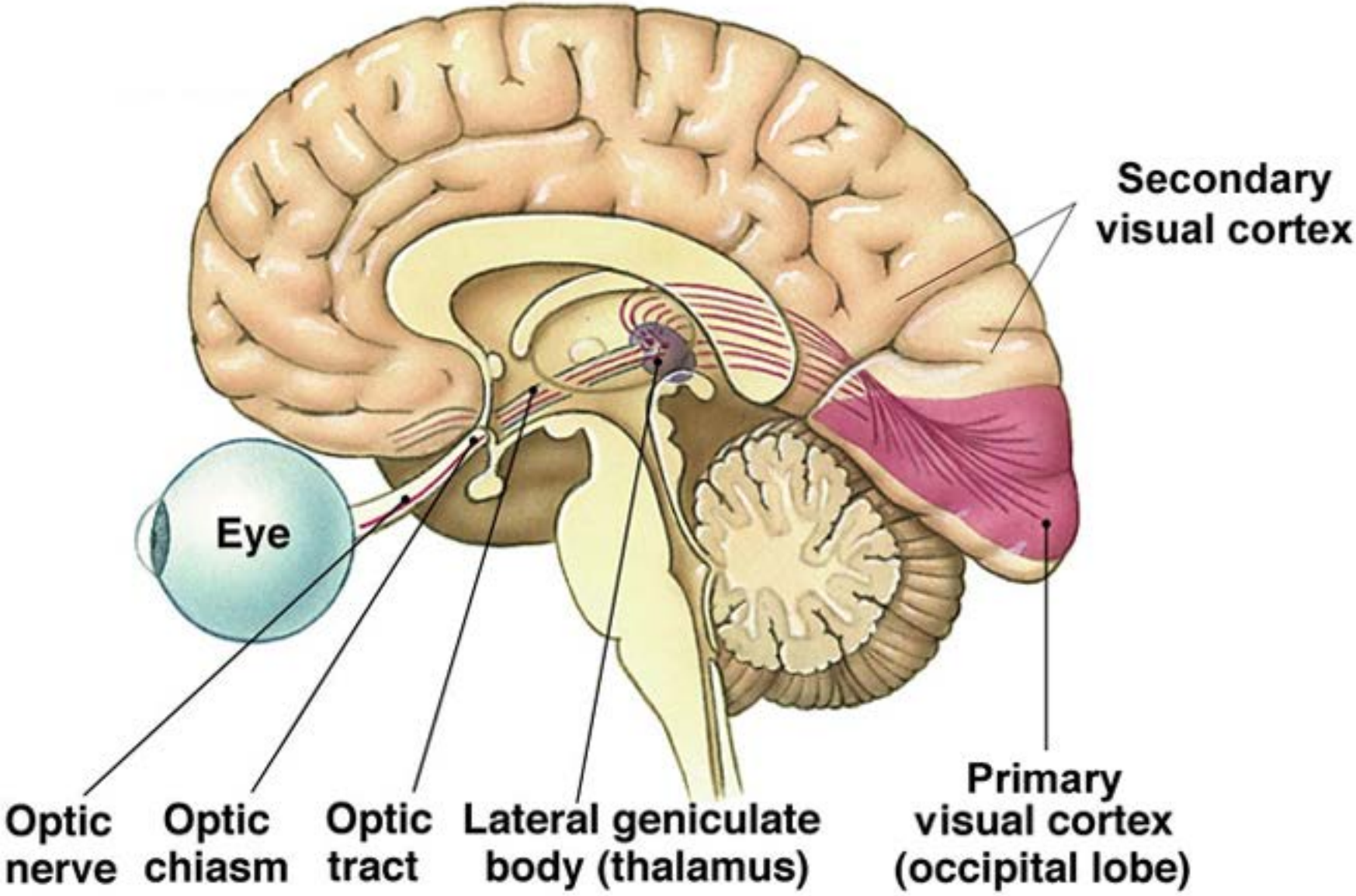
6.034
Farewell Address

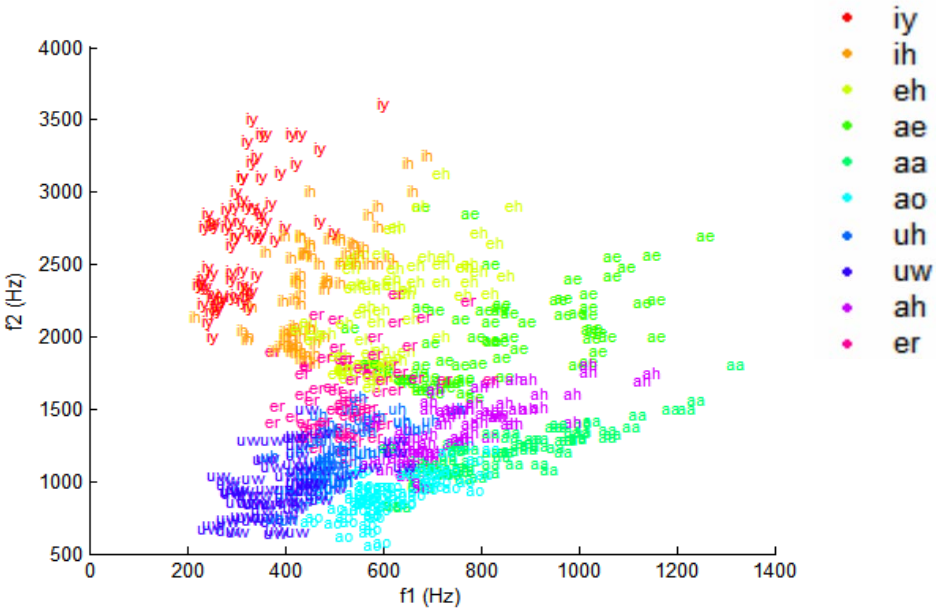
2011

The Exotic Engineering Hypothesis

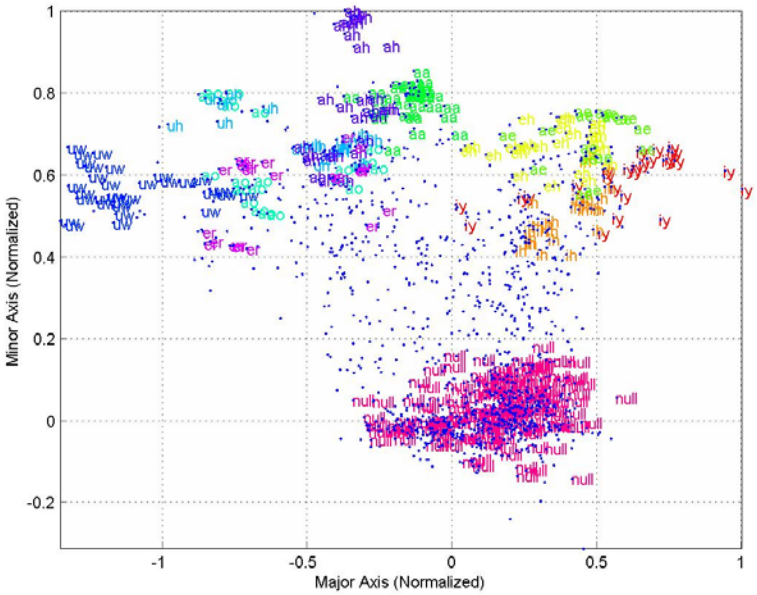
