

GtpStatistics

Collecting Statistics of Go Engines

Markus Enzenberger

Go Seminar, University of Alberta

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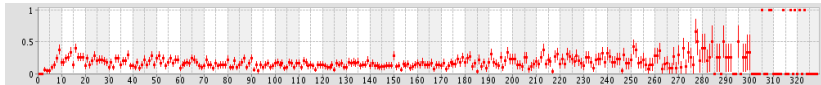
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- ▶ Writes results to a **data table**
- ▶ Produces **HTML reports** with plots and statistical data

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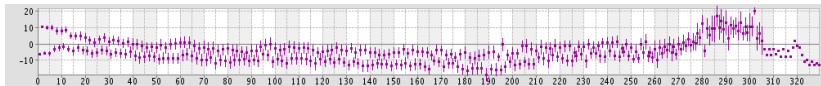
- ▶ Runs a Go engine on **every position** in a game collection
- ▶ Writes results to a **data table**
- ▶ Produces **HTML reports** with plots and statistical data
- ▶ Platform independent **Java** program

Average Plots

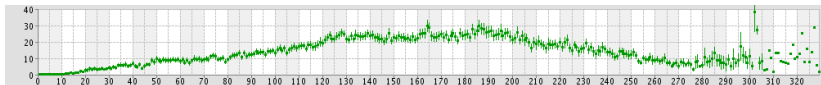
RegGenMove



Score

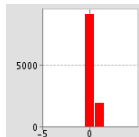


Time

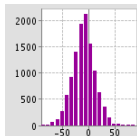


Histograms

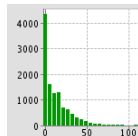
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- ▶ Configurable commands are executed:
 - ▶ On start positions (before first move)
 - ▶ On every position
 - ▶ On final positions (after last move)

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- ▶ Implements [useful commands](#)
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- ▶ Implementing [reg_genmove](#) is recommended ¹

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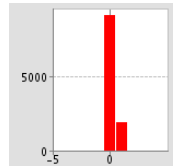
Invocation

Example

```
java -jar gtpstatistics.jar \  
-program "explorer -time 20" \  
-begin "cputime_reset" \  
-commands "ex_time_last_move,ex_score" \  
-final "cputime" \  
GoSeigen50/*.sgf
```

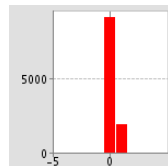
RegGenMove

- ▶ GTP standard command `reg_genmove`



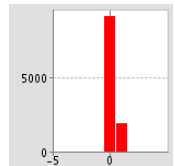
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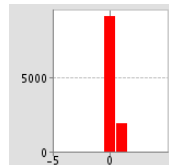
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Useful for:

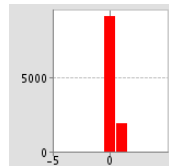


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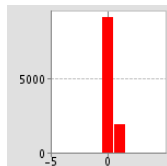


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- ▶ Automatically executed as *first command*
- ▶ Result is *compared to move* in game
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Useful for:

- ▶ Testing *prediction of expert moves*
- ▶ Comparing move generation with *previous versions* of the Go engine



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- ▶ Simple [text format](#)
- ▶ Easy to process with [standard UNIX tools](#)
- ▶ Easy to import into [spreadsheet programs](#)

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Generation by Other Programs

It is possible to use GtpStatistics **only for the HTML report generation** and produce the result table by other programs.

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- ▶ Other **board games** (Checkers, Hex, ...)
- ▶ **Episodic machine learning tasks** with discrete timesteps

Table Format

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# Program: ../linux/build/release/explorer -time 20
# Date: Thursday, July 7, 2005 10:40:33 PM MDT
#
#File          Move reg_genmove ex_score timelastmove
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GoSeigen.10.sgf 2      1           -3         0.09
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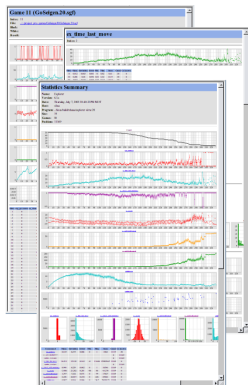
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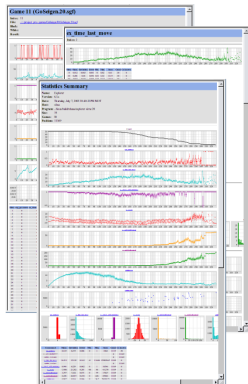
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4. Table **data** (separator is TAB)

Report Generation



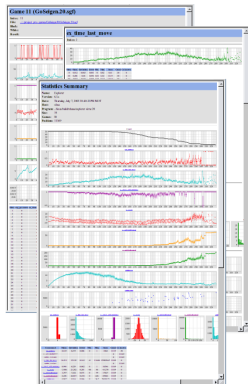
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Report Generation



