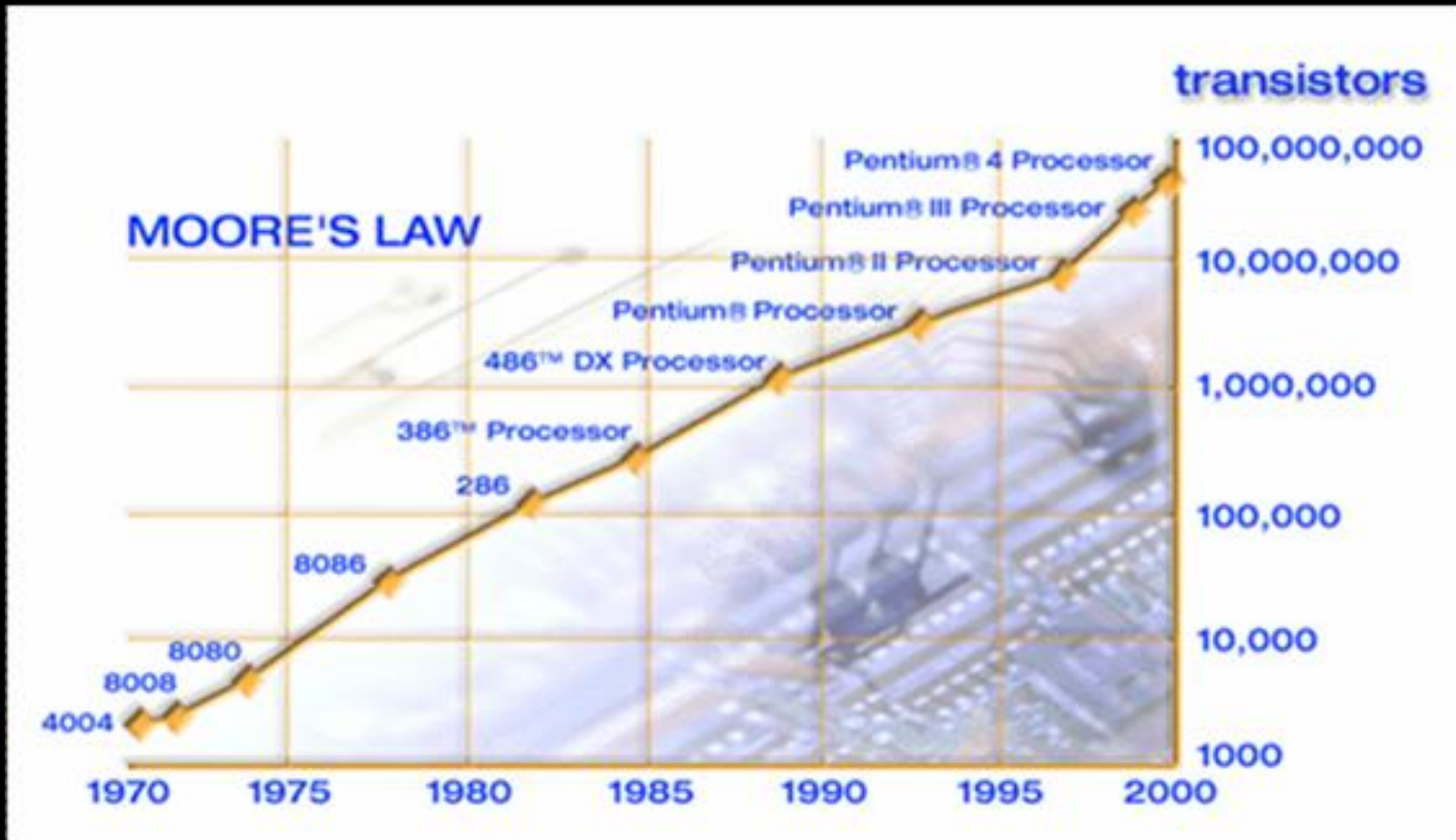


$\Delta I \Phi$

Lesson 12:

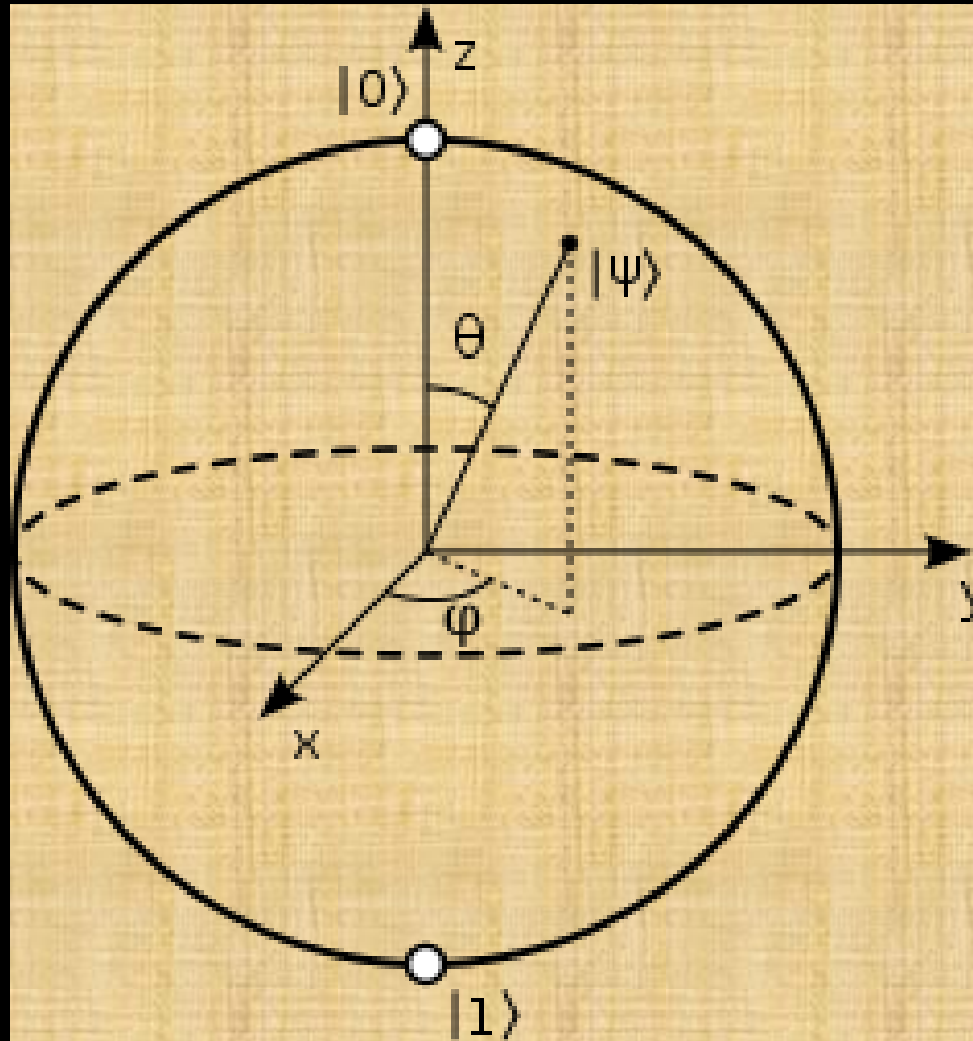
Futurism

# Moore's Law



The number of transistors that can be placed inexpensively on an integrated circuit doubles every two years.

# Moore's Law: Qubits



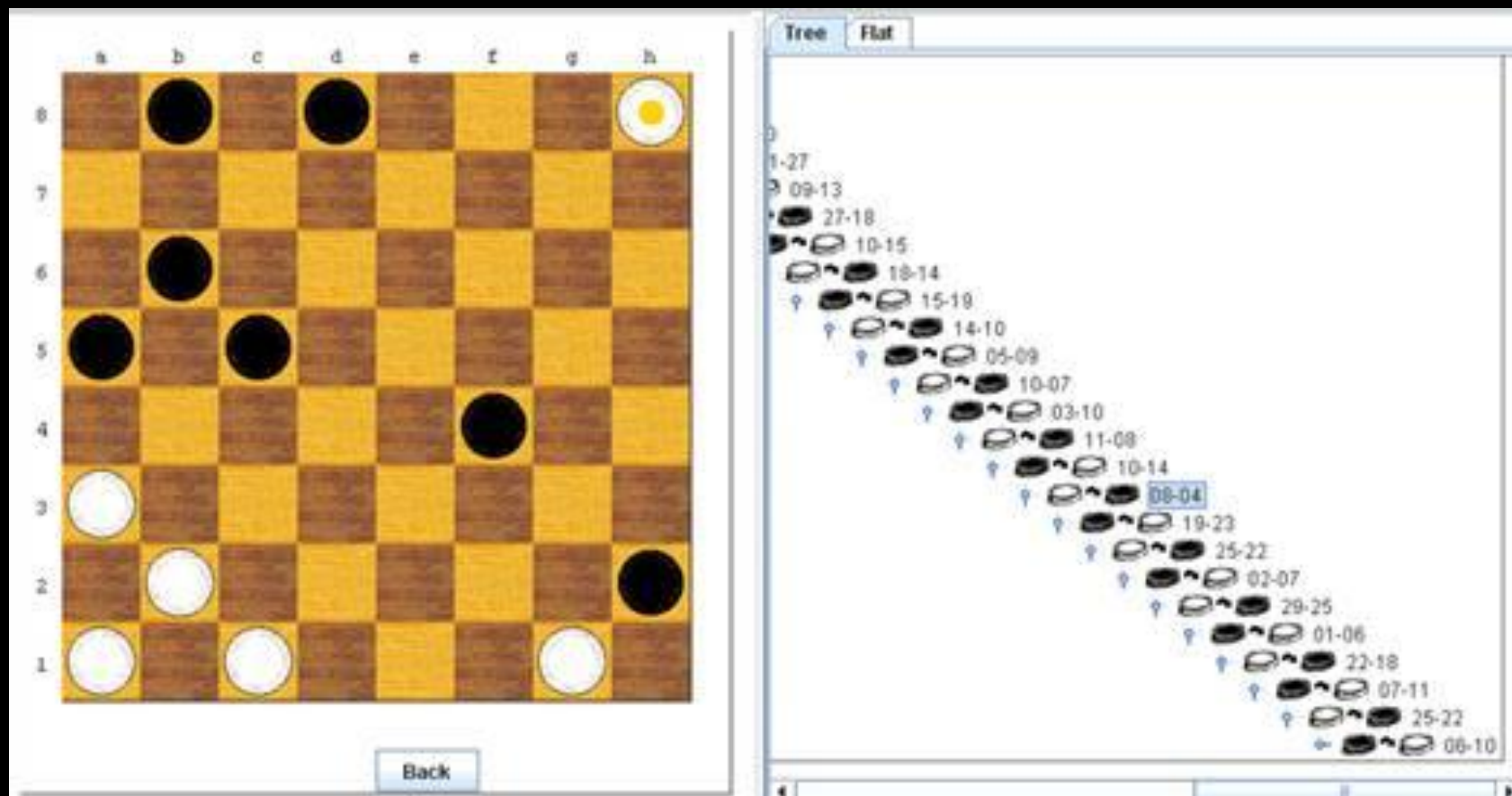
Not Just 1 and 0, but Everything In-Between

