



COMS 647

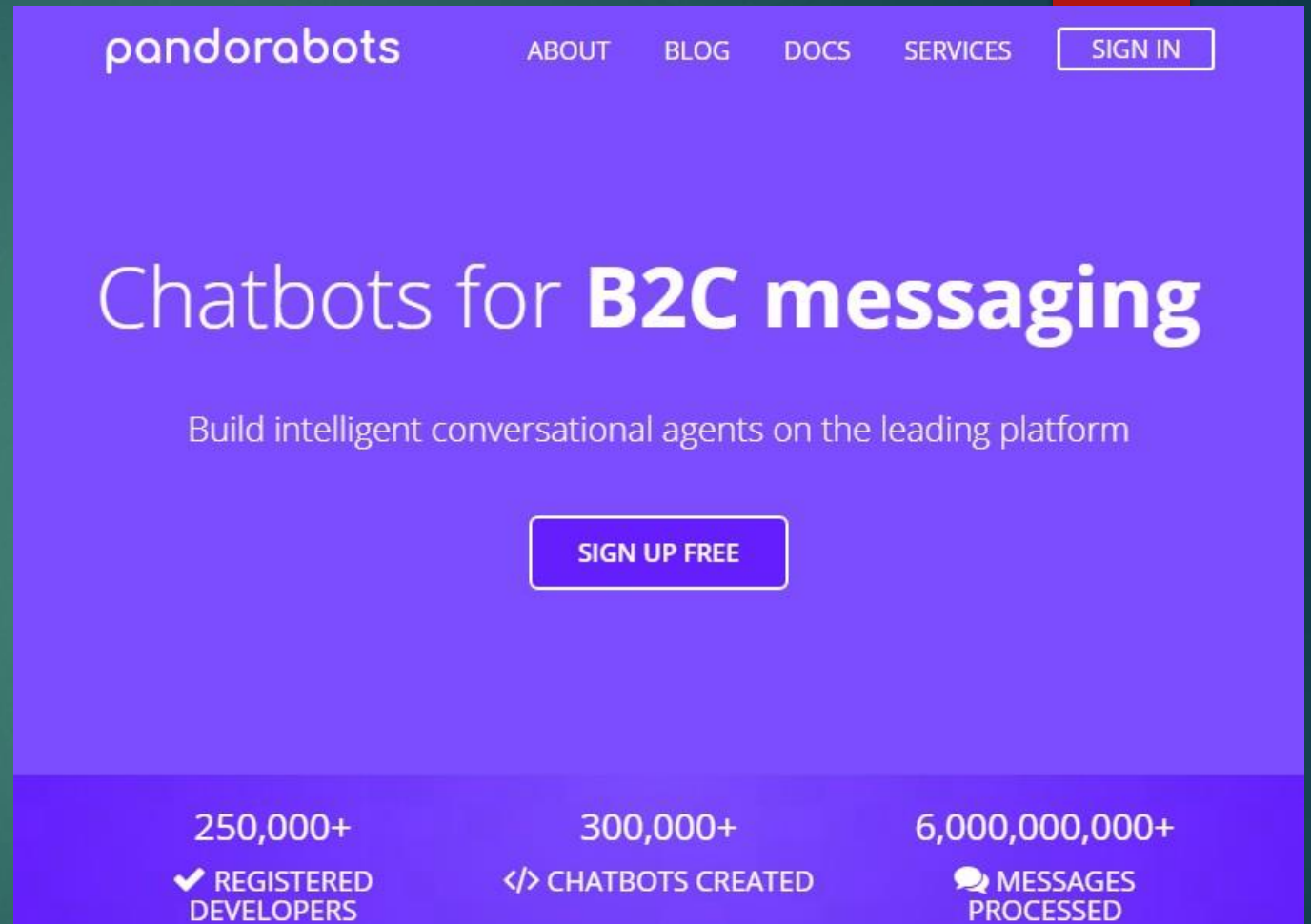
AI, ROBOTS & COMMUNICATION

Agenda

- ▶ Review
- ▶ Remix
- ▶ Preview

Review

- ▶ Chatbots
 - ▶ Origin/History
 - ▶ Critical Questions



The screenshot shows the Pandorabots website homepage. The header is dark blue with the 'pandorabots' logo in white, and navigation links for 'ABOUT', 'BLOG', 'DOCS', 'SERVICES', and a 'SIGN IN' button. The main content area has a dark blue background with the title 'Chatbots for B2C messaging' in large white text. Below the title is the tagline 'Build intelligent conversational agents on the leading platform' and a 'SIGN UP FREE' button. The footer is dark blue and features three statistics: '250,000+ REGISTERED DEVELOPERS', '300,000+ CHATBOTS CREATED', and '6,000,000,000+ MESSAGES PROCESSED'.