There is a kind of engineering in our heads about which we are nearly clueless.



Formant data



Lip contour data



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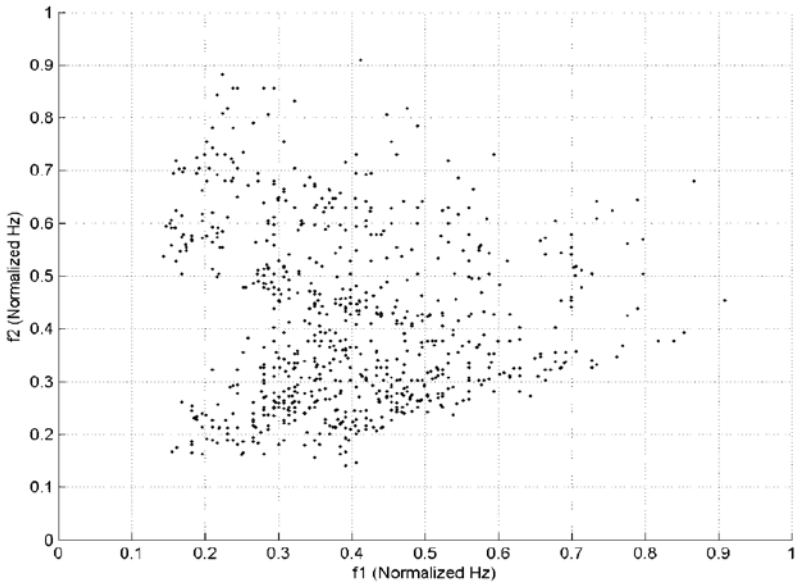

