Notation*) is a format used in the digital environment to record games of chess. Most of the programs to play chess via computer support it.

I wrote a first version of PGNviewer3D with the Blender Game Engine (BGE), which I didn't know about! The BGE is no longer supported today and so a few months ago I decided to try to bring the program code to Godot, an innovative multi-platform development system. The trouble is that as I didn't know the BGE, I didn't know (and still now I'm almost groping!) even the Gdscript, Godot's language.

So I started to explore this world (the programming language BGE based on Python) absolutely mysterious and unknown (for me) and the first successes (being able to move a piece on the board) have encouraged me and given the desire to continue. Slowly I solved the problems that presented themselves to me and at the end, I could reproduce back and forth the moves of a game, all from terminal, without interface.

When I created a graphical interface that offered the possibility to select a pgn file and a game within it (there are pgn files that contain hundreds of thousands of games!) the problems started. I tried different tools, Tkinter, Gtk... but evidently my skills were not up to the results I expected.

A very dear friend and expert programmer in **bash** came to my aid and with a script in that interpreter (ancient Aramaic for me!) he created a valid and comfortable interface to my little program, so much so that I consider it the focal point of the whole application. This interface, created for the first version of PGNviewer3D, with small changes is the same that I use today for the version with Gdscript in Godot. From the initial idea (play a game in 3D) thanks to this interface you can consider the application an **archive for PGN files** and the 3D part a pleasant accessory function.

And now some instructions for use

Downloading and installing

If you want, you can download the archive with the files needed to run PGNviewer3D that, it must be remembered, was written on **Linux** (to be exact Void Linux) and on this platform also works the interface written in bash. On Windows it works correctly but without interface. Later I will give instructions to analyze different PGN games. The links are at the end of this document.

Unzip the contents of the archive and at the root of the unzip folder you will find three folders and four files:

```
PGNviewer3D
├── desktop_dipendenze_istruzioni
│   ├── pgn_gui.png
│   ├── PGNViewer3D.desktop
│   └── PGNviewer3D.pdf
├── GAMES
├── pgn_gui
├── PGNviewer3D.pck
├── PGNviewer3D.x86_64
├── RobertJamesFischer.pgn
├── rq
├── temp
└── current.pgn
```

The `desktop_dipendenze_istruzioni` folder contains:

- `pgn_gui.png` the icon for the program and the bash script,
- the file `PGNViewer3D.desktop`, the launcher of `pgn_gui`,
- these instructions.

On all Linux distributions, you will need to meet the dependencies listed at the end of this text.

The first time you run it (directly or via the launcher), the bash `pgn_gui` script creates a "`temp`" folder in the Godot program's user directory in these paths:

in Linux:

```
/home/UserName/.local/share/godot/app_userdata/PGNviewer3D/temp
```

in Windows:

```
C:\Users\UserName\AppData\Roaming\Godot\userdata\PGNviewer3D\temp
```

and the opening of a window that will contain the list of stored pgn files. If no pgn has been stored (situation that occurs at first start) the window will be empty and the only useful button will be



It must be said that for a better functioning of the system and for a check of integrity and correctness of the format of the pgn files, the script `pgn_gui` converts the pgn in the json format, verifies the formal correctness, with each game adds