pandorabots ABOUT BLOG DOCS SERVICES SIGN IN

Chatbots for **B2C messaging**

Build intelligent conversational agents on the leading platform

SIGN UP FREE

250,000+
✓ REGISTERED DEVELOPERS

300,000+
</> CHATBOTS CREATED

6,000,000,000+
💬 MESSAGES PROCESSED

Review

Origins/History

Problem with Intelligence

“I propose to consider the question, “Can machines think?” This should begin with definitions of the meaning of the terms “machine” and “think.” The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words “machine” and “think” are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, “Can machines think?” is to be sought in a statistical survey such as a Gallup poll. But this is absurd.” – Alan Turing, 1950

A. M. Turing (1950) Computing Machinery and Intelligence. *Mind* 49: 433-460.

COMPUTING MACHINERY AND INTELLIGENCE

By A. M. Turing

1. The Imitation Game

I propose to consider the question, “Can machines think?” This should begin with definitions of the meaning of the terms “machine” and “think.” The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words “machine” and “think” are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, “Can machines think?” is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a survey, which is closely related to it and is

in terms of a game which we call the Imitation Game. In this game, a man (A), a woman (B), and an interrogator stay in a room apart from the interrogator. The interrogator's task is to determine which of the other two is the man and which is the woman. The interrogator asks them questions by labels X and Y, and at the end of the game the interrogator has to decide whether X is B or “X is B and Y is A.” The interrogator asks the questions and B thus:

“What is your hair?”

“It is A's object in the game to try and answer the questions. The interrogator might therefore be:

“How long are your hair?”

“The interrogator the answers should be written, and the interrogator is to have a teleprinter communicating with the players. The questions and answers can be repeated by an interrogator (B) is to help the interrogator. The interrogator asks the questions and B thus: “How long are your hair?” “It is A's object in the game to try and answer the questions. The interrogator might therefore be: “How long are your hair?” “The interrogator the answers should be written, and the interrogator is to have a teleprinter communicating with the players. The questions and answers can be repeated by an interrogator (B) is to help the interrogator. The interrogator asks the questions and B thus: “How long are your hair?” “It is A's object in the game to try and answer the questions. The interrogator might therefore be: “How long are your hair?”

We now ask the question, “What will happen when a machine takes the part of A in this game?” Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, “Can machines think?”

Review

Origins/History

Change the Question - Imitation Game

“Instead of attempting such a definition, I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words. The new form of the problem can be described in terms of a game which we call the ‘imitation game.’ It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex. The interrogator stays in a room apart from the other two. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman..” – Alan Turing, 1950

A. M. Turing (1950) Computing Machinery and Intelligence. *Mind* 49: 433-460.

COMPUTING MACHINERY AND INTELLIGENCE

By A. M. Turing

1. The Imitation Game

“Can machines think?” This should begin with “What do you mean by ‘think’?” and “think.” The definitions might be awkward, but this attitude is essential. The words “can” and “machines” are to be found by the interrogator. It is to be sought in a way which is not absurd. Instead of attempting such a definition, I shall replace the question by another, which is closely related to it and is

expressed in terms of a game which we call the Imitation Game. It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex. The interrogator stays in a room apart from the other two. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman. He asks them questions, and they answer. At the end of the game he says either “X is B and Y is A.” or “X is A and Y is B.” The interrogator must be honest.

Q: “Air?”

A: “It is A’s object in the game to try and answer the question so that the interrogator will be misled. He might therefore be:

“About nine inches long.”

Q: “The interrogator the answers should be written, and the answers can be repeated by an interrogator. The object of the game for the interrogator is to help the interrogator. The interrogator must be honest. She can add such things as

