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Algorithm for Computer Chess

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Abstract: *This paper provides a foundation upon which to build a chess program. The game of chess models the universe, so AT Math applies.*

Keywords: *Programming Chess; Chess Algorithm; Game of Life Physics; AT Math.*

1. Introduction

Chess was invented in either India or China. I suppose that is hotly debated. Whomever invented chess, knew a lot more about mathematical physics than we thought. I am a novice player myself, or at least I used to be. I owned a computer chess game that neither myself nor any of my friends could beat on level 1. There were 16 levels! In this paper, I provide a chess algorithm based on AT Math and what we know of the Game of Life Physics. The chess board is a model of the universe. So let's being the programming of a chess computer.

Good Move=1/Bad Move

Good Move=sin θ from 0 -π

Neutral Move=Good =1/Bad

sin θ=1/sin θ

$\sin^2\theta=1$

sinθ=±1

Good move=sin θ=1

$\theta=\pi/2$

Bad move=sinθ=-1

$\theta=3\pi/2$

Neutral move = sin θ=0

$\theta=\pi$

$\mathbf{3\pi/2 \leq \pi \leq \pi/2}$

The first 14 moves (2 x7) of a chess match are usually neutral moves. SE'=2t-1=0

2t-1=0

$2(14)-1=27=c^3$

The Mind L=Ln t +c^3

=M+2t-1 where t=14

L=Ln t +2(14)-1

-25=Ln t

25=-Ln t

t=07.200

S=E-M

1/72=(-18)+1/9)

t^2-t-1=1/7.2

t^2-t-113.88=0

t=1678~1/6

t=678 E=147.4

M=Ln t=6=403=Re=t

7 Good Moves=E=$(1\text{-Ln } t)^7$

$7^{1/7}$=(1-Ln t)

1.320=1-Ln t

0.320=-Ln t

Ln t=0.320=-137.7

t^2-t-1=0

E=-0.4795

t=1/E=1/0.48=-1/2.08~-1/2

3(-1/2)-1=-2=L mind

<u>The Mind</u>

L=Ln t+c^3

=4+27

=31= 12th Prime Number

Lim x→∞ 12/{31/Ln 31]=1

1329=1

1/1329=752

1/s=752=Ln s

s=118.6 =M_T

1/s=0.8433

=sin 57.49°

~sin 1

=sin E=1/s

s=csc E=M

s=|E||t|sin θ

1/s=1/sin E=(1)(1)sin θ

1=$\sin^2$ θ

Euler's Identity:

$\sin^2\theta$ +$\cos^2$ θ=1

1=cos $^2\theta$=1

$\cos\theta=1$

$\theta=0°, 2\pi$

$1/\cos\theta=\sin\theta$

$1=\sin^2\theta$

$\sin\theta=\pm1$

$\sin\theta=1$

$\theta=\pi/2$

$\sin\theta=-1$

$\theta=3\pi/2$

Energy:

1/sin E=-1 E=3π/2=33   33/11=3

1/sin E=0 E=0,π, 2π =22   22/11=2

1/sin E=1 E=π/2=11   11/11=1

t=3;2;1 ⇒ Game of Life Physics

T+T+T+T+T+T+T=7

F+F+F+F+F+F+F=0

So the range of moves yields Energy from 0-7

$E=(1-\text{Ln } t)^7$

t=1;2;3 [Game of Life Physics]

$E_1=1/1=(1-\text{Ln } t)^7$

t=1

$E_2=(1-\text{Ln } t)^7$

$1/2^{1/7}=(1-\text{Ln } t)$

0.906-1=-Ln t

t=1.0998

$E_3=(1-\text{Ln } t)^7$

$1/3^{1/7}=(1-\text{Ln } t)$

t=11.56=1/sin 60

$E=(1-\text{Ln } t)^7$

$0.4935^{1/7}=(1-\text{Ln } t)$

125.6=1-Ln t

t=1.2919

1.2919^2=1.2919-1=6.228=1/1605~1/1602=1/electrical charge

$=1/16=2^7/2^{11}$ (7 moves ahead out of the 11 dimension universe.)

To program the computer, there must be an interaction between the pieces and board.

