PER47

23/10/13

Prob*lems* o*n Tuuning Machi*ne.

Que

Design a Im for

*L*=1*261221}* Logic Use

As we got first d we oves wsite it asx state will changed movement is towards white in search.

right

of b

As we got first b we overwrite it as y state will changed (92) mo*vem*ent is towards left in seaich of x.

As we got 's we jump on initial state do Nowy p*roc*edwe will be as above

**When alla** db be*com*e x lysespectively % will go for first y state will change (92) movement is

toward sight in search of blank (6)

*As 93* got blank we will jump on final state

Diagam

*48*

23/10/13

EYL

YE

3. Diansition Table

b

2

YB

as a

9o 9, X, R.

93-Y7R

=

9191,0, R

92,Y, L

ai, Y, R

92

92, a, L

To, x, R

,Y, L

93, Y, R

af, tn

23 1013

Stimu*lation*

W=aaabbb

طالعقيق

طوط طووووعة )ک

(طوطططوم ويق) ( طططهموهم

طططط وهلو (۵)

لطم القلم)

(de, xaaybb, b)

t

190, Xaybub)

(90, rx yy, 6)

حالا

المططعمرو)

طططلا مقاومة ) لط طط لأهلاوية )

طوط طلاولويه)

(طوططلافتلاويه) طيط دمعكرو)ل طيط وقدره ) با

(ط, طلا وجلالا مه )

ظ ط لا يحتويه ) (طو طلاوتحتويه ) F ( بطلات18تويه)

طولالالالتحروف) (طلالاتلار 2ق) :( ولالا ولاتحرمه)

لا ولالاتية,دف) +

(طر(لايحتتردو)

2411013

Que. Design a TM for L = 3an inte

> > Logic Use >

As we got first I we over waite it as 'r stote will changed movement is towards right in search of b

during that we will ignose, all'a

As we got first b we overwrite it as 'y' state will changed movement is towards sight & im**megiately tox** second 'b'we overwrite it as 'y' stale will chan**ged movement is**

towards left in search of x. a

As we got x we jump en initial state. Now, the procedure will be as above

when all alb becomes x ly no will search for fisst y state will changed (96) movement is towards ni*ght i*n sedach of blank (6)

As 94 got blank we jump on final state 2f

2 *Dildom*

YlyL Talal

for nzo

SON

*на 24 |* 12 | 13

Transition

Table

b

Яo 41, к.

ч Ті, а, R ЧАУ,

, У, L

Чs, y, L

93 | 3,a, L.

—

to, 1,

43, 7,

—

96, 7, R

af, bn

Е *( 4 , ахууу*у, В) Е (£*, алуу у*у, Е)

2% Stimulation

We a alb bb b *као,* даbььь, В) Ea, yahhhh. B)

E (, 1аьььь, к). - (, xayььь, и). Е (Яз, xayyь, к) Е (Зо, даууы,к) *Е (*в*о*, за уурь, и.) E (9,17 дурь, и). *Е (2 , уу*у, и *Е(, уууу*,к) Е (*о, туу*ууук) Е (94*, хуууу*у,к) *Е (94, xxууу*у,к) *— (94 , ууууу*ль)

52 Lars 24/10/13

Que. Design a tm for 15 anns 1 T

→ 17 Logic Use it

As we got first 'a'wo overwrite it as a state will changed movement is towards right & immediately

for second d' we overwrite it as 'i' stat**e will changed** movement is towards sight in search of 'b' dwing that we will ignore all'a

As we got 'b' we oves wsite it as 'y' state will changed movement is towards left in search of's"

As we got x wo jump on initial state, Now procedure will be as above.

when all a &b becomes afy a will search fos first y state will changed movement is towards sight in sedich of blank (6)

As 94 got blank we jump on final state at,

*D1000*

alar

blitt

XR

JYlYR

Pero 53

-

R*5/10/*13

> Lansihon. Diddom

To

4, 2, R

9492,18

22

92, 9, R

93, V, L

-

92, Y; R

-

9393, A, I

To, X, R

93, Y, L

94, Y, R

af, K.N.