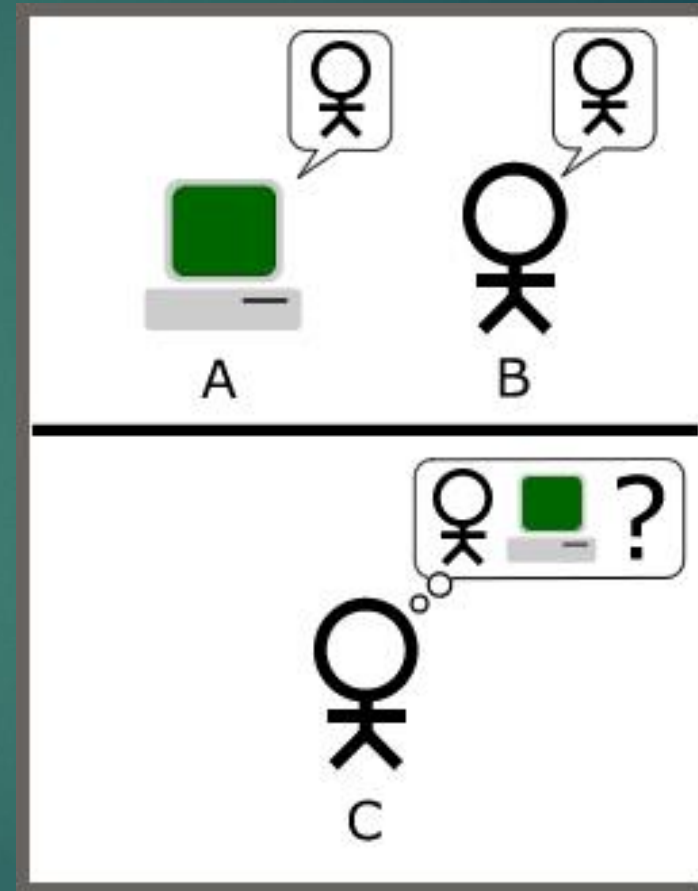
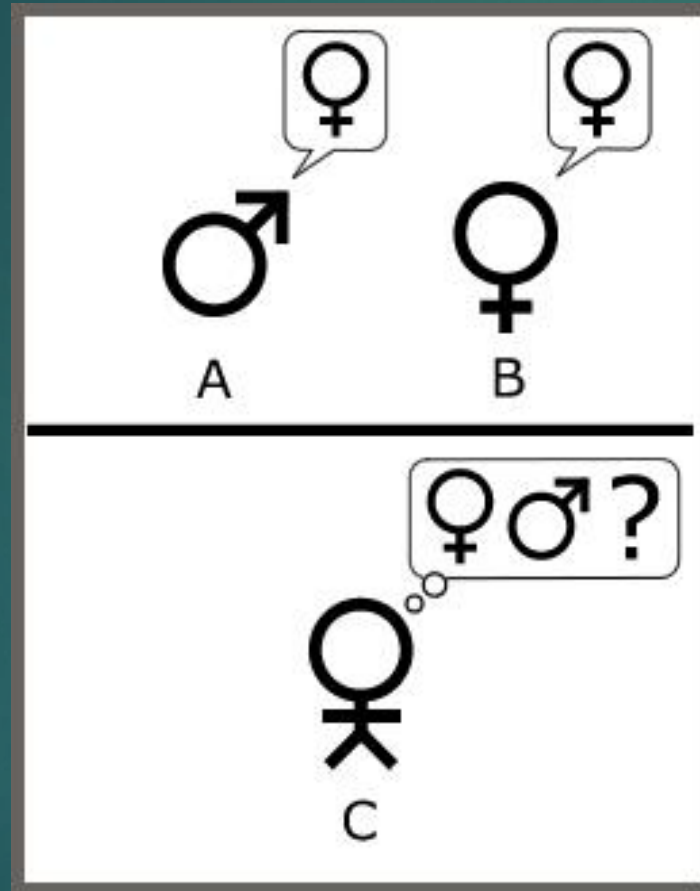
“I am the woman, don’t listen to him.” to her answers, but it will avail nothing as the man can make similar remarks.

We now ask the question, “What will happen when a machine takes the part of A in this game?” Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, “Can machines think?”