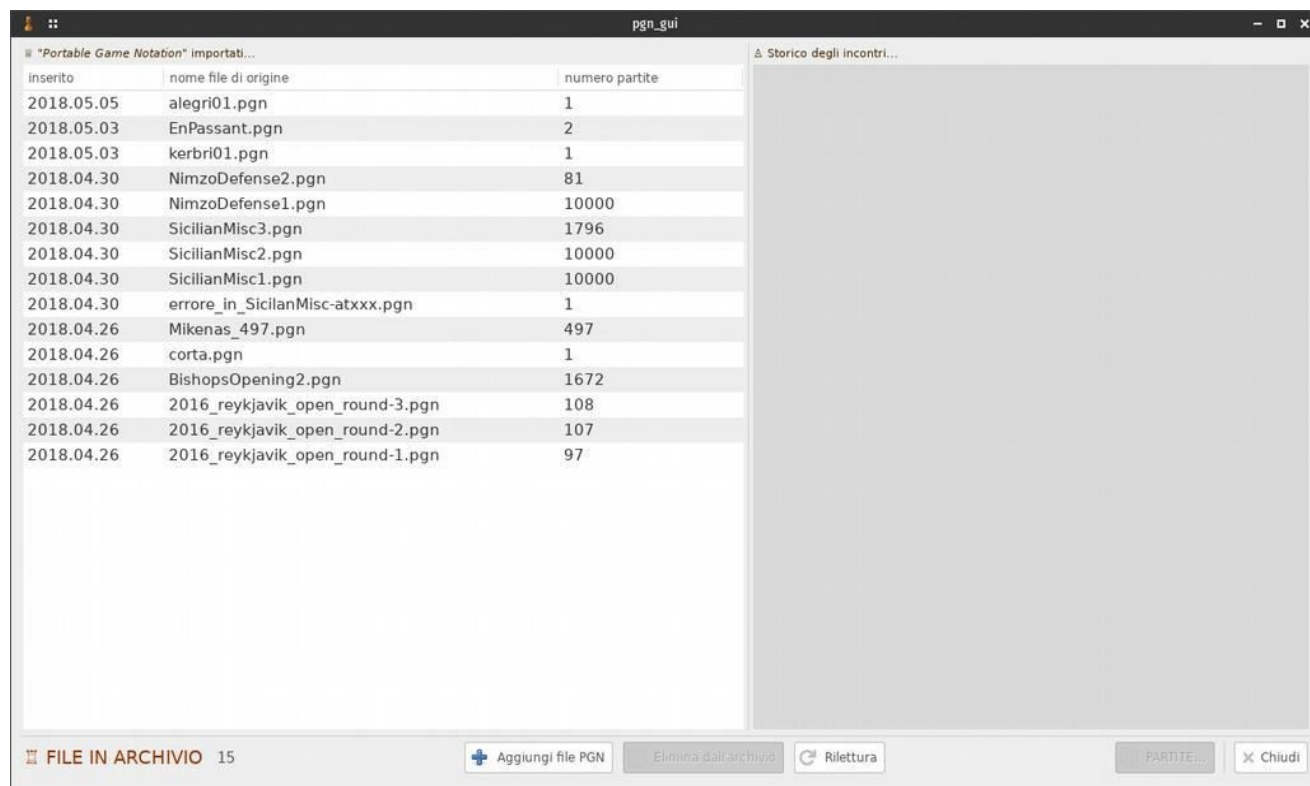
the "`HashCode`" tag and stores the generated files with unique names in the **GAMES** folder.

Note that the pgn files downloaded from the web may have errors or inconsistencies that thanks to the `pgn-extract` program, `pgn_gui` corrects, if possible, or ignores.