H (93, xxxxyy, 6)

*(*92, *xury*) E (9*4, U y*y,b).

*(*44, *xur*y )

4. S*timulation*

*8(*90, addobb, 6)

1991 yoldabb, b). t (92, araabb, 6)

(92, xxg abbeke) + (92, xzadbbk)

(93, azadybyk) E (93,27a ayb, b) t (90, xxadyb, 6) E (da*, xa*y, 62 t (98, xxxxyb, 6)

*(98*, b ) E (92, *2xx*yyk)

FYQF, 1*1A*XYY, b)

\*\* 75 TERT 30/10/*1*3

Av*.v.inze*

Theoremi Ił wis accepted by.e two dimensio*n*al twing machine

\_\_Ma\_then iis accepted by one dimensional tuing machine Me

W-10

W-13

Pxcofa l ete Miksepresent the tape of tuing machine these

- tapes die two way-infinite

S*up*pase that Memakes.a move in which the head does not leave the sectangle alseady represented by my topenen If the m*ov*e is horizontal\_My simply moves its head maskes one cell left on sight attes painting a new s*y*mbol Ichanging the state of Me seconded in Mi's control. If the I move is vestical it uses its second tape to count **the** number of cells between the tape head and to its left **then\_ My moves to the** sight if the move is down *t*he t*ape.*

bead mask the coscesponding position *i*n the new block by bising the second tape L a Now.consides Me's bead moves of the rectangle.

represented by My if the movesic vestical addia new

block of blank to the left ansight using the second tape -count the cirent length of blocke if the moves is

bosizontal my uges shifting oves technique to add a blank at the leftosaightend of each block

(954*XX2YY*. b*)*

E91,2X240 6 F1922X80 Y*X*O) E1921.3x2 V4 pbad

40.142942%) E (931.1227 Voubel E (930\_2*1*2*4\**26)

*, 76* 7 30110113

W-10

S-08

W-07 suot

V.inf

s-04

\*\*Thecém-? If Lis\_accepted by non-deterministic thing

machine me then Lis a*c*cepted by some detaministice tusing machine. M2. -

Proof

for any state of tape symbol of Mr there is cha finite numbes of choices for the next move. This can be numbered 1, 2, ukoli

. Let e be the maximum number of choices for any state tape symbolthen any finite sequence of choices \_can be sepresented by a sequence of the digits 1,*2,*....ce*ns*

Such sequence may sepresent choices of moves there may be less than a choices in some situationen

My will have three tapes. The first tape will hold the input.on the second. tsipe. My will generate sequence of digit 1, 2 esenced *i*n systematic mannesma Foleach sequence génerated on tape 2, My-copied the input onto tape 3. On tape 3 using the sequence on tape 2 defect\_the moves of me It mentess and accepting state MQ also accept it.

FREE RE 7*7* ode: 14) 1113

*Modification o£ Iurisd-Machine*

These are three types of\_modified Jusing machine.

5-*1*3 S-10

S-09

***\**W-06**

**JEROS**

Multihead Tuning Machine iz

A multihead tusing machine has fixed numbesin Lofike heads Ihe heads ase numbesedfxoma luokand more

Lof the twing machine depends on the states and the symbol Escan by each headeIn one move multihead tusing machine

Lean move Jeft, sight os demains stationnsy

\*\*\* Multidimensional Insing Machine >

to this type of twing machine consist of finite control which is similas to othes type of\_IM wh**eseas the tape** of this twing machine consist of\_k-dimensional assdy of cells infinite in all k disection. Depending on the tape & the symbol scan the twin**g machine chang**es its state & printa near symbot and movesaits tape head to one of the sixection Leithes positively os n**egatively along one of** the K access.

At the stast the input is **along one of the acce**ss and head Lis at leftand of the input

**5-10** S-07

wko SPD

D

2. Offline Iusing Mashine

Anzoffline tuing machine is a multitape. In **whose tape is sead o**nly. It's suisound the input by end **maskes on** the left and on the sight. The rm is knot allowed to move the input tope head of the segion between

***78*** *1 16*11*/13*

Dand The offline\_Im is a special.case of multitape TM and therefore is no more powerful than any of the models.