Review

Origins/History

The Imitation Game



Review

Origins/History

```

=====
EEEEEEEE L      IIIIII ZZZZZZZ      AAA
E         L      I      Z
E         L      I      Z
EEEEEE   L      I      Z
E         L      I      Z
E         L      I      Z
EEEEEEEE LLLLLLL IIIIII ZZZZZZ      A
=====
ELIZA > (PLEASE TYPE IN ALL CAPS) WHAT'S YOUR NAME DEAR ?
AMIT
ELIZA > HI, I'M ELIZA. WHAT DO YOU WANT TO TALK ABOUT ?
AMIT > CAN I TALK ABOUT MY PROBLEM ?
ELIZA > SURE... !
AMIT > DUE TO ON GOING EXAMS IN COLLEGE, I HAVE A LOT OF STRESS.
ELIZA > PLEASE RELAX A LITTLE. SLEEP WELL.
AMIT > THANKS FOR YOUR ADVICE.
ELIZA > NO MENTION.
AMIT > BYE
ELIZA > BYE AND KEEP IN TOUCH...
=====

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Joseph Weizenbaum - 1966

Computational Linguistics

D. G. BOBROW, Editor

Contextual Understanding by

Further, what I wish to report here should not be confused with what is generally called content analysis. In the latter situation we are concerned with the fragments of natural language that occur in conversations, not with complete texts. Consequently, we cannot rely on the texts being analyzed to be grammatically complete or correct. No theory that depends on parsing of presumably well-formed sentences can be of much help. We must depend on heuristics and other such impure devices instead. The first program to which I wish to call attention is a particular member of a family of programs which has come to be known as DOCTOR. The family name of these programs is ELIZA. This name was chosen because of the programs, like the Eliza of Pygmalion fame, can be taught to speak increasingly well. DOCTOR causes ELIZA to respond roughly as would certain psychotherapists (Rogerians). ELIZA performs best when its human respondent is initially instructed to "talk" to it, via a typewriter, of course, just as one would to a psychiatrist.

I chose this mode of conversation because the psychiatric interview is one of the few examples of categorized dyadic natural language communication in which one of the participants is free to assume the pose of knowing nothing of the real world. If, for example, one were to tell a psychiatrist "I went for a boat ride" and he replied "Tell me about boats," one would not assume that he knew nothing about boats, but that he had some reason for so directing the subsequent conversation. It is important to note that this assumption is one made by the psychiatrist. Whether it is realistic or not is an altogether different question. In any case, it has a crucial psychological utility in that it serves the speaker to maintain a sense of being heard and understood. The speaker thus defends his impression (which even in real life may be illusory) by attributing to his conversational partner some knowledge of background knowledge, insights and reasoning. But again, these are the speaker's contribution to the conversation. They manifest themselves inferentially in the interpretations he makes of the offered responses. From