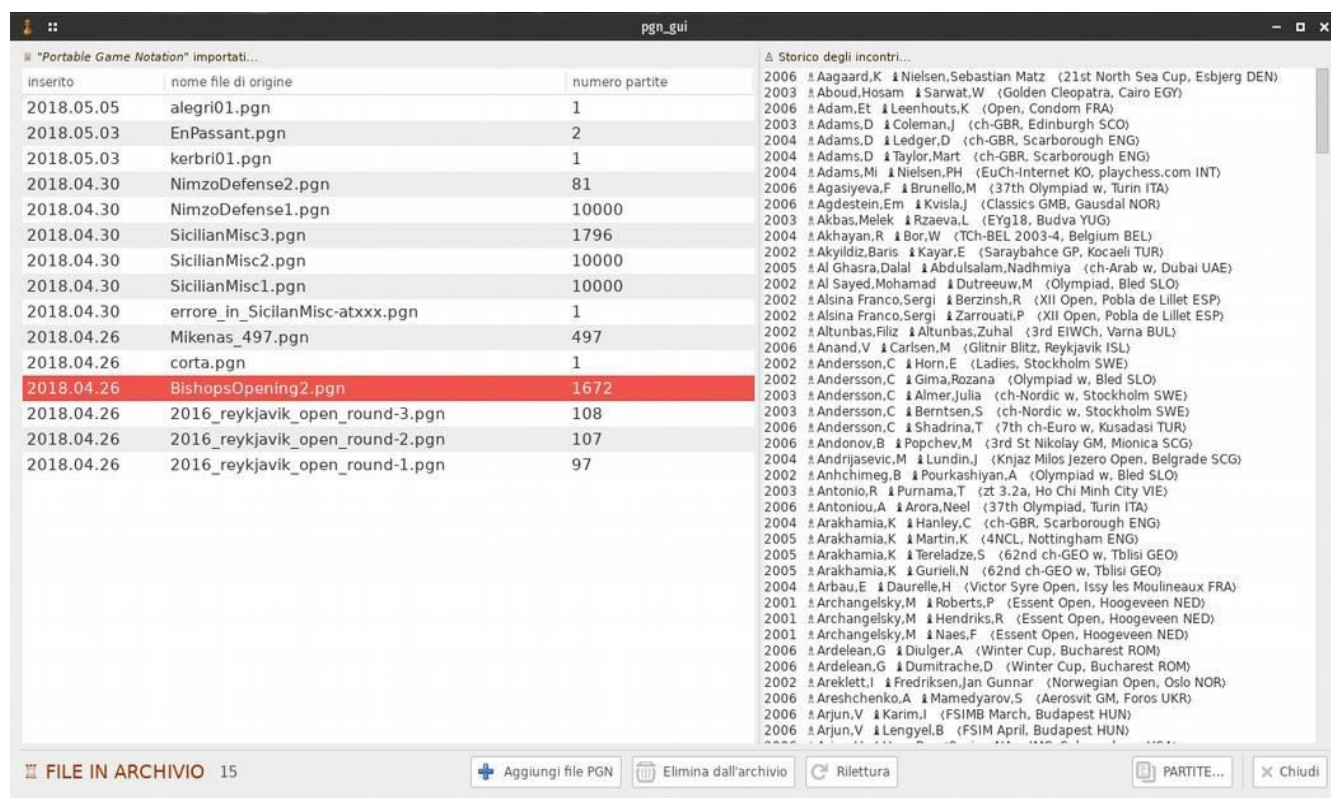
Nome	Dimen
2d48526da6b808b99e4b626a6dbec2f1.json	362 B
2d48526da6b808b99e4b626a6dbec2f1.pgn	587 B
2fe35d27c68673248f283cc75edddcc34.json	389,7 K
2fe35d27c68673248f283cc75edddcc34.pgn	1,2 M
3a15d3103d7113fc44a7b26911e03067.json	322 B
3a15d3103d7113fc44a7b26911e03067.pgn	422 B
4dcbec2795140a76fe51324feddde4fe.json	26,7 K
4dcbec2795140a76fe51324feddde4fe.pgn	69,1 K
13e2389762cb0f931fc1a597f02a3295.json	274 B
13e2389762cb0f931fc1a597f02a3295.pgn	477 B


Consultation of the GAMES folder will therefore not be humanly readable; the content will be similar to that of the image on previous page, but from the interface everything will be very simple and immediate.