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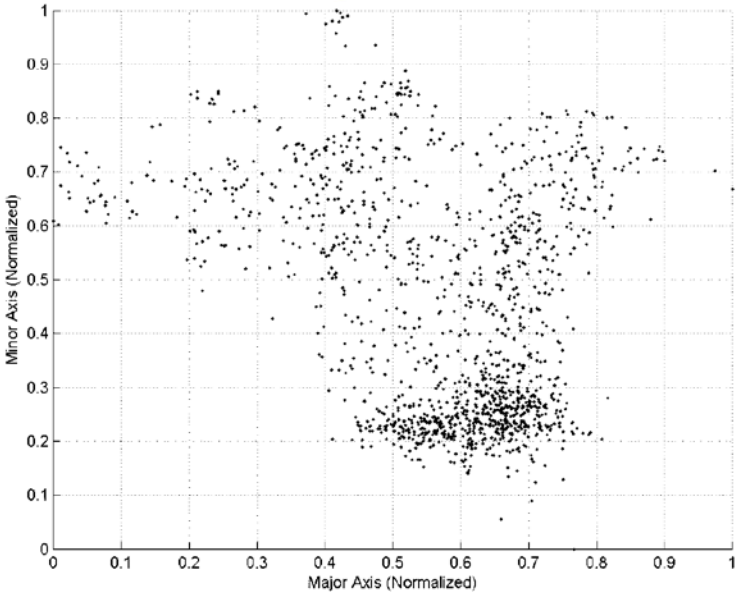
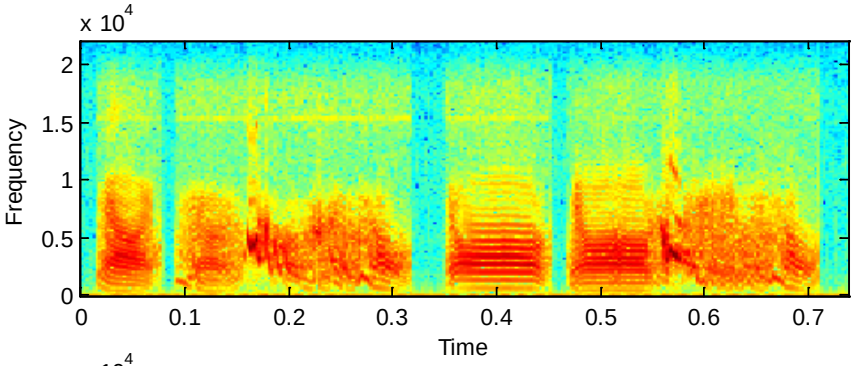
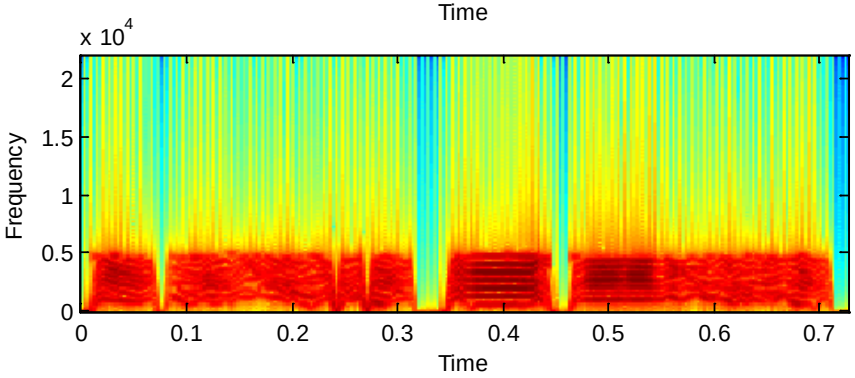
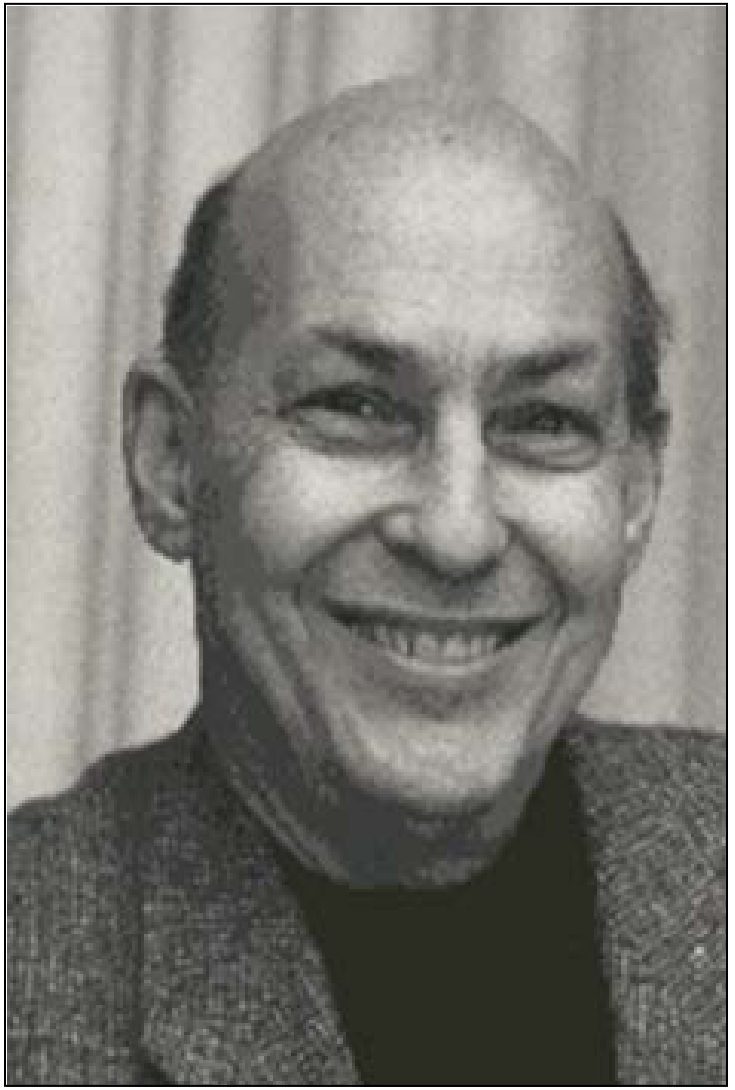