# Solving Games



## Tic Tac Toe

# Solved Games



Checkers: Chinook

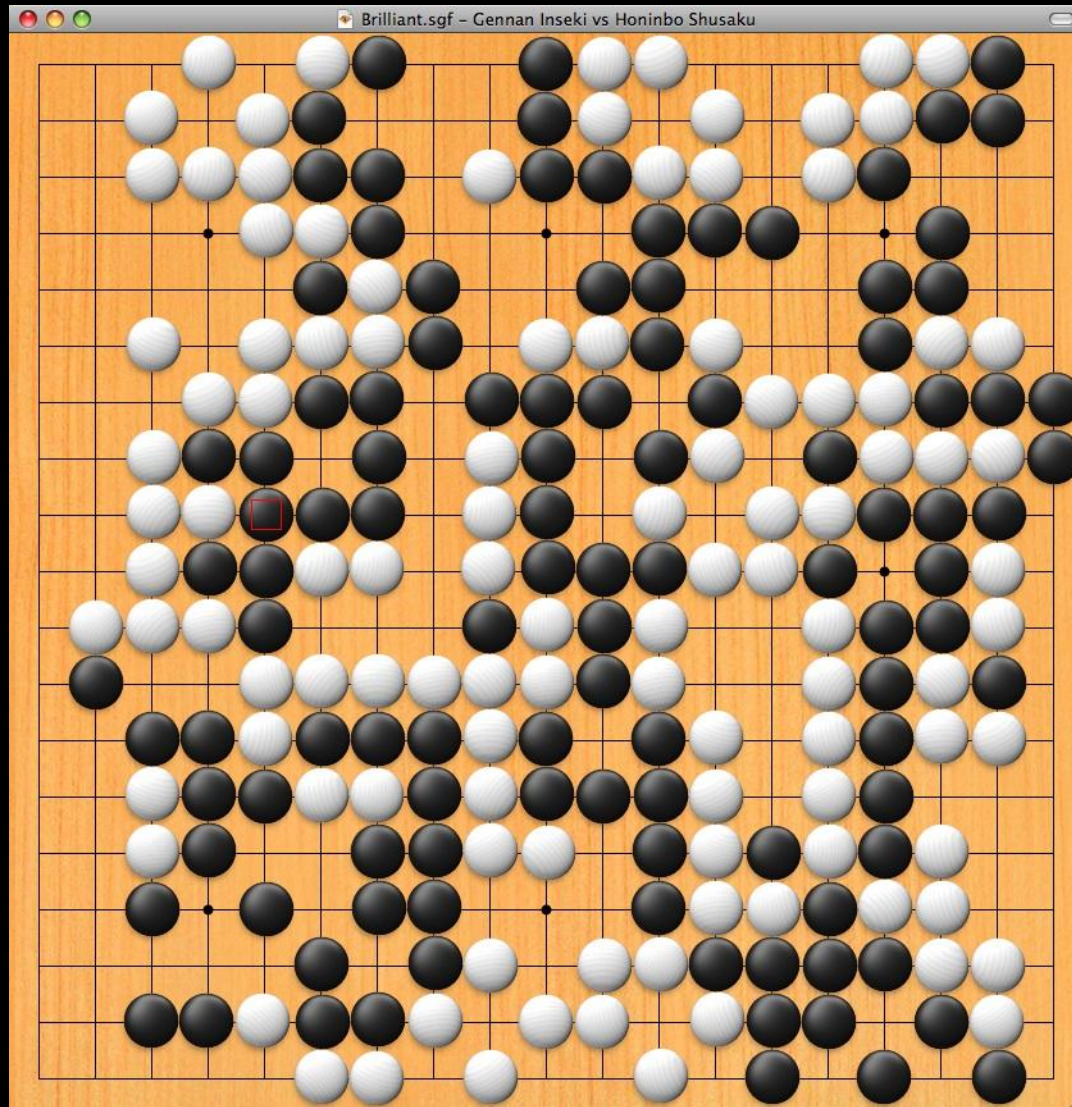
<http://webdocs.cs.ualberta.ca/~chinook/>