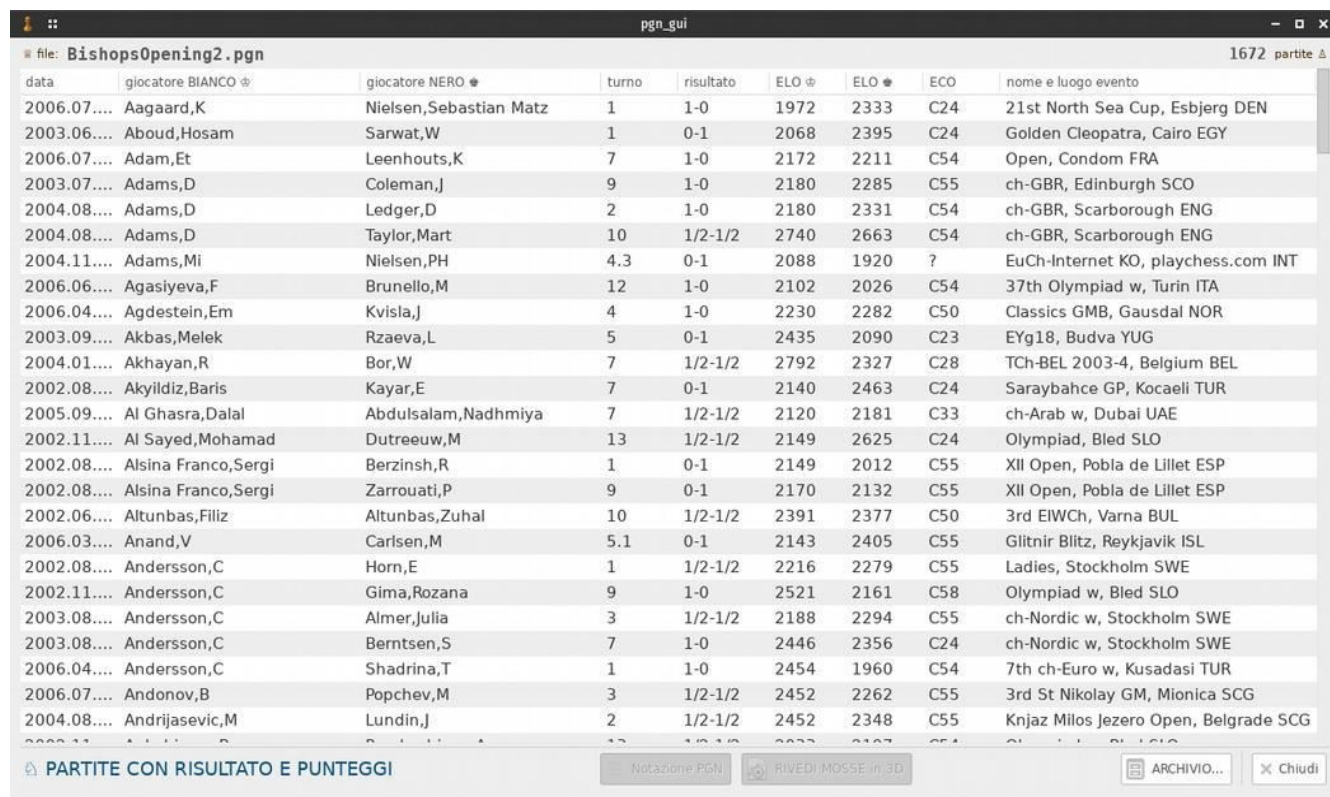
In the following image some pgn files have already been archived.



The selection of a pgn file from the list shows in the right box the list of the games it contains.



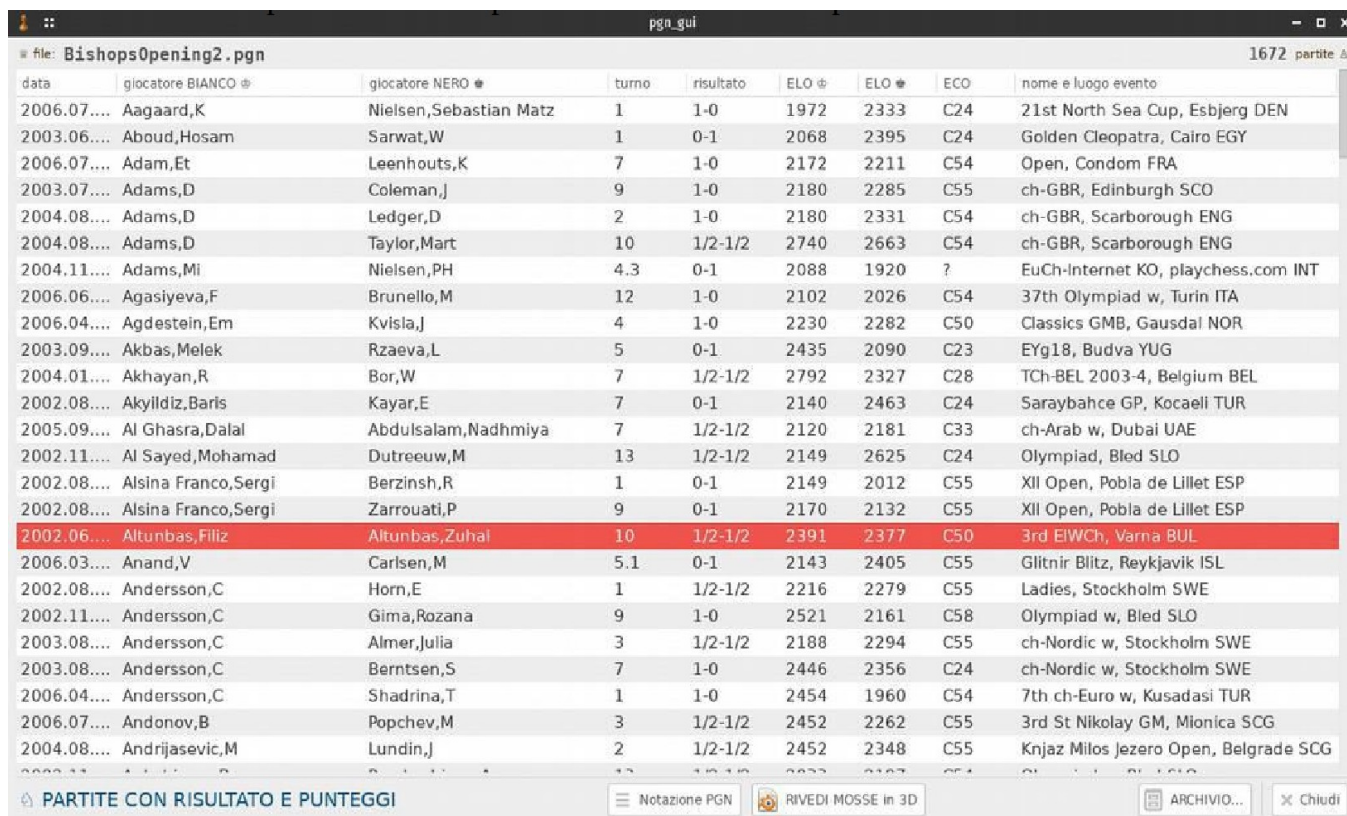
At this point the button is activated  that, if pressed, shows the list of all the matches of that pgn.