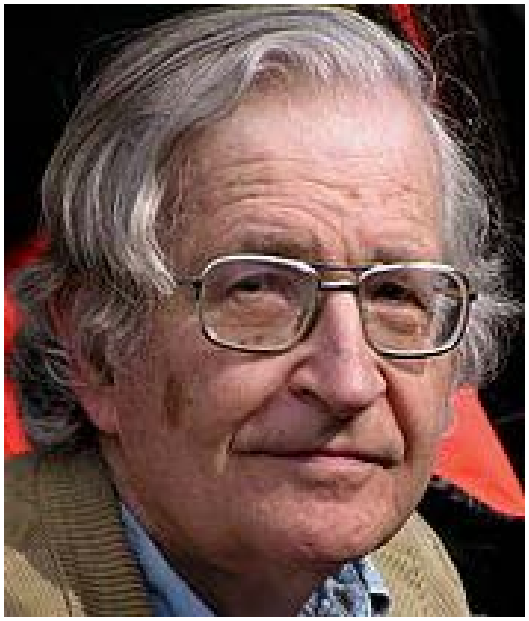
Samba

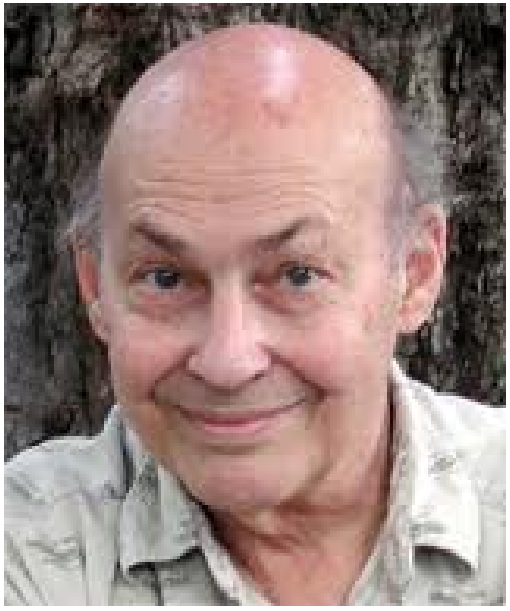


“Samba’s son”









$$\int \frac{x^4}{(1-x^2)^{5/2}}\,dx = \frac{1}{3}\tan^3(\arcsin x) - \tan(\arcsin x) + \arcsin x$$

Duncan is a person. Lady Macbeth is a person. Macduff is a person. Macbeth is a person. A thane is a noble. Macbeth is a thane. Macduff is a thane. Lady Macbeth is greedy. Macbeth defeats a rebel. Appear is a success. Macbeth has a success. Witches talk with Macbeth. Witches have visions. Duncan rewards Macbeth because Duncan becomes happy. Macbeth wants to become king because Lady Macbeth persuades Macbeth to want to become king. Macbeth murders Duncan.

Duncan becomes dead because if a person murders another person, the other person becomes dead.

Engineering Perspective

Artificial Intelligence is about building stuff with

- Representations
- Methods
- Architectures

Scientific Perspective

Artificial Intelligence is about understanding stuff with

- Representations
- Methods
- Architectures

The Business Perspective

	Saves Money	Creates New Opportunity
Information Gatherers		✓
Blunder Stoppers		✓
Novice Workers		
Expert Workers	✗	