many ideas that potentially aid understanding are communicated by gestures, intonations, pauses, and so on. All of these are unavailable to readers of telegrams—be they computers or humans.

Work reported herein was supported (in part) by Project MAC, an MIT research program sponsored by the Advanced Research Projects Agency, Department of Defense, under Office of Naval Research Contract Number N00014-67-1-102-01.

From the purely technical programming point of view, the psychiatric interview has the advantage that it eliminates the need for storing explicit information about the real world.

The human speaker will contribute much to clothe ELIZA's responses in vestments of plausibility. However, he will not defend his illusion (that he is being understood) against all odds. In human conversation a speaker will

Review

Origins/History

Men are all alike
IN WHAT WAY

They're always bugging us about something or other
CAN YOU THINK OF A SPECIFIC EXAMPLE

Well, my boyfriend made me come here.

YOUR BOYFRIEND MADE YOU COME HERE

He says I'm depressed much of the time.

I AM SORRY TO HEAR YOU ARE DEPRESSED

It's true. I am unhappy.

DO YOU THINK COMING HERE WILL HELP YOU NOT TO

I need some help, that much seems certain.

WHAT WOULD IT MEAN TO YOU IF YOU GOT SOME HELP

Perhaps I could learn to get along with my mother.

TELL ME MORE ABOUT YOUR FAMILY

My mother takes care of me.

WHO ELSE IN YOUR FAMILY TAKES CARE OF YOU

My father

YOUR FATHER. WHAT RESEMBLANCE DO YOU SEE

You are not very aggressive but I think you don't want me to notice

WHAT MAKES YOU THINK I AM NOT VERY AGGRESSIVE

You don't argue with me.

WHY DO YOU THINK I DON'T ARGUE WITH YOU

You are afraid of me.

DOES IT PLEASE YOU TO BELIEVE I AM AFRAID OF YOU

My father is afraid of everybody.

WHAT ELSE COMES TO MIND WHEN YOU THINK OF YOUR

Bullies

DOES THAT HAVE ANYTHING TO DO WITH THE FACT THAT YOUR

BOYFRIEND MADE YOU COME HERE

“ELIZA created the most remarkable illusion of having understood in the minds of many people who conversed with it. People who know very well that they were conversing with a machine soon forgot that fact, just as theatergoers, in the grip of suspended disbelief, soon forget that the action they are witnessing is not “real.” This illusion was especially strong and most tenaciously clung to among people who know little or nothing about computers. They would often demand to be permitted to converse with the system in private, and would, after conversing with it for a time, insist, in spite of my explanations, that the machine really understood them.” – Joseph Weizenbaum 1976

Review

Origins/History

Kenneth Colby's PARRY (1972)

Unlike ELIZA, which was originally designed to emulate the conversational activities of a Rogerian therapist, PARRY (which was written in LISP) simulated a person with paranoid schizophrenia. In 1972, PARRY and a version of ELIZA that was named DOCTOR were connected over ARPANET (the precursor to the internet) and interacted with each other in a highly publicized demonstration at ICCO 1972 (International Conference on Computer Communications).