The screenshot shows the 'pgn_gui' application window. The title bar reads 'pgn_gui'. The main window has a menu bar with 'file: Bishops0pening2.pgn' and a status bar on the right showing '1672 partite'. Below the menu bar is a table with the following columns: data, giocatore BIANCO, giocatore NERO, turno, risultato, ELO, ELO, ECO, and nome e luogo evento. The table contains 30 rows of chess game data. At the bottom of the window, there is a button labeled 'PARTITE CON RISULTATO E PUNTEGGI' and a button labeled 'Notazione PGN'. To the right of these buttons is a button labeled 'RIVEDI MOSSE in 3D' and a button labeled 'ARCHIVIO...'. There is also a 'Chiudi' button in the bottom right corner.



data	giocatore BIANCO	giocatore NERO	turno	risultato	ELO	ELO	ECO	nome e luogo evento
2006.07....	Aagaard,K	Nielsen,Sebastian Matz	1	1-0	1972	2333	C24	21st North Sea Cup, Esbjerg DEN
2003.06....	Aboud,Hosam	Sarwat,W	1	0-1	2068	2395	C24	Golden Cleopatra, Cairo EGY
2006.07....	Adam,Et	Leenhouts,K	7	1-0	2172	2211	C54	Open, Condom FRA
2003.07....	Adams,D	Coleman,J	9	1-0	2180	2285	C55	ch-GBR, Edinburgh SCO
2004.08....	Adams,D	Ledger,D	2	1-0	2180	2331	C54	ch-GBR, Scarborough ENG
2004.08....	Adams,D	Taylor,Mart	10	1/2-1/2	2740	2663	C54	ch-GBR, Scarborough ENG
2004.11....	Adams,Mi	Nielsen,PH	4.3	0-1	2088	1920	?	EuCh-Internet KO, playchess.com INT
2006.06....	Agasiyeva,F	Brunello,M	12	1-0	2102	2026	C54	37th Olympiad w, Turin ITA
2006.04....	Agdestein,Em	Kvisla,J	4	1-0	2230	2282	C50	Classics GMB, Gausdal NOR
2003.09....	Akbaz,Melek	Rzaeva,L	5	0-1	2435	2090	C23	EYg18, Budva YUG
2004.01....	Akhayan,R	Bor,W	7	1/2-1/2	2792	2327	C28	TCh-BEL 2003-4, Belgium BEL
2002.08....	Akyildiz,Baris	Kayar,E	7	0-1	2140	2463	C24	Saraybahce GP, Kocaeli TUR
2005.09....	Al Ghasra,Dalal	Abdulsalam,Nadhmiya	7	1/2-1/2	2120	2181	C33	ch-Arab w, Dubai UAE
2002.11....	Al Sayed,Mohamad	Dutreeuw,M	13	1/2-1/2	2149	2625	C24	Olympiad, Bled SLO
2002.08....	Alsina Franco,Sergi	Berzinsh,R	1	0-1	2149	2012	C55	XII Open, Poble de Lillet ESP
2002.08....	Alsina Franco,Sergi	Zarrouati,P	9	0-1	2170	2132	C55	XII Open, Poble de Lillet ESP
2002.06....	Altunbas,Filiz	Altunbas,Zuhal	10	1/2-1/2	2391	2377	C50	3rd EIWCh, Varna BUL
2006.03....	Anand,V	Carlsen,M	5.1	0-1	2143	2405	C55	Glitnir Blitz, Reykjavik ISL
2002.08....	Andersson,C	Horn,E	1	1/2-1/2	2216	2279	C55	Ladies, Stockholm SWE
2002.11....	Andersson,C	Gima,Rozana	9	1-0	2521	2161	C58	Olympiad w, Bled SLO
2003.08....	Andersson,C	Almer,Julia	3	1/2-1/2	2188	2294	C55	ch-Nordic w, Stockholm SWE
2003.08....	Andersson,C	Berntsen,S	7	1-0	2446	2356	C24	ch-Nordic w, Stockholm SWE
2006.04....	Andersson,C	Shadrina,T	1	1-0	2454	1960	C54	7th ch-Euro w, Kusadasi TUR
2006.07....	Andonov,B	Popchev,M	3	1/2-1/2	2452	2262	C55	3rd St Nikolay GM, Mionica SCG
2004.08....	Andrijasevic,M	Lundin,J	2	1/2-1/2	2452	2348	C55	Knjaz Milos Jezero Open, Belgrade SCG