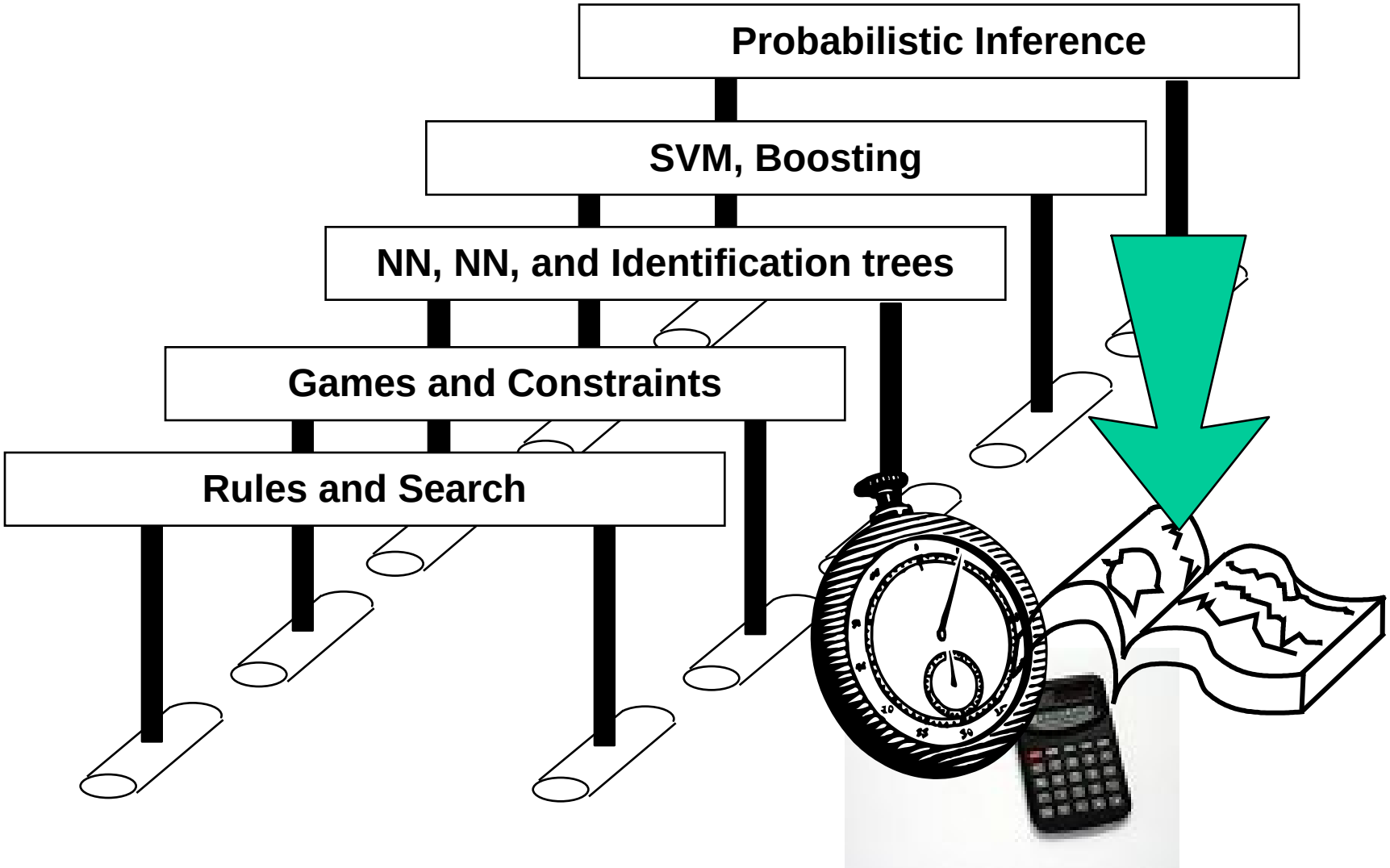
What Does AI Offer That Is Different

- A language for procedures
- New ways to make models
- Enforced detail
- Opportunities to experiment
- Upper bounds

How do you do it?

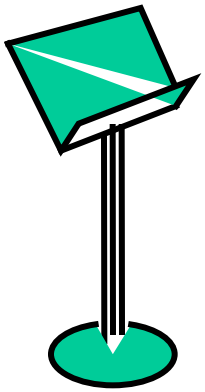
- Characterize behavior
- Formulate computational problems
- Propose computational solutions
- Implement exploratory systems
- Crystallize out the principles

What Might Be on the Final



Winston's Picks

6.034



6.868	Minsky	Society of Mind ?
6.891	Berwick	Evolution
6.UAT	Davis	Communication
6.945	Sussman	Large Scale Symbolic Systems
9.71 (F)	Kanwisher	Functional MRI Investigations
...	Richards	
...	Tenenbaum	...
...	Sinha	
…	Battlecode	…
…	UROP	…
6.xxx	Winston	Human Intelligence Enterprise

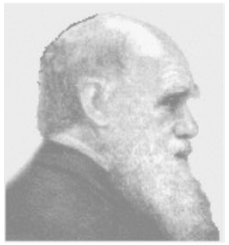
How to Speak
Friday, February 3, 11am

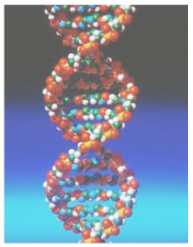
INTERESTED IN EVOLUTIONARY BIOLOGY?

6.049J/7.33J

Evolutionary Biology

Spring 2012





Instructors:
Professor Dave Bartel
Professor Robert C. Berwick
Tues, Thurs 11–12:30pm (56-154)
First Class: Tuesday, February 7
Prereq: 7.03; 6.00, 6.01; or permission of instructor

An undergraduate elective in the new Course 6/7 degree in Computer Science & Molecular Biology
MIT's only undergraduate course devoted entirely to evolutionary biology

- What does evolutionary biology says about life, genomics, and drug discovery?
- Is Richard Dawkins right? Is everything explained by "selfish genes"?
- Has there been natural selection for a language gene?
- How can maximizing fitness lead to evolutionary extinction?
- Did humans ever mate with Neanderthals?

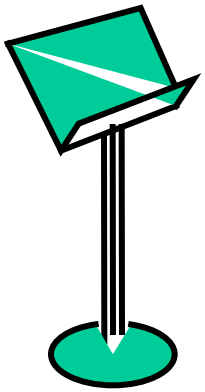
Distinguished guest lecturers including:

- Dr. Ian Tattersall, Curator of the American Museum of Natural History, New York, on human evolution and paleontology

Catalog Description: Explores and illustrates how evolution explains biology, with an emphasis on computational model building for analyzing evolutionary data. Covers key concepts of biological evolution, including adaptive evolution, neutral evolution, evolution of sex, genomic conflict, speciation, phylogeny and comparative methods, Life's history, coevolution, human evolution, and evolution of disease.