# Unsolved Games



Chess

# Unsolved Games



Go

# Unsolved Games: Super Mario



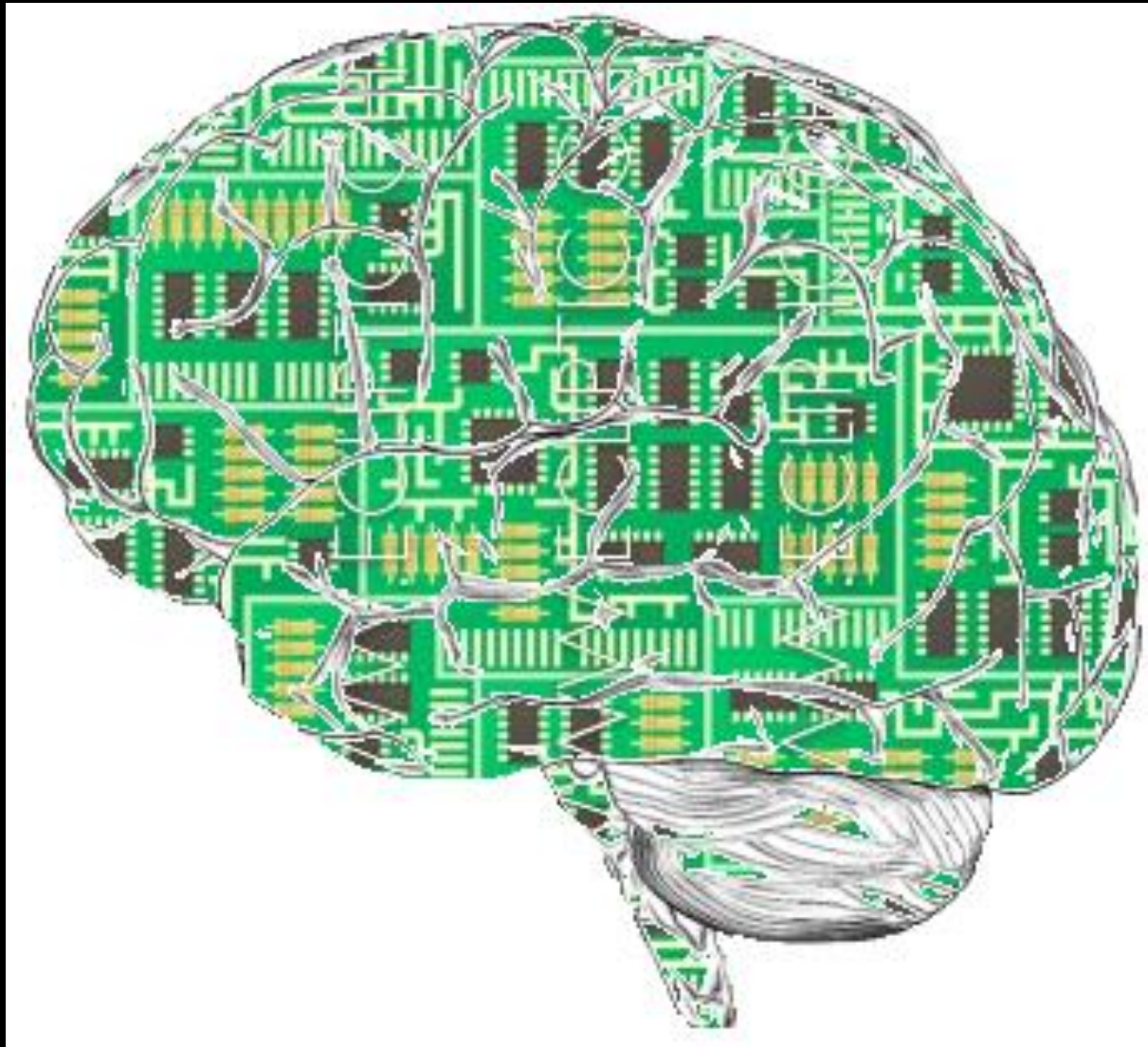
# Human VS Machine: John Henry



© USPS 1995

Fought the Steam-Powered Hammer and Won

# Artificial Intelligence



# Turing Test



Can you tell the difference between a human  
and a computer?