Input

tape

Head

finite control

fiq @ Block Diagram of offline Thing Machine

Restricted

Turind

Machine

*- Following u*se\_*restricted twing onachine -*

3-09

\* W-os

.

\* S-04

*Multistacki Trising\_Machines*

*A detesministia two-stacko maihine* is *a tusing machine with dead only input and two different storage tape which osre acting as di STACK, Ite head.* moves *on either tape a blank (bah is printed on that*

***tapes***

z*u*ng17

*m*mo\*

*Inteza Machine* za

***Countes machines ase nothing b****ut offline IM. who*se ***st*o*rage tape Desem****i infinite and contains only tw*o s*ymbol z B s*er*ved as bottom of stack, which is scanned by the tape at initial and it does not appea*s.on. ***any other set and integes I lone can be stored on the* \_*tape by moving tape bedd*** *i cells right to the similasly,*

***astered oumber can be incsemented es decsemented b*y** *moving the tape head to the right or to the left.xespectively*

3. *Restriction* o*n the number of sta*tes *and the symbole*

*Anothes kind of restriction to the tusing machine is the limi****t on the ta****pe alphabet* e**n*d of states*** *zased this we ty****pe of twing ma****chine is les*s powe*rful* ***than the other***

*ty*pe of ***becouse of limiton the number of symb****ole* ***I states***

-

1

*An duineds Bounded Hutomata*

*Linear Bouarded Automate (LBA) is nothing but non-****deterministic IM such tha****t its alphabet* ***c*o*nsist of the special symbo****liwhich we used asend* ***maskes. The****se symbolere*

*Th****e moment of tape*** *head of lineas bounded automata is sestricted between* $8 *o*n *the left hand side & qu the sight* ***hand side from the abov*e s*estrictions* we *can co****nclude*

pa so

pus: 16/11/13

that the tape fos LBA\_having- finite no.of symbolover itd the movement of tape head is being restricted to that portion\_ofily.

*Techniques\_for. Thing Machine*

*Construction*

*The various techniques\_for\_IM..constuctio*ns

ase

*1. Storage in the finite\_control*

*The finite-control of IM can also be used f*o*r holding some information*

- Fd2eX *Suppose we want to stored in formation segarding any object such. d.g\_one bit of information theor we can have the stordge in finite.control as*

[qs] where quis some state belongs to qandais - input we have to stored

D*e Multiple Trock*

*A tape of\_IM-can be divided into multiple tr*acks o*n the upper track input is shown between symbol* $\_$$ where as on the lowes track (6) blank symbol (B) are shown where the output of the operation on the given input can be stored. We can used a tape hav*ing* multiple track with each trock having its specific

\*\* 81 DE 21/1113

pusposer

В

В Тв

в

в

Einite Control

fiqin

Black Dingiom of Multi

3*. Shifting a*ves S*ymbol*

*The tu****sing machine can make space on its tape by shifting all non blank sonbolto t****he sighto*n

***The tope bead makes m****ore to the right repeatedly & Iseplace them with symbol oedd from the lefte The Im* Ic*and setun empty cell & point symbol of its choice.*

I*f the space is available it car push blocks of symbol left in the similar m****annes***

2.82 hary 21/1113

S-08

**S-Ot.**

*Church sypothesis*

US

*Guer£xplain church Hypothesis.*

*The assumption that computable Function* Le*an be identified with the class of postial secu*s*si*ve\_

*function is k*no*wn as church hypothesis.*

*Partial secussive function includes all + computable\_functions. Logician have presented man*y

*hypothesis such as\_*2-calculus , post system &genesal osecussive function All have been shown to define the same class of function. The Random access memory *(*Ram) also give sised to the postia recussive function.

- Random access m*e*mosy consist of an infinite no. of memory recordeach of which can hold any integer ļ La finite no. of asithmatic registers capable of holding

any integes. Integer may be décoded into usual.computes Linstauetiana