Winston's Picks

6.034



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How to Speak
Friday, February 3, 11am

6.XXX Benefits

- Understand the great ideas of the great thinkers and how they got them
- Learn how to extract and evaluate ideas from original, sometimes opaque sources
- Learn how to package your own ideas and expose their greatness

6.XXX Packaging Topics

Abstracts

Proposals

Slide presentations

Promotion letters

Letters of complaint

Trip reports

Elevator talks

Openings

Business plans

Press releases

Job interviews

Study briefs

Terms of reference

Panel discussions

How to threaten people

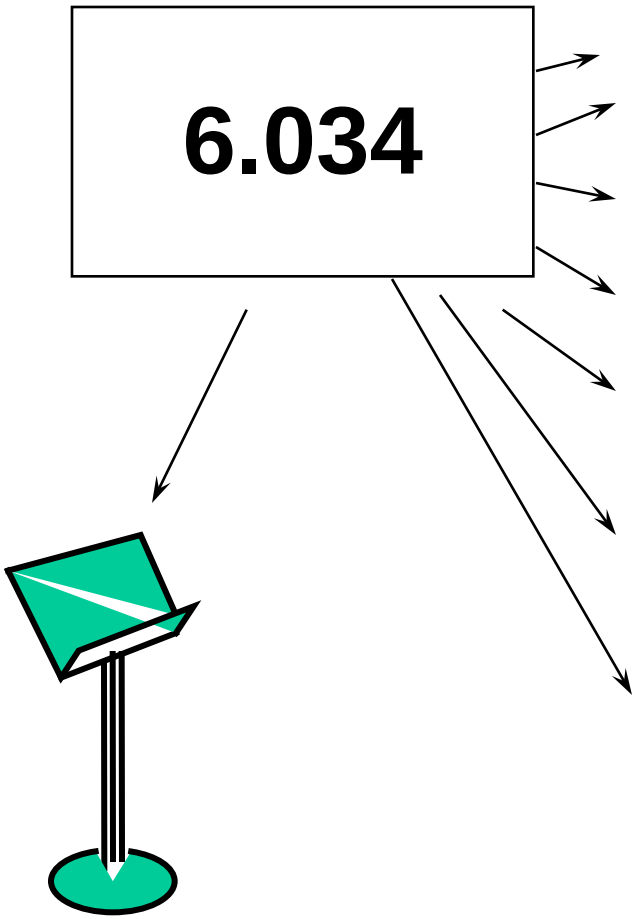
From the Underground Guide

Exams were described as “incredibly difficult,” “brutal,” and “frustrating.” They were graded harshly and “covered topics not taught in the class.”

From the Underground Guide

Officially, Winston has never confirmed or denied that there are quizzes for this class. His students seem to take after him --- comments were evenly split between complaints of brutal weekly 9:30AM quizzes and a "7-hour final", and denial of any and all testing. We at the UG aren't quite sure what to make of this.