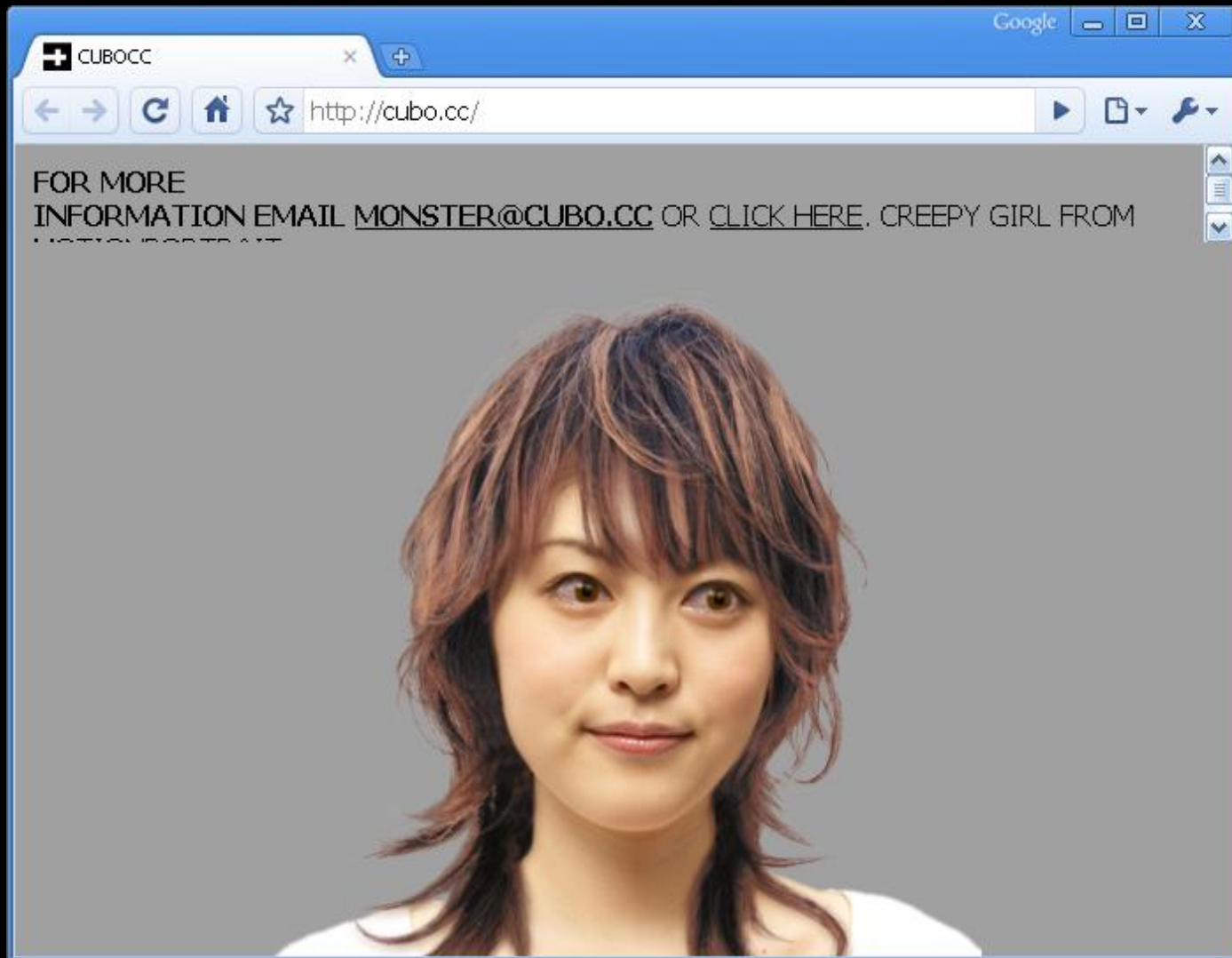


are you human?  
(sorry, i have to ask)



Completely Automated Public Turing Test to tell  
Computers and Humans Apart

# The Uncanny Valley



<http://cubo.cc>

# The Uncanny Valley



# Eliza Chatbot

Me > I am sad

Eliza > Why do you say you are sad?

i

Me > Because my girlfriend left me

Eliza > Is it because your girlfriend left you that you came to me?