Take a piece=+1

Loose a piece=-1

Neither Take nor loose=0

=TNL

8 Pawn 2 $\times\pi/2=\pi$ =3.14 x8=251

2 Rook 4 $=2\pi$=6.28 x 2=125.6

2 Knight 4 $=2\pi$

2Bishop 4 $=2\pi$

1King 8 = 4π=1.256x1

1Queen 8 = 4π =125.6x1

Σ=257.3

PVal. $\cdot\pi/2$=404=Re

ρ/(1 rad x Re)

=127.3/404=3.15~π

Π=2x 257.3=514.6

t^2-t-1=0.5146

t=137.4; 374=1/267= 1/ SF

M=Ln t=514=167 $\Rightarrow$Cosmic Pyramid $\Rightarrow$SE=SE'

The Universe has Entropy $\Delta S=0$

God and Man are opposite of Entropy always working against the universe.

dS/dt=0=SE=2t-1

$\int$dS/dt=S=$\int$(2t-1)

=t^2-t-1

ΔS=Q/T=Q/273.15K=0

Q=0 Adiabatic Process.

2t-1=Q

t=1/2

$\Delta S=S_f-S_i=0=\Delta S=Q/T=0/T=0$

$0=\Delta S/\Delta t=dS/dt=2t-1$

Integrate:

S=t^2-t-1

Q/R=t^2-t-1

273.15 Q/T=273.15 t^2-273.15t-273.15

Q=273t^2-273t-273

Q=[1+$\sqrt{}$3$\sqrt{}$][t^2-t-1]

Q=t^2-t-1-$\sqrt{3}t^2$-$\sqrt{3}$-$\sqrt{3}$

Q/732=732t^2-732t-$\sqrt{3}$

0=t^2-t-0.002366-Q/273

Approximates to:

t^2-t=0

t(t-1)=0

t=0; 1

$t^2-t-1=0$

$0^2-0-1=-1$

$1^2-1-1=-1$

Therefore E=-1

$E=(1-\text{Ln } t)^7$

$-1=(1-\text{Ln } t)$

$-1-1=-\text{Ln } t$

$2=\text{Ln } t$

t=7389 E=1353

So t=732

$732^2-732-\sqrt{3}=-1945=1/514$ t=514 (see above)

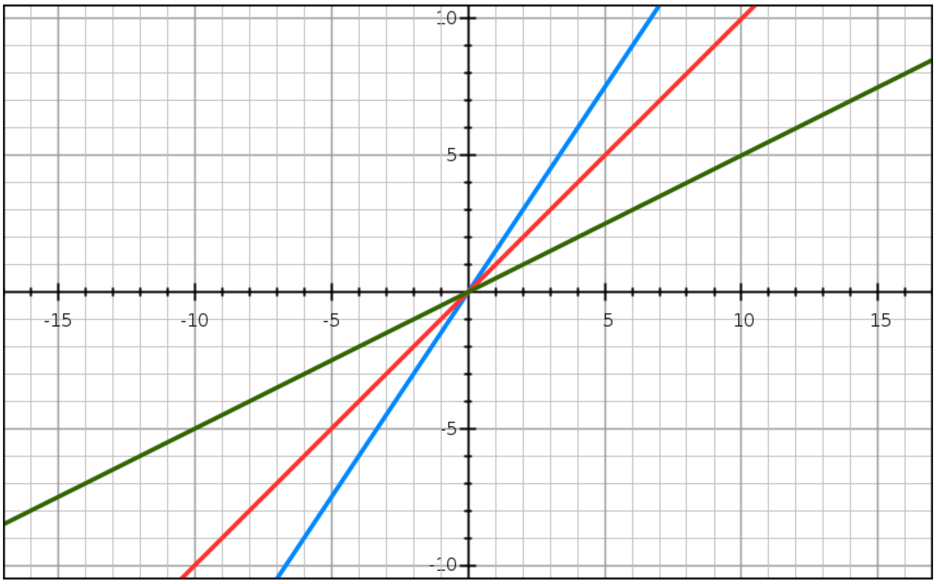


Figure1. *Plot of Value Functions: Green is bad; Blue is Good; Red is neutral*

2. GAME OF LIFE PHYSICS

There is only one rule in the Game of Life Physics. It is:

For each cell in the grid, count how many of its 8 neighbours are ON at the present instant. If the answer is exactly two, that cell stays in its present state (ON or OFF) in the next instant. If the answer is exactly three, the cell is ON in the next instant whatever its current state. Under all other conditions, the cell is OFF. [1]

This translates into Chess. On =man on a cell; Off = no man on a cell.