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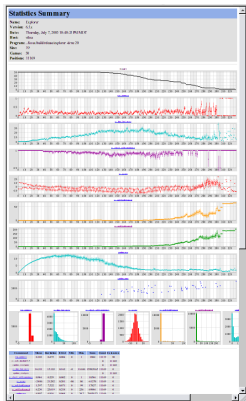
- ▶ Generates a **HTML** report
- ▶ **Hyperlinks** from summary view to command and game views
- ▶ **Auto-scaled** and colored plots

Invocation

Example

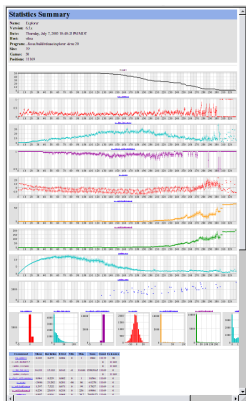
```
java -jar gtpstatistics.jar \  
-analyze gtpstatistics.dat \  
-output reports/gtpstatistics
```

Summary View



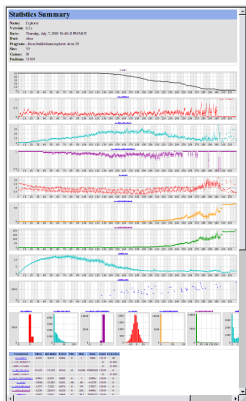
► Average plots by move number

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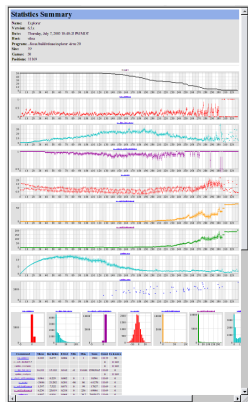
- ▶ Average plots by move number
- ▶ Histograms for all positions

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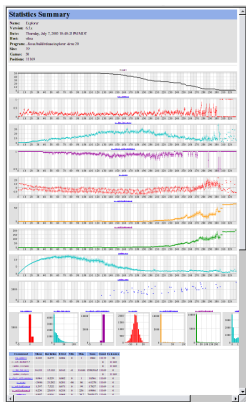
- ▶ Average plots by move number
- ▶ Histograms for all positions
- ▶ Statistics for all positions

Summary View



- ▶ Average plots by move number
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- ▶ Game table with results of start and final commands

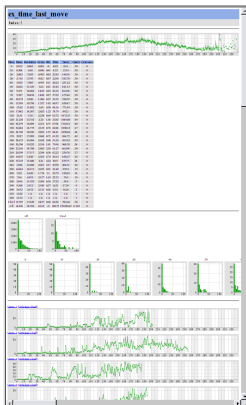
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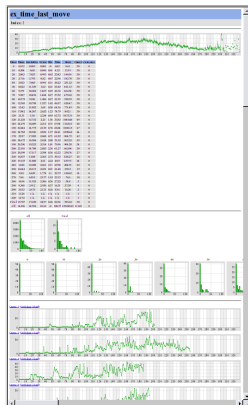
Note on Standard Error: Statistics for all positions can underestimate the standard error due to correlations of positions within a game.

Command View



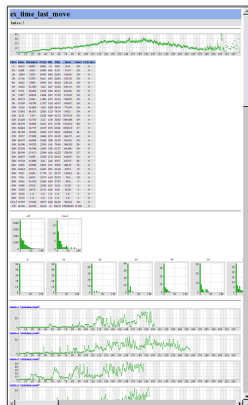
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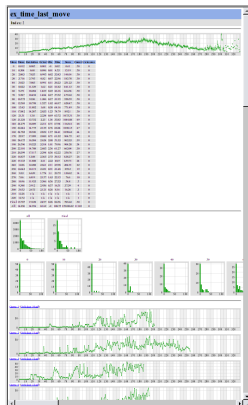
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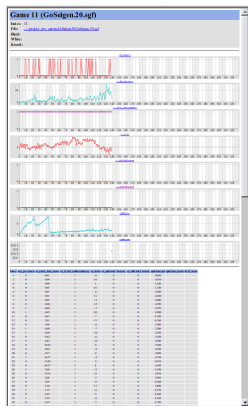
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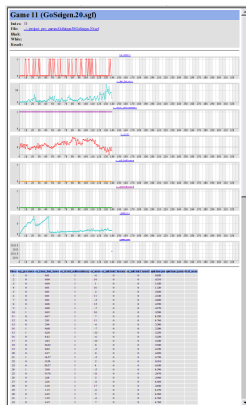
- ▶ Average plot by move number
- ▶ Statistics and histograms for positions at a move number (selected)
- ▶ Histograms for all and final positions
- ▶ Plots by move number for all games

Game View



► Plots by **move number** for all commands

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- ▶ Plots by **move number** for all commands
- ▶ Table with all **command results**

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