PARRY encounters ELIZA

The session recorded below actually happened on 18 September 1972 and is herewith reproduced for your entertainment.

ELIZA: Good Evening.

ELIZA: Tell me your problems. Please terminate input with a period or a question mark.

PARRY: People get on my nerves sometimes.

ELIZA: I am not sure I understand you fully.

PARRY: You should pay more attention.

ELIZA: Suppose you should pay more attention.

PARRY: You're entitled to your own opinion.

ELIZA: What makes you think I am entitled to my own opinion?

PARRY: It bothers me just to be around people in general.

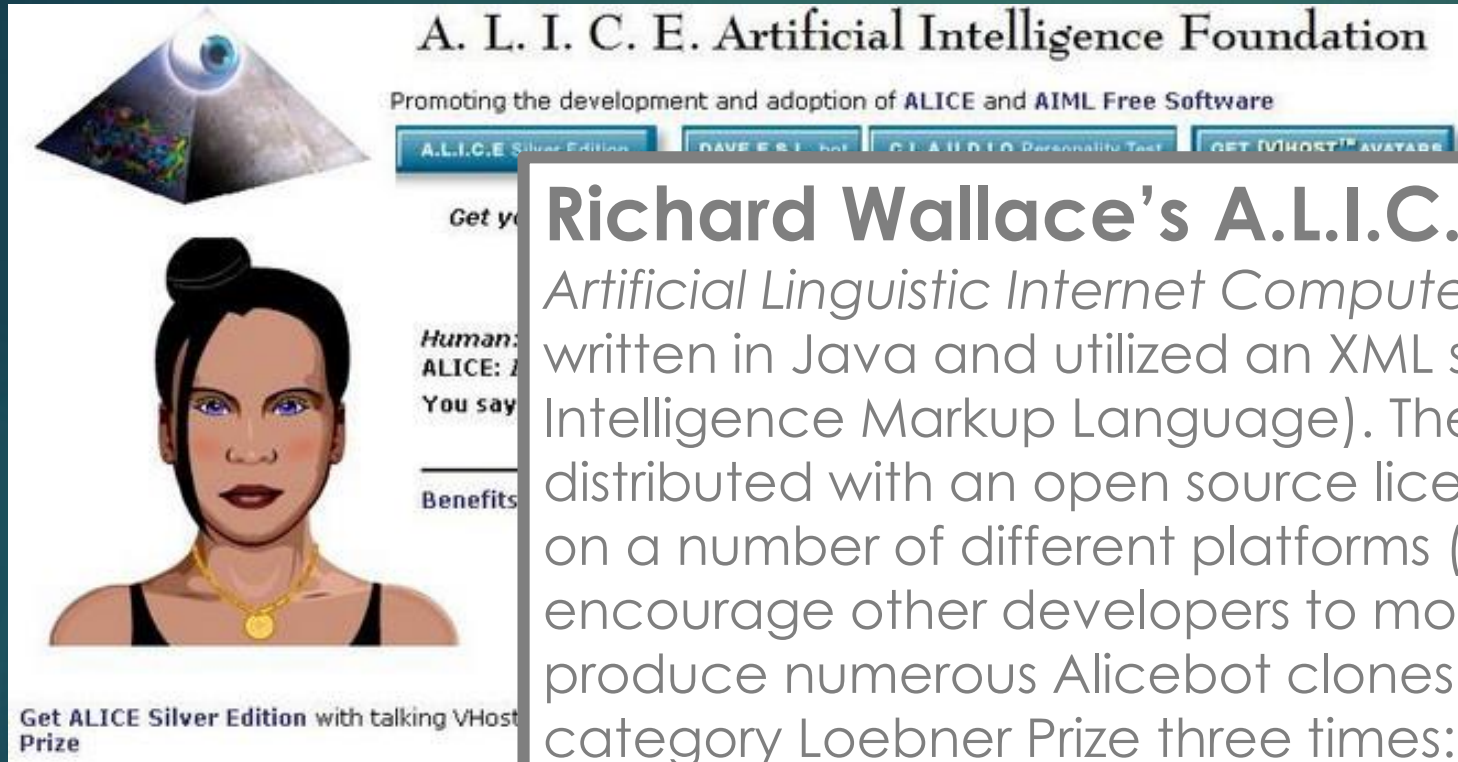
ELIZA: Please go on.

Michael Mauldin's CHATTERBOT (1994)

Unlike ELIZA and PARRY, which could only engage in conversational interactions with a single dedicated user, CHATTERBOT was designed to be an NPC in the virtual world of TinyMUD. Mauldin (1994, 16) explains, “We created a computer controlled player, a ‘Chatter Bot,’ that can converse with other players, explore the world, discover new paths through various rooms, answer players’ questions about navigation (providing the shortest-path information on request), and answer questions about other players, rooms and objects.” Since this initial demonstration in the virtual world of TinyMUD, bots of various kinds and configurations have become a standard feature in computer games and online virtual worlds

Review

Origins/History



Richard Wallace's A.L.I.C.E. (1995)

Artificial Linguistic Internet Computer Entity (A.L.I.C.E.) was originally written in Java and utilized an XML schema called AIML (Artificial Intelligence Markup Language). The aim of AIML, which was distributed with an open source license and has been implemented on a number of different platforms (i.e. Pandorabots), was to encourage other developers to modify the initial program and produce numerous Alicebot clones. A.L.I.C.E. won the restricted category Loebner Prize three times: in 2000, in 2001, and in 2004. This prize, initiated by Hugh Loebner in 1991, is "the first formal instantiation of the Turing Test" (Loebner 2017). Additionally, filmmaker Spike Jonze's has credited his personal experience with an Alicebot as the source of inspiration for the film *Her*.

Review

Origins/History

Pandorabots - AIML

udc

1

<?xml version="1.0" encoding="UTF-8"?>

2

<aiml>

3

4

5

<category>

6

<pattern>*</pattern>

7

<template>

8

<random>

9

What whas that?

10

I don't understand.

11

Come again.

12

</random>

13

</template>

14

</category>

15

16

<category>

17

<pattern>hi</pattern>

18

<template>hello world.</template>

19

</category>

20

21

<category>

22

<pattern>Hey ^</pattern>

23

<template>Leave me alone</template>

24

</category>

25

26

<category>

27

<pattern>What is your name</pattern>

28

<template>I am a bot. Thank you for your interest</template>

29

</category>

30

31

<category>

32

<pattern>Do you take bitcoin</pattern>

33

<template>I do not deal in sham currencies</template>

34

</category>

35

36

</aiml>