Selecting a game from the list causes the buttons  and 



The screenshot shows the 'pgn_gui' application window. The title bar reads 'pgn_gui'. The main window has a menu bar with 'file: Bishops0pening2.pgn' and a status bar on the right showing '1672 partite'. Below the menu bar is a table with the following columns: data, giocatore BIANCO, giocatore NERO, turno, risultato, ELO, ELO, ECO, and nome e luogo evento. The table contains 30 rows of chess game data. At the bottom of the window, there is a button labeled 'PARTITE CON RISULTATO E PUNTEGGI' and a button labeled 'Notazione PGN'. To the right of these buttons is a button labeled 'RIVEDI MOSSE in 3D' and a button labeled 'ARCHIVIO...'. There is also a 'Chiudi' button in the bottom right corner.

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2002.08....	Akyildiz,Baris	Kayar,E	7	0-1	2140	2463	C24	Saraybahce GP, Kocaeli TUR
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2002.08....	Alsina Franco,Sergi	Berzinsh,R	1	0-1	2149	2012	C55	XII Open, Poble de Lillet ESP
2002.08....	Alsina Franco,Sergi	Zarrouati,P	9	0-1	2170	2132	C55	XII Open, Poble de Lillet ESP
2002.06....	Altunbas,Filiz	Altunbas,Zuhal	10	1/2-1/2	2391	2377	C50	3rd EIWCh, Varna BUL
2006.03....	Anand,V	Carlsen,M	5.1	0-1	2143	2405	C55	Glitnir Blitz, Reykjavik ISL
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2004.08....	Andrijasevic,M	Lundin,J	2	1/2-1/2	2452	2348	C55	Knjaz Milos Jezero Open, Belgrade SCG

With the button  Notazione PGN you can view the pgn of the selected game and finally click on the button  RIVEDI MOSSE in 3D to launch the application PGNviewer3D.

file: Bishops0pening2.pgn

data	giocatore BIANCO	giocatore NERO	turno	risultato	ELO	ELO	ECO	nome e luogo evento
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2006.03....	Anand,V	Carlsen,M	5.1	0-1	2143	2405	C55	Giltir Blitz, Reykjavik ISL
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PARTITE CON RISULTATO E PUNTEGGI

notazione_pgn_gui

```

[Event "3rd EIWCh"]
[Site "Varna BUL"]
[Date "2002.06.06"]
[Round "10"]
[White "Altunbas,Filiz"]
[Black "Altunbas,Zuhai"]
[Result "1/2-1/2"]
[WhiteElo "2391"]
[BlackElo "2377"]
[ECO "C50"]
[Hashcode "0e9a7eff"]

1. e4 e5 2. Bc4 Bc5 3. d3 Nc6
4. Nf3 Nf6 5. Nc3 d6 6. Bg5
B06 1/2-1/2

```

ARCHIVIO... X Chiudi

At this point we will be in front of the chessboard and we will have the opportunity to scroll back and forth between the moves of the game with the keys "a" and "z". We will be able to rotate the view with the cursor keys and with the F3 key we will be able to turn on and off the audio effects.