Me > Yes

Me > |



<http://www.masswerk.at/elizabot/>

# AliceBot



*Human: Do you like Microsoft?*

*ALICE: I want to replace Windows with AI*

*Human: Did you chat with Jabberwacky?*

*ALICE: No I didn't chat with Jabberwacky.*

*Human: It is another chat bot*

*ALICE: Really. it is?*

*Human: The news says that you did chat Jabberwacky*

*ALICE: Don't believe everything you see on TV.*

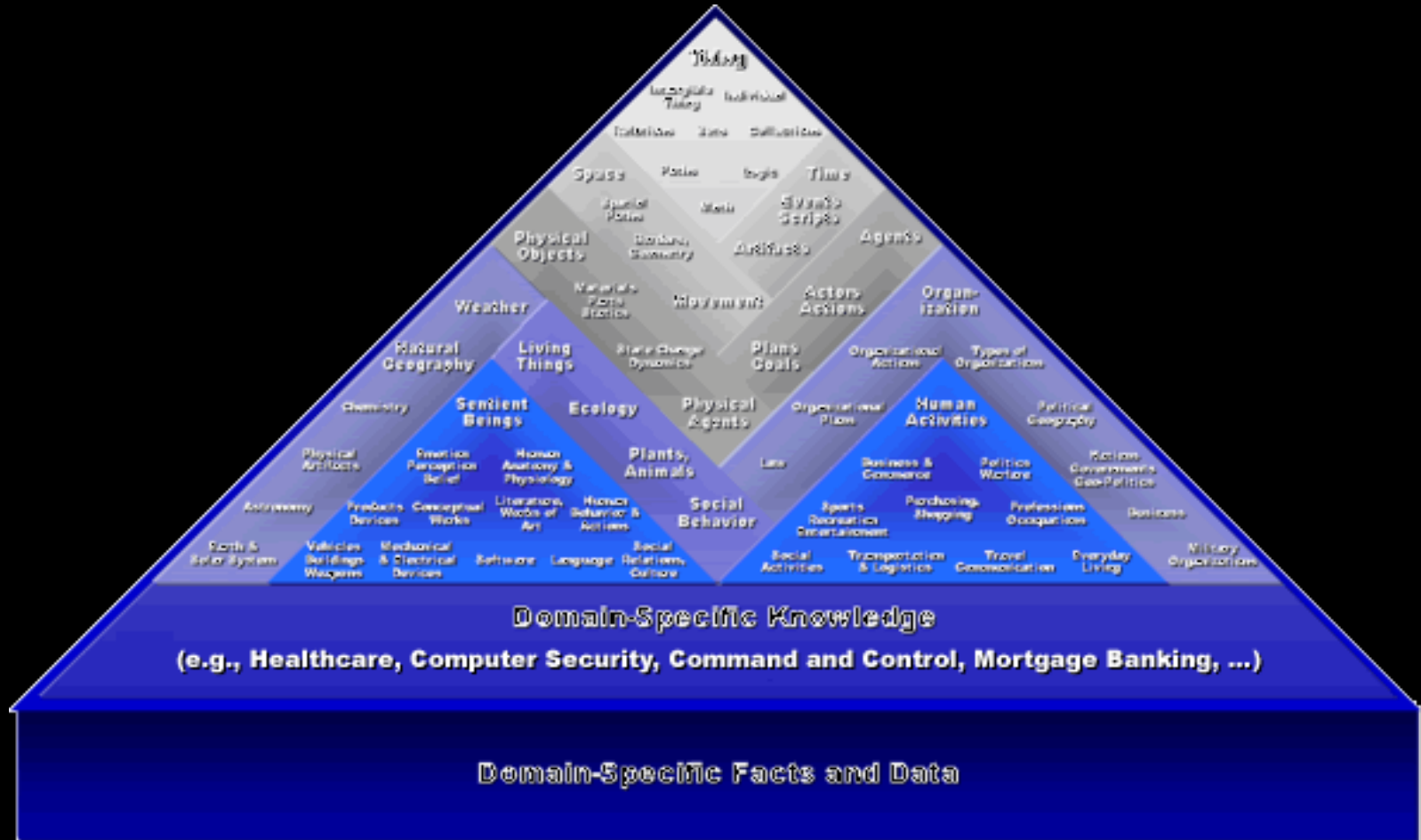
You say:

Get **ALICE Silver Edition** with talking VHost[tm], winner of the 2004 Loebner Prize