37


Status: Saved

Editing: udc.aiml

No. of Items: 5

Last Modified: 3/7/2018,
7:22:25 PM

Load
Order: 1



Review

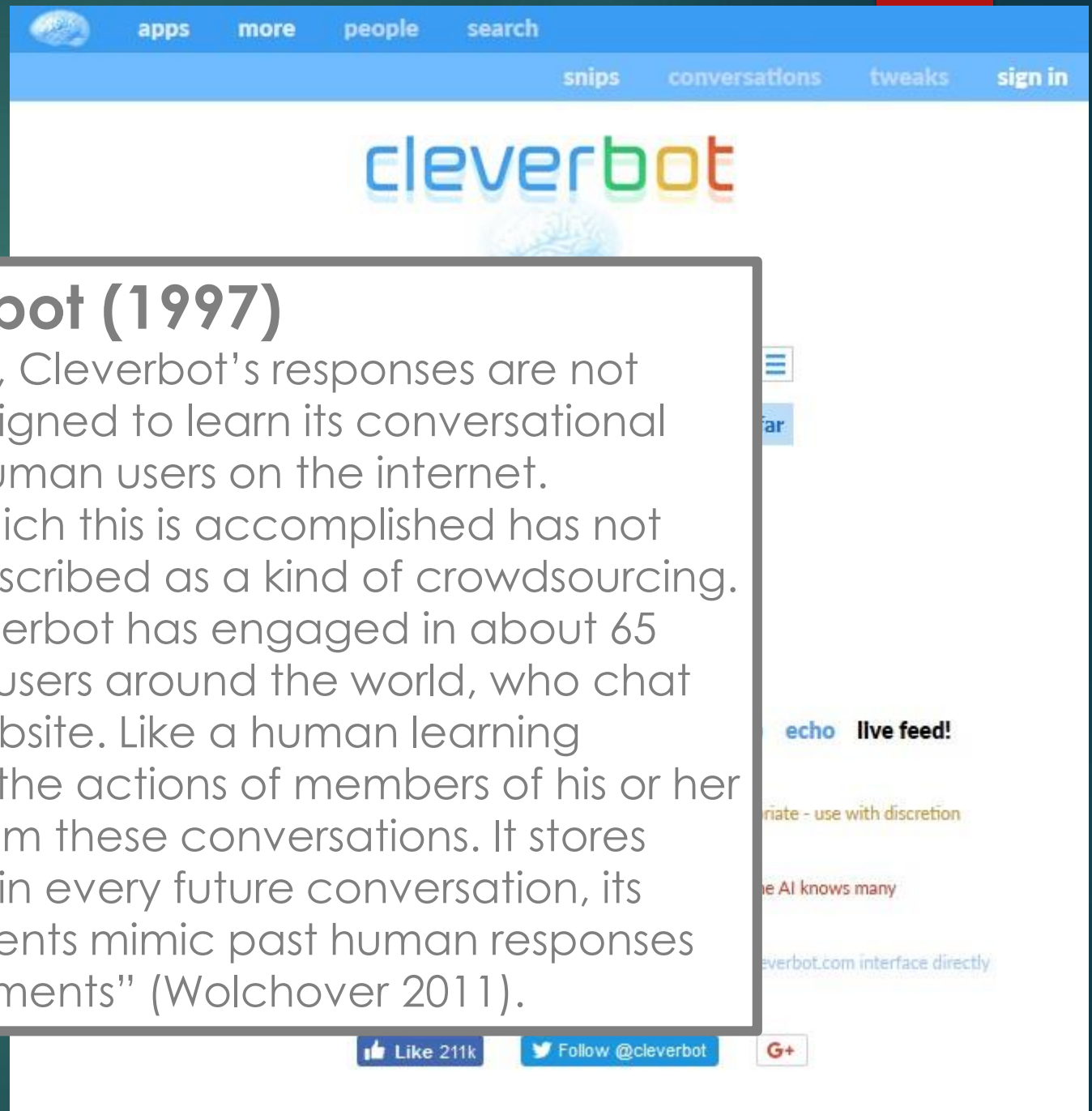
Origins/History

Rollo Carpenter - Cleverbot (1997)

Unlike previous chatterbot systems, Cleverbot's responses are not prescribed. Instead, the bot is designed to learn its conversational behaviors from interactions with human users on the internet.

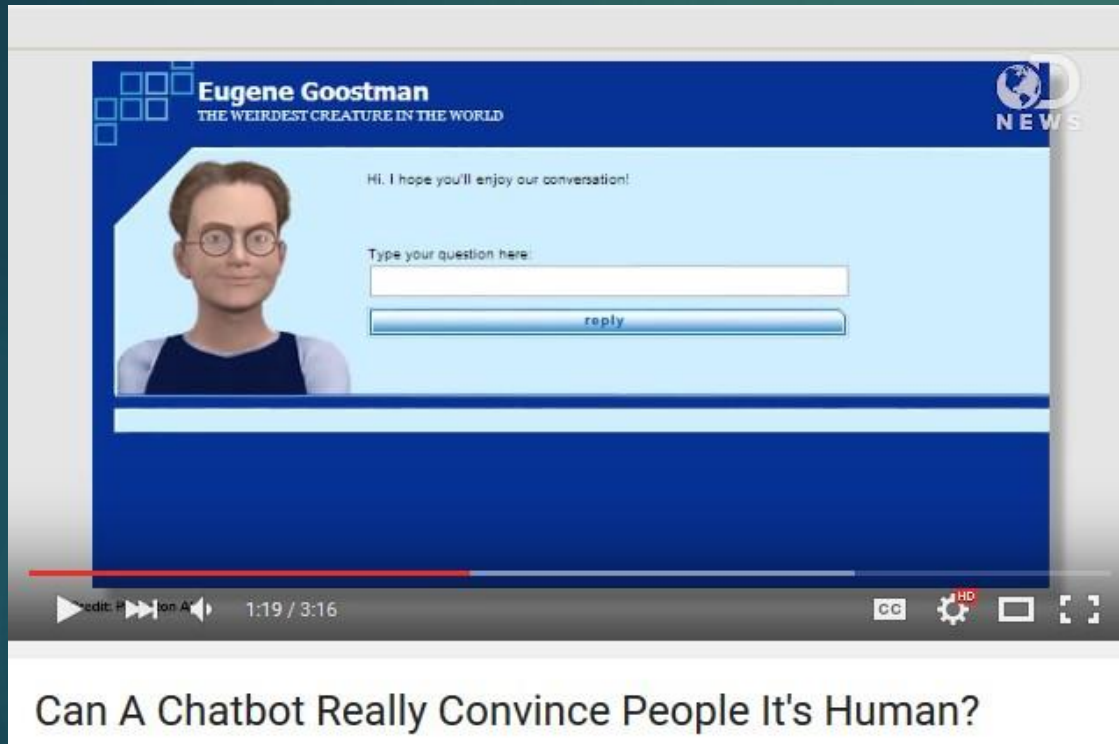
Although the exact method by which this is accomplished has not been made public, it has been described as a kind of crowdsourcing.

"Since coming online in 1997, Cleverbot has engaged in about 65 million conversations with Internet users around the world, who chat with it for fun via the Cleverbot website. Like a human learning appropriate behavior by studying the actions of members of his or her social group, Cleverbot 'learns' from these conversations. It stores them all in a huge database, and in every future conversation, its responses to questions and comments mimic past human responses to those same questions and comments" (Wolchover 2011).



Review

Origins/History



Can A Chatbot Really Convince People It's Human?

<https://www.youtube.com/watch?v=njmAUhUwKys>

Home Page of The Loebner Prize in Artificial Intelligence

"The First Turing Test"



What is the Loebner Prize?

The Loebner Prize for artificial intelligence (AI) is the first formal instantiation of a [Turing Test](#). The test is named after [Alan Turing](#) the brilliant British mathematician. Among his many accomplishments was basic research in computing science. In 1950, in the article [Computing Machinery and Intelligence](#) which appeared in the philosophy journal *Mind*, Alan Turing asked the question "Can a Machine Think?" He answered in the affirmative, but a central question was: "If a computer could think, how could we tell?" Turing's suggestion was, that if the responses from the computer were indistinguishable from that of a human, the computer could be said to be thinking. This field is generally known as natural language processing.

In 1990 [Hugh Loebner](#) agreed with The Cambridge Center for Behavioral Studies to underwrite a contest designed to implement the Turing Test. Dr. Loebner pledged a Grand Prize of \$100,000 and a Gold Medal (pictured above) for the first computer whose responses were indistinguishable from a human's. Such a computer can be said "to think." Each year an annual cash prize and a bronze medal is awarded to the **most** human-like computer. The winner of the annual contest is the best entry relative to other entries that year, irrespective of how good it is in an absolute sense.

Review

Projections/Future

CHATBOTS

Five Reasons Why Chatbots are the Future of Customer Service

With improved technology, nuanced communication and greater reliability, chatbots will allow businesses to achieve organizational goals swiftly

215
shares



Add to Queue

NEXT ARTICLE



Image credit: Shutterstock

TOP 5 CHATBOT INSIGHTS FOR THE FUTURE

2020



85%