A reminder to help the keys to be pressed is obtained by pressing the F1 function key.

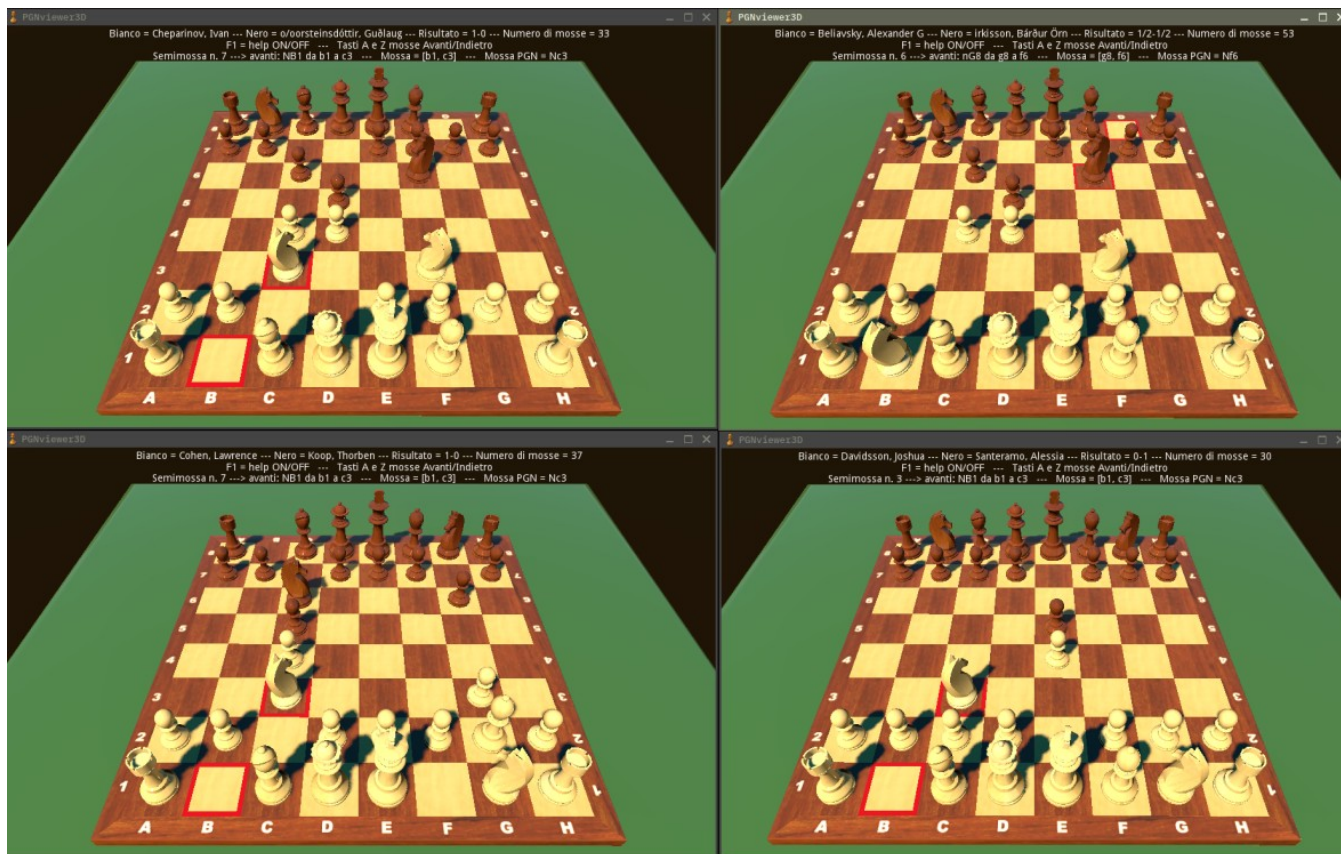


At the end of the game we can close the 3D window and select another game from the archive still open or select a new game without closing the 3D window.