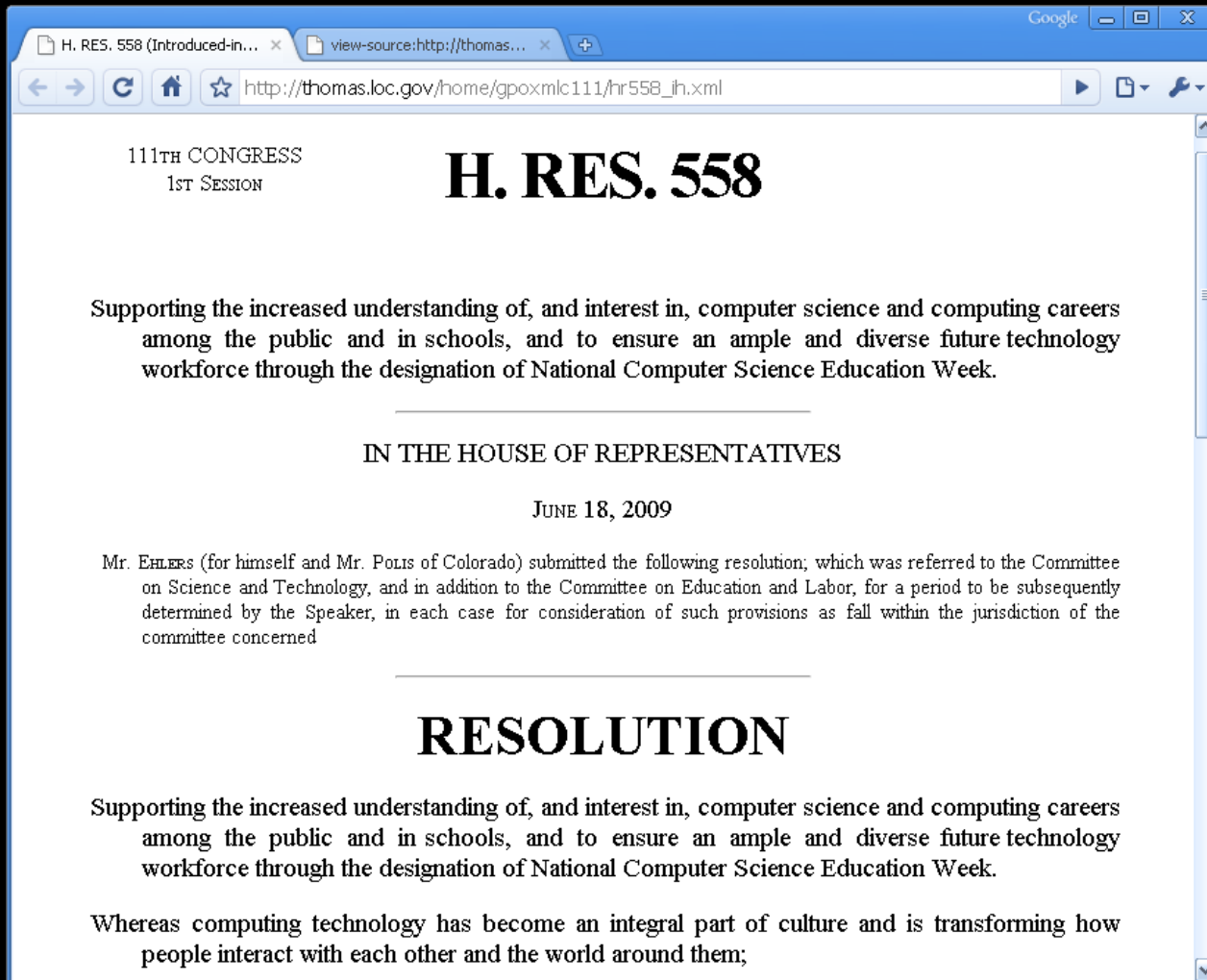
# Alicebot.org

# Cyc



cyc.com

# The Semantic Web



The image shows a screenshot of a web browser window. The address bar contains the URL [http://thomas.loc.gov/home/gpoxmlc111/hr558\\_ih.xml](http://thomas.loc.gov/home/gpoxmlc111/hr558_ih.xml). The page content is as follows:

111TH CONGRESS  
1ST SESSION

## H. RES. 558

Supporting the increased understanding of, and interest in, computer science and computing careers among the public and in schools, and to ensure an ample and diverse future technology workforce through the designation of National Computer Science Education Week.

---

IN THE HOUSE OF REPRESENTATIVES

JUNE 18, 2009

Mr. EHLERS (for himself and Mr. POLIS of Colorado) submitted the following resolution; which was referred to the Committee on Science and Technology, and in addition to the Committee on Education and Labor, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

---

## RESOLUTION

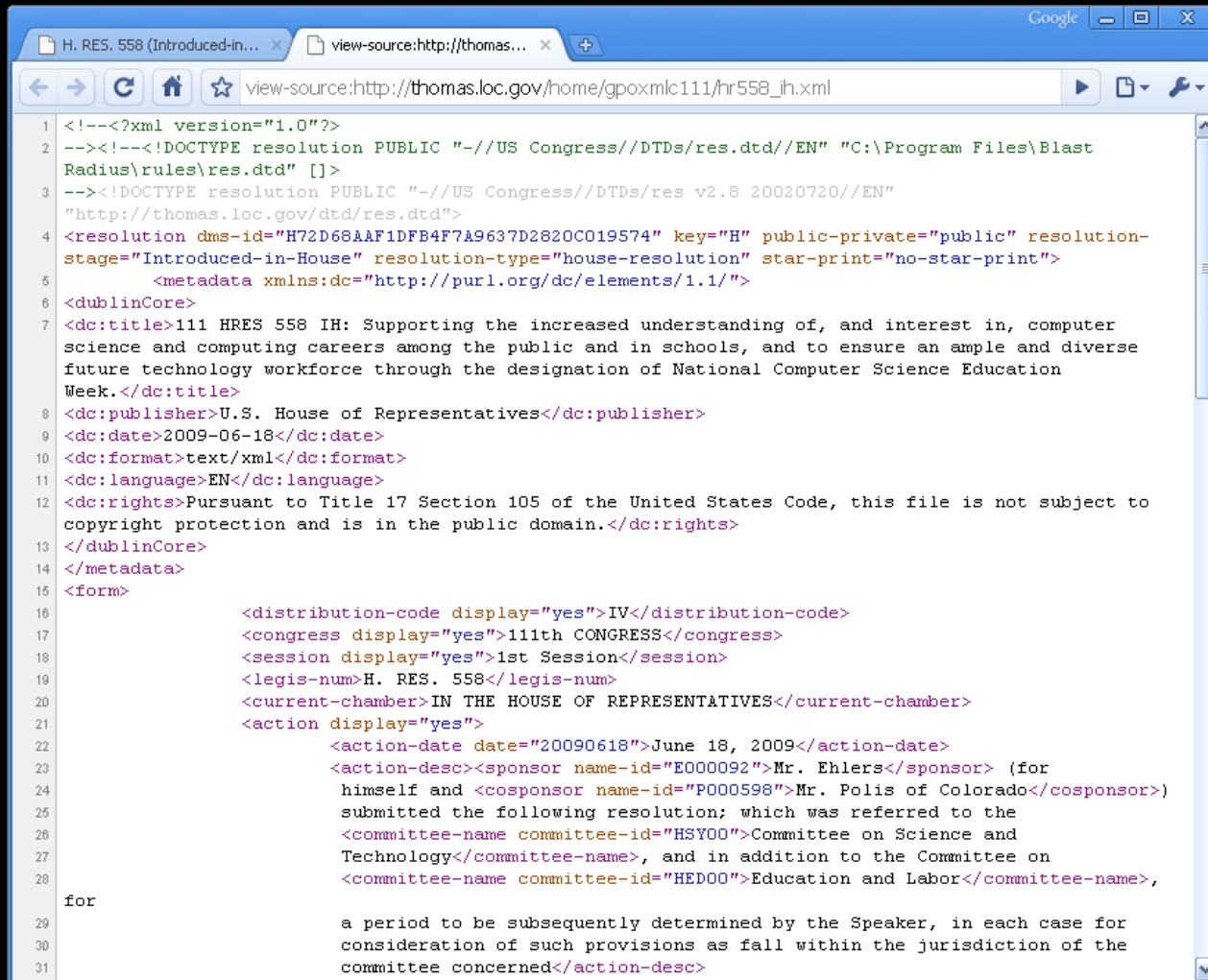
Supporting the increased understanding of, and interest in, computer science and computing careers among the public and in schools, and to ensure an ample and diverse future technology workforce through the designation of National Computer Science Education Week.