(8 choose 2)=28

(8 choose 3)=56

$56=28\chi$

$\chi=2 \Rightarrow y=2=L \Rightarrow y=y'$

SE'=2t-1

=2(2)-1=3

$t^2-t-1=3$

$t^2-t-4=0$

t=256; 1.561

SE=SE'

t^2-t-1=2t-1

t=3 E=5

E=(1-Ln t)^7

=(1-Ln 3)^7=0

SE'=2t-1

0=2t-1

t=1/2=t_{min} ⇒ E_{min}=-1.25

y=y'

t=3;2;1

SE=2t-1

SE_3=2(3)-1=5 Good Move

SE_2=2(2)-1=3 Neutral Move

SE_1=2(1)-1=1 Bad Move

t=3 E=5

t=2 E=3

t=1 E=1

Straight line y=mx+b

E=m t+0

m_3=5/3=1.666=1/6

$m_{2=}$3/2=1.5

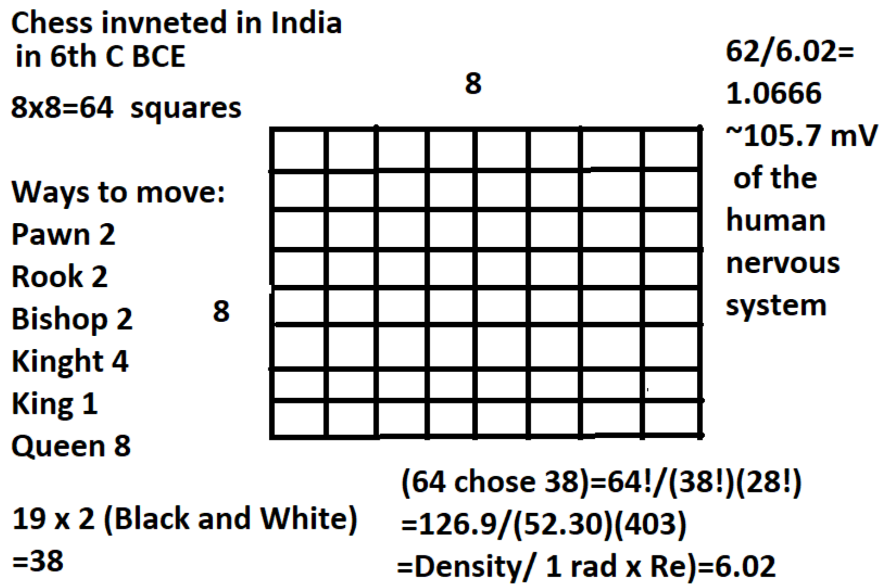
$m_{1=}$1/1=1

E=mt

$E_1=t_1$ E=1   t=1

E_2=1.5t   E=3   t=1/3

E_3=(1/6)t   E=1/2   t=2



$M=Ln\ t=Ln\ 1/2=-0.693$

$PE=Mc^2+MGh=0.693[9+6.67]=10.947$

$t=KE=1/2Mv^2=1/2(4)(1/\sqrt{2})^2=1$

SE=SE'=5

TE=16.94~17

t=1/17=590

$t^2-t-1=1.055mV$ (Human Nervous System)

$4^{(n+1)}=4^{(2669)}=404=Re$

$\rho/[e \times Re]=127.3/[1x\ 404]=\pi=t_{max.}$

{8 choose 2}=28

TE=28=6268+(n+1)+SE

6241=n

<u>PVal. & TLN</u>

TE=PVal x TLN

(8x8) /6.02= 106.8=PVal. x TLN

$M/(2\pi)$=PVal x TLN

$TE=\Sigma M/(2\pi)$

$TE=3/2\pi$

$TE=2/2\pi$

$TE=1/2\pi$

$\Sigma TE=[3/2\pi+2/2\pi+1/2\pi]$[PVal. x TLN]

$=3/\pi$[PVal. x TLN]

Good Move=$3/\pi$(PVal x 1)=3PVal $/\pi$

Neutral Move=$3/\pi$(PVal x 0)=0

Bad Move=$3/\pi$(PVal x (-1)=-3PVal$/\pi$

-3PVal $/\pi$ $\leq$ 0 $\leq$3PVal$/\pi$

Bad Neutral Good

$\Sigma E=3/\pi$ [PVal. × TLN]

Good Move

2=t(1.5 x 1)

t=4/3

E=3/4=0.75

E=0.75(1.5 x 1)

=1.125=1/888=E

t=0.888

$t^2-t-1=1.098\sim 11$

$E\geq 11$

11 Dimension Universe

$2^{11}/2^7=2^4=16\sim 157=\pi/2$

~1601=Charge on an electron.