Winston's Picks

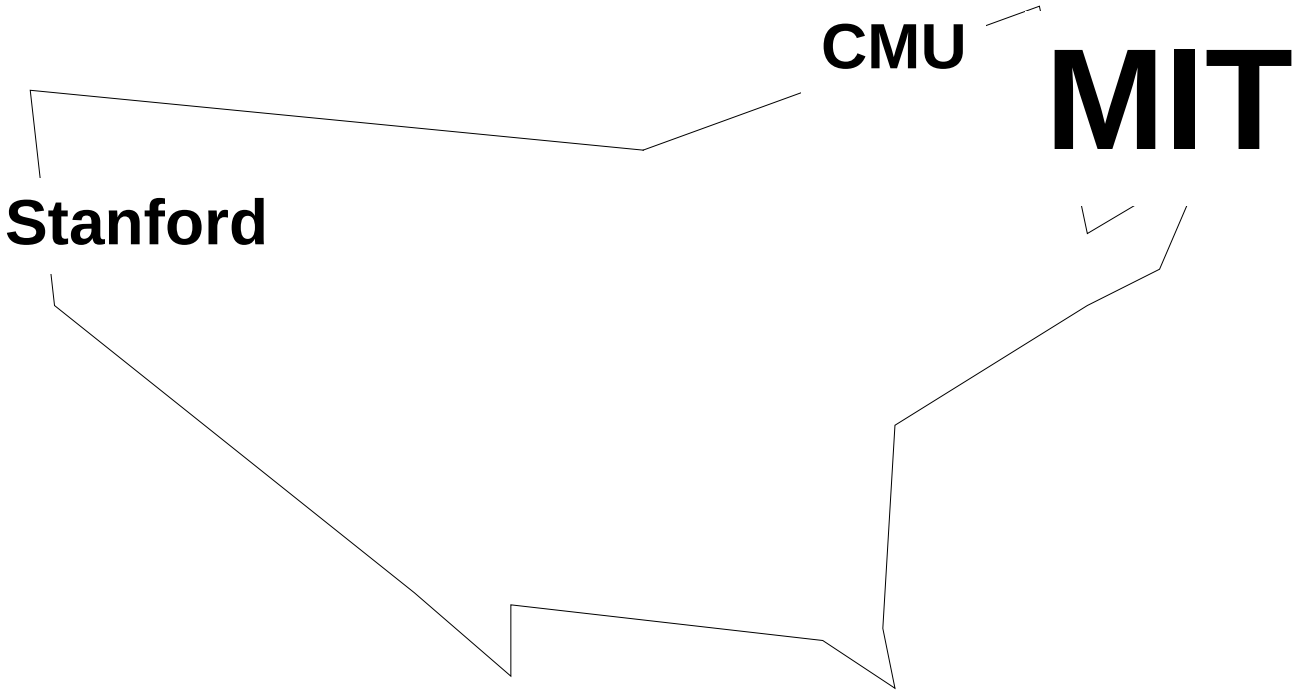


How to Speak
Friday, February 3, 11am

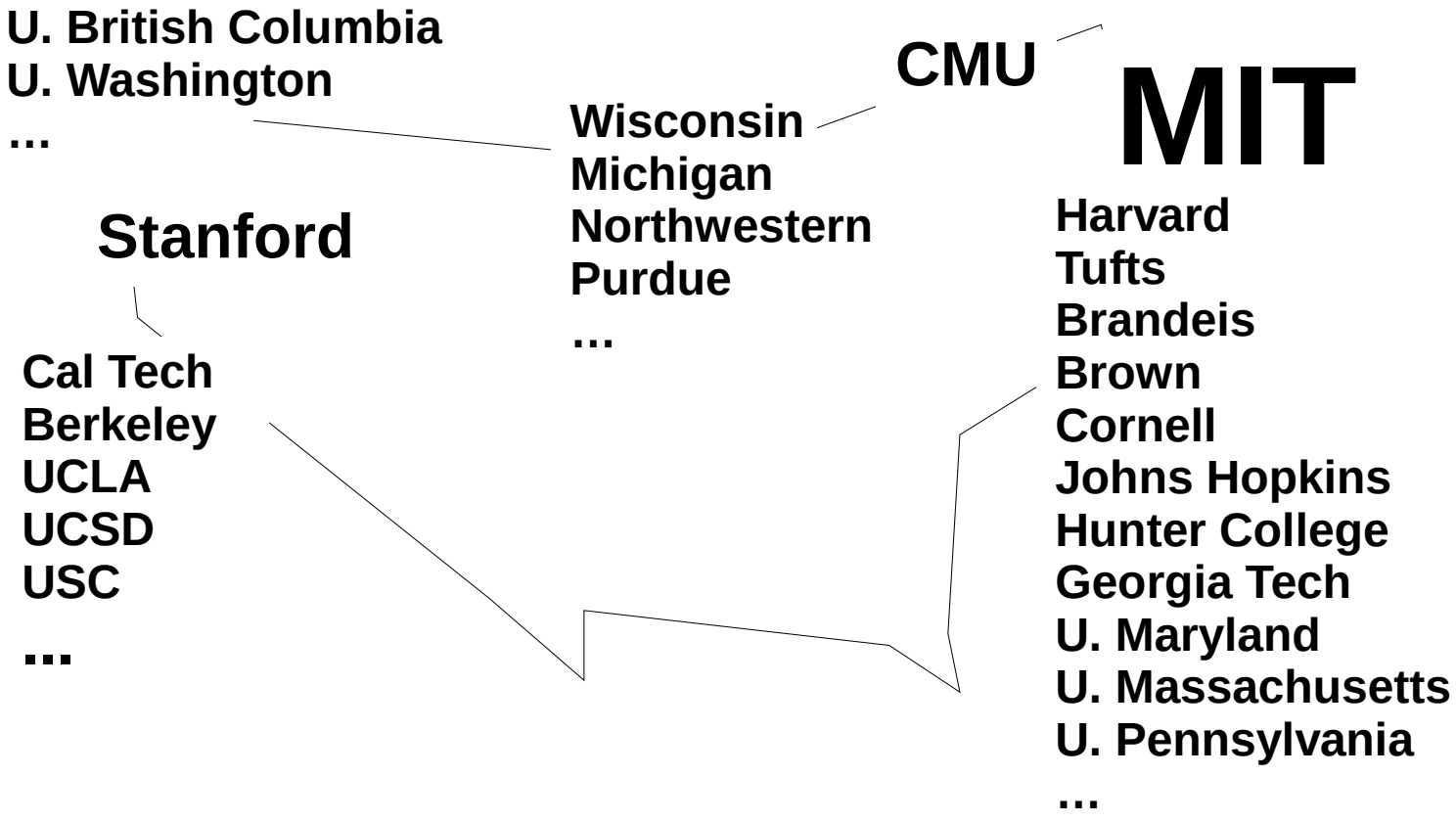
The Issues

- What can we know about the physical world?
- How do we handle abstract worlds?
- What can we imagine and why?
- How do we discover order in our perceptions?
- How do experience and culture guide thinking?
- How do symbols ground out in perception?
- How do our faculties learn to communicate?
- Why are human computers so robust?