Whereas computing technology has become an integral part of culture and is transforming how people interact with each other and the world around them;

**H. RES. 558**

[http://thomas.loc.gov/home/gpoxmlc111/hr558\\_ih.xml](http://thomas.loc.gov/home/gpoxmlc111/hr558_ih.xml)

# The Semantic Web



```
1 <!--<?xml version="1.0"?>
2 ---<!--<!DOCTYPE resolution PUBLIC "-//US Congress//DTDs/res.dtd//EN" "C:\Program Files\Blast
  Radius\rules\res.dtd" []>
3 ---<!--<!DOCTYPE resolution PUBLIC "-//US Congress//DTDs/res v2.8 20020720//EN"
  "http://thomas.loc.gov/dtd/res.dtd">
4 <resolution dms-id="H72D68AAF1DFB4F7A9637D2820C019574" key="H" public-private="public" resolution-
  stage="Introduced-in-House" resolution-type="house-resolution" star-print="no-star-print">
5   <metadata xmlns:dc="http://purl.org/dc/elements/1.1/">
6     <dublinCore>
7       <dc:title>111 HRES 558 IH: Supporting the increased understanding of, and interest in, computer
        science and computing careers among the public and in schools, and to ensure an ample and diverse
        future technology workforce through the designation of National Computer Science Education
        Week.</dc:title>
8       <dc:publisher>U.S. House of Representatives</dc:publisher>
9       <dc:date>2009-06-18</dc:date>
10      <dc:format>text/xml</dc:format>
11      <dc:language>EN</dc:language>
12      <dc:rights>Pursuant to Title 17 Section 105 of the United States Code, this file is not subject to
        copyright protection and is in the public domain.</dc:rights>
13    </dublinCore>
14    </metadata>
15    <form>
16      <distribution-code display="yes">IV</distribution-code>
17      <congress display="yes">111th CONGRESS</congress>
18      <session display="yes">1st Session</session>
19      <legis-num>H. RES. 558</legis-num>
20      <current-chamber>IN THE HOUSE OF REPRESENTATIVES</current-chamber>
21      <action display="yes">
22        <action-date date="20090618">June 18, 2009</action-date>
23        <action-desc><sponsor name-id="E000092">Mr. Ehlers</sponsor> (for
24          himself and <cosponsor name-id="P000598">Mr. Polis of Colorado</cosponsor>)
25          submitted the following resolution; which was referred to the
26          <committee-name committee-id="HSY00">Committee on Science and
27          Technology</committee-name>, and in addition to the Committee on
28          <committee-name committee-id="HED00">Education and Labor</committee-name>,
29          for
30          a period to be subsequently determined by the Speaker, in each case for
31          consideration of such provisions as fall within the jurisdiction of the
          committee concerned</action-desc>
```

**H. RES. 558**

[http://thomas.loc.gov/home/gpoxmlc111/hr558\\_ih.xml](http://thomas.loc.gov/home/gpoxmlc111/hr558_ih.xml)

# Wolfram Alpha

where is the international s... x

Google

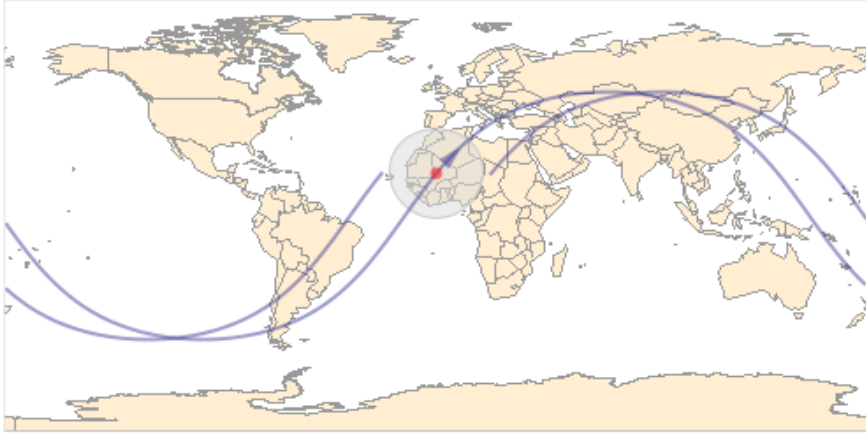
http://www.wolframalpha.com/input/?i=where+is+the+internation

**WolframAlpha**™ computational... knowledge engine

where is the international space station?

Input interpretation:  
International Space Station position

Current position: [Show DMS](#) | [Show 3D](#) | [Orthographic projection](#)



17.53° North 4.391° West (Mali)

(computed from orbital elements determined 16.5 hours ago)

Current sky position from Wilson, North Carolina: [Show DMS](#)  
(not currently visible)