Bad move $<1/2<$ Good move

Bad move $<1/2 \times 2\pi<$ Good move

Neutral Move

1/2=t(PVal. x 0)

t=0

Bad Move

0=t(PVal x TLN)

0=t(-1/2x -1)

0=2t
t=0

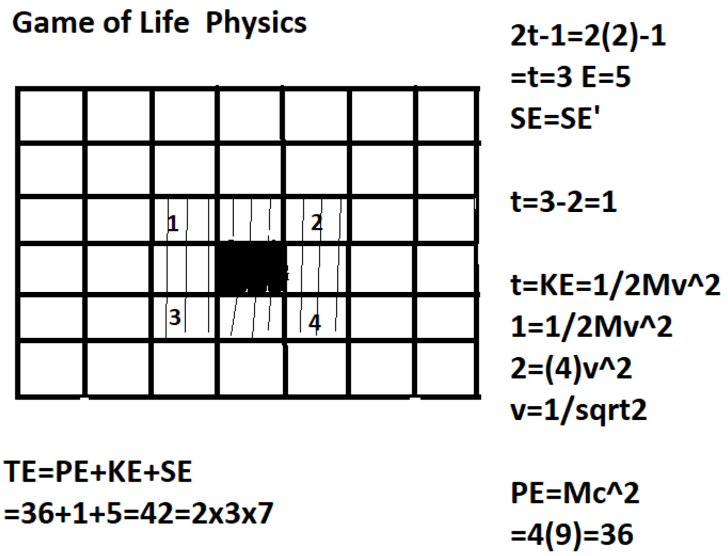


Figure1.

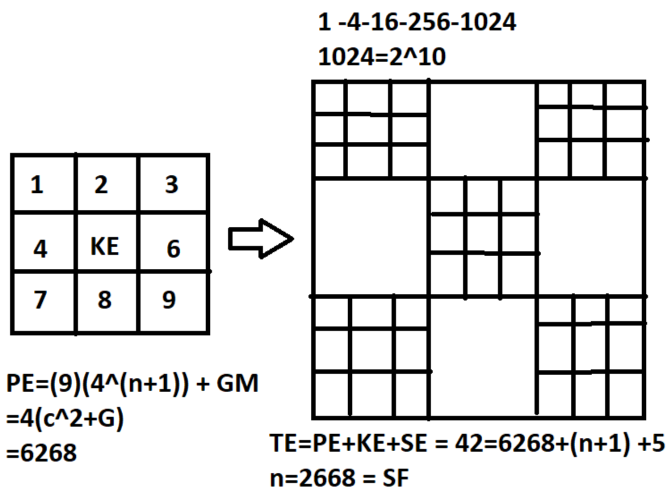


Figure2.

[38 choose 7]=126.7 x 10^{11}=ρ

ρ/ [E x Re]=126.7/(1x 404)=3.12 x 10^{9} [3]billion possible moves.

3.12/921600 Bd=56.42 min per move ~1 hour

{8 choose 2}=28

{t choose d^2E/dt^2}

{t choose G} Clairnaut DE

E=E'=E"=G

{t choose E}

(1/E)! /[E!(E-1/E)!

1=28=(E-1/E)

1/28=(E-1/E)

$1/28=[E^2-1]/E$

$E^2-1=E/28$

$28(E^2-E-1)=0$

$E^2-E-1=0$ Golden Mean Parabola

Now,

{8 choose 3}=

56

8!/[3!(8-3)!=56 t=√3=eigenvector

$t_1/[t_2(t_2-t_1)=56$

$t_1=56t_2(t_2-t_1)$

$t_1=56t_2-56\ t_1$

$57t_1=56t_2^2$

$57/56t_1=t_2^2=(\sqrt{3})^2$

$t_1=3(56)/57=263=1/38=1/(2\ x\ 19)$

$t_1^2 \cdot 1/t_1$={64 choose 38}

$t_1=64/38=263$

$E=(1-Ln\ t)^7=379$

$1/E=t=263=t_1$

$t_1 \times t_1/(1/t_1)$={64 choose 38}=56

{64 choose 38}=R

E=(1-Ln t)^7

1.001=(1-Ln t)

t=1

{8 choose 2}=$E=t^2-t-1=28$

{8 choose 3}=t=1/E

$t=E^2+E-2$

$=28^2-28-2$

=755

$E=1-Ln\ 0.755)^7$

$=(1-0.6626)^7$

$=(1-h)^7$

=1.012~1

E=1/t

{64 choose 19}

$=E=(1\text{-Ln } t)^7$

=(1-Ln 263)7

= 0.858

=R

3. Conclusion

AT Math and the Game of Life Physics rule with programmable Chess.

References

[1] Dennett, DC., Darwin's Dangerous Idea., Simon and Schuster USA 1995.

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