Where Can You Go Next



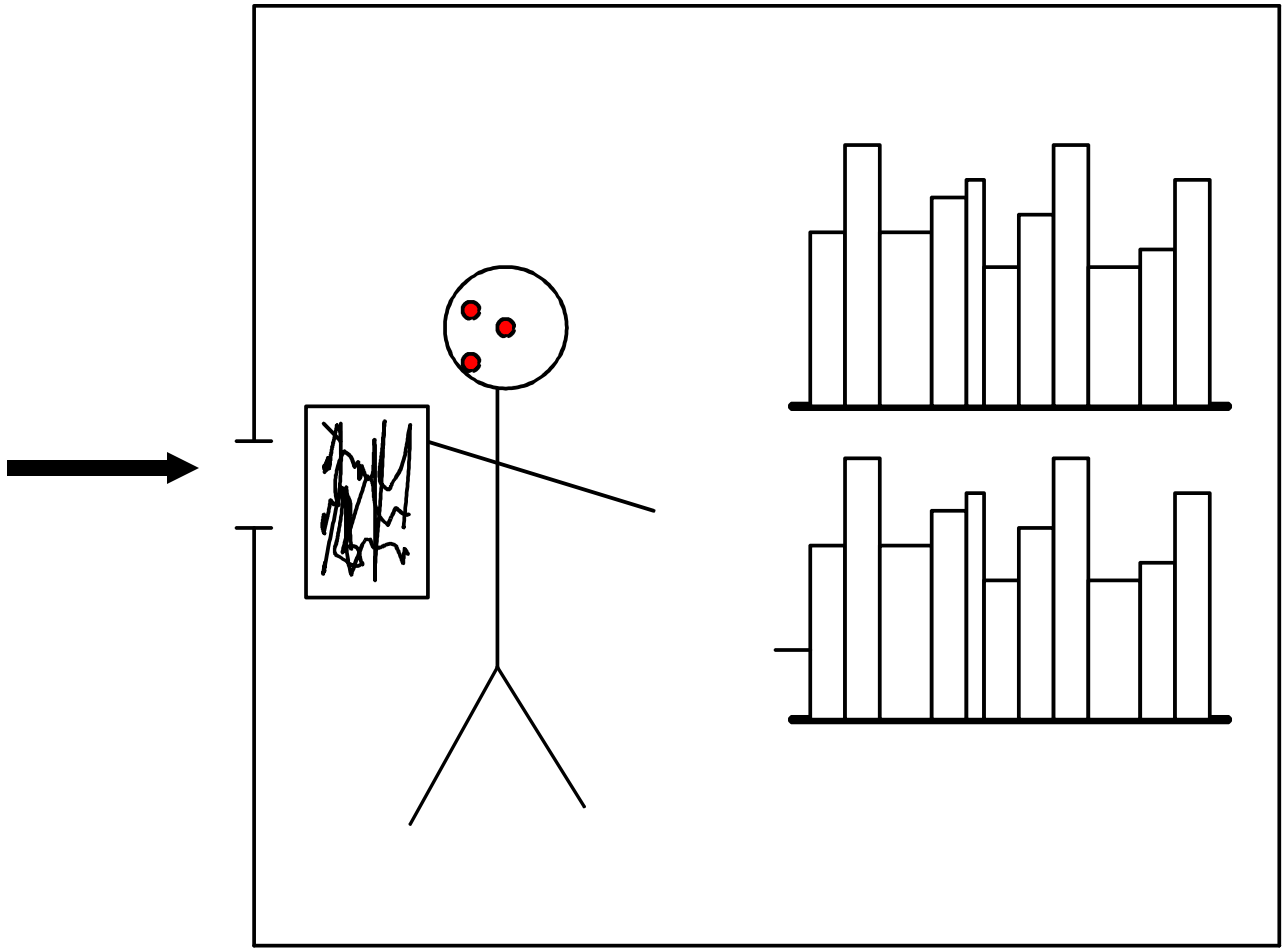
Where Can You Go Next



The Big Questions

- Is AI useful?
- What are the powerful ideas?
- Can they be truly smart?
- Are we close?

The Chinese-Room Argument



The Homunculus Fallacy

- It cannot be in the program
- It cannot be in the computer
- Therefore, it cannot be at all

The Biggest Issue

- Are people too smart?
- Are people smart enough?

The Powerful Ideas

- Good representations make you smarter
- Sleep makes you smarter
- You cannot learn unless you almost know
- You think with mouths, eyes, and hands
- The Strong Story Hypothesis

The Staff

Avril Kenney

Adam Mustafa

Caryn Krakauer

Erek Speed

Gary Planthaber

Mark Seifter

Peter Brin

Tanya Kortz

Bob Berwick

Randy Davis

David Broderick

The Rolling Stones

The Black Eyed Peas

…

A Really Powerful Idea

- You can change the world
- Only you can do it
- You can’t do it alone
- You are obliged to do it