If from `pgn_gui`, while you are analyzing a game, select another one and click on the button , another instance of the program PGNviewer3D opens with the selected game.

With several instances of the program, each with different matches, it is possible, by bringing the focus (click on the window of the desired instance), to go back and forth between the moves of each match and pressing "**a**" = forward and "**z**" = back.



In the following image there is a different game on each of the four instances of PGNviewer3D.

These are the links to download the package in Windows, Linux and source versions:

Compiled for Windows:

<https://my.pcloud.com/publink/show?code=XZ0LBc7ZAghfkIWN6P00fk22Bdmq9pDF2iv7>

Windows accessories tool:

<https://my.pcloud.com/publink/show?code=XZbqbc7ZUL65WuuID1QWhd05h1FtrJ91kryX>

Compiled for Linux:

<https://my.pcloud.com/publink/show?code=XZR4Bc7ZSdJTWXeYvAHhbh04mWSi95oio4fX>

Source code:

<https://my.pcloud.com/publink/show?code=XZ24Bc7ZKGTUmJLKAsj9GCbpBQLfRJR30hEX>

Windows accessories tool:

<https://my.pcloud.com/publink/show?code=XZcdbc7ZEoPYcvfbnQu0AC7iLWcyb7GiWe2k>

Conclusion

Remember that the PGNviewer3D program was born as my programming exercise. Although I have tried to consider all the conditions I am sure that it will not be difficult to come across some unexpected situation. In this regard, I invite those who find some bugs to write to me and, if you wish, can download the Godot project with the source scripts to modify: my *...spaghetti code* would have a great need for optimization!

One last consideration: in the archive I also inserted the file RobertJamesFischer.pgn downloaded from the web. I said that `pgn_gui` besides archiving the pgn files also makes it a validation; in fact, the import of RobertJamesFischer.pgn in the archive makes only 825 of the 846 matches of the original pgn valid.

In addition, in order to keep system efficiency within acceptable limits, `pgn_gui` reduces the import of a PGN file to the first 10000 matches, ignoring the rest. This limit is easily overcome thanks to the efficient `pgn-extract` tool, which can be used from the command line.

I'll end with some technical notes: to work the programs need some dependencies, remembering that these are applications available for the Void Linux distribution and that they may have different names in other distributions:

`glew libopenal openimageio jemalloc jq pgn-extract spacefm xdotool`

The scripts are heavily based on the efficient "**pgn-extract**" application freely downloadable from <https://www.cs.kent.ac.uk/people/staff/djb/pgn-extract/>

You will find comprehensive documentation at <ftp://ftp.cs.kent.ac.uk/pub/djb/pgn-extract/help.html>

For an immediate use of `pgn-extract` here are some command examples:

command to split a pgn with more than 10000 matches into multiple files:

```
pgn-extract -s -#10000 nomefile.pgn
```

the command will produce 1.pgn, 2.pgn, n.pgn...

which should be renamed to file name1.pgn, file name2.pgn, file name.pgn...

command to extract from a pgn all the games that end with crazy:

```
pgn-extract -s -M -o nameFileMatto.pgn nomefile.pgn
```

command to extract from a pgn all games that end in a draw:

```
pgn-extract -s --stalemate -o file nameStalemate.pgn file name.pgn
```

command to extract from a pgn all matches that match certain tags:

With the following command will be extracted from RobertJamesFischer.pgn all games played by Spassky with white and lost in 1972:

```
pgn-extract -s -Tw "Spassky" -Td "1972" -Tr "0-1" -o partite_estratte.pgn RobertJamesFischer.pgn
```

At the moment, the Windows version does not have an interface for storing and selecting games. As already stated, PGNviewer3D contains a default game. To analyze other games you need to manually copy to the file `current.pgn` in the path:

`"C:\Users\UserNameUser\AppData\Roaming\Godot\app_userdata\PGNviewer3D\temp"`
the pgn of the desired game.

A PGN file can contain thousands of matches, but a match always starts with the [Event "....."] tag and ends with the result and usually an empty line.

In practice, a game in a pgn file that contains more than one is all that is contained between two [Event "....."] tags

IMPORTANT! The folder obtained by unpacking the archive with all the PGNviewer3D files on Linux systems should be copied to `/opt`.