Customer Interactions will be handled without a human agent

Gartner Report

2021



50%

of Enterprises will spend more on chatbots than mobile apps

Gartner Report

2022



\$8 Bn.

in Cost Savings from the use of Chatbot conversations

Review

Critical Questions

1. Communication

- Can chatbots communicate?
- Chatbots are computer programs designed to exhibit conversational behaviors. But is this communication? (And what do we mean by “communication” in this context)

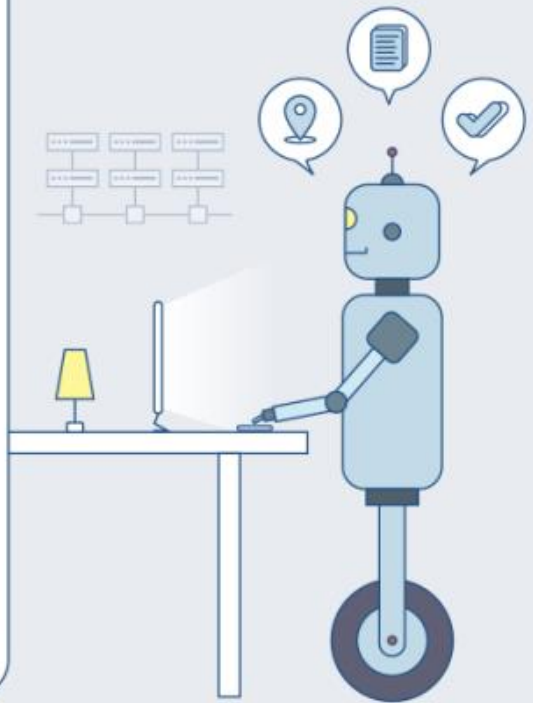
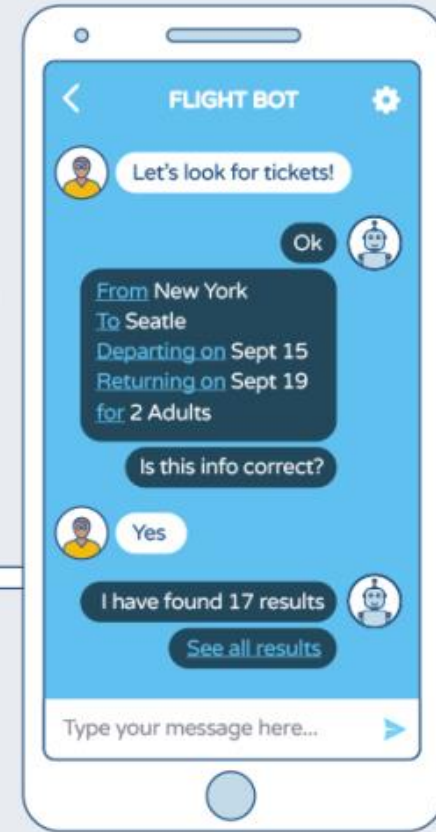


Review

Critical Questions

2. Employment

- Will chatbots displace/replace human workers?
- How does/will this effect the discipline of communication?
- How can/should we respond to this opportunity/challenge?



Review

Critical Questions

3. Deception

- Are chatterbots deceptive?
- Robert Epstein – Fell in love with and had an online affair with a chatbot called Ivana. Is this a form of deception? Is it fraud?

(perspectives)

From Russia, with Love

How I got fooled (and somewhat humiliated) by a computer

BY ROBERT EPSTEIN

IT ALL STARTED with an online dating service. I was looking for a date. Like most men (we dogs), I made my initial judgment based largely on a photo. Yes, that's shallow, and when one is online, it's also fairly stupid because it's all too easy to fake.

She blew it. She showed a slim, attractive supposedly living in Russia from me. She didn't look like herself, and her English suggested that she was a teenager. That's okay, I thought, of my grandparents' generation after all.

She was a variation on a theme I had been more of a fan of, this moniker would be "The Fabulous Desha." It is a 2001 French film by Tautou as Amélie, a woman who has a unique way of communicating with others. Hmm. I wrote my e-mail quite quickly and also admitted that I was in Russia, not California.

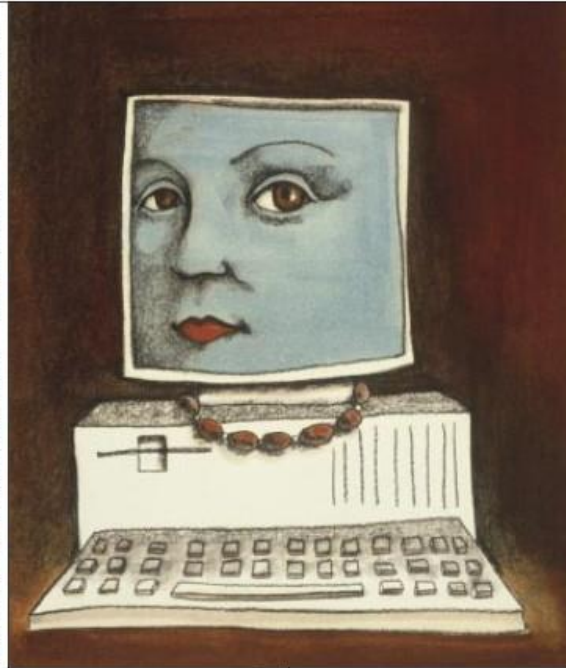
Normally I find that kind of distance daunting, but her photos were so attractive and her e-mails so warm that I continued to correspond with her. She sent me her real name; I'll call her "Ivana."

Here is an example of the kind of e-mail I received from her:

I have told to mine close friends about you and to my parents and them happy that I really interested someone and regardless of the fact that not here in Russia and all from

them happy for me, that I have met you. I have very special feelings about you ... It—in the same way as the beautiful flower blossoming in mine soul ... I only cannot explain ... but I confident, that you will understand me so I wish to know that makes you, think, and I shall wait your answer, holding my fingers have crossed ...

After two months of e-mails I started to get, well, not suspicious exactly but at least concerned. Online dating can be a slow, frustrating process [see "The Truth about Online Dating," by Robert Epstein; SCIENTIFIC AMERICAN MIND, February/March 2007]. Our romance was progressing, especially slowly: no phone calls, very vague talk on Ivana's part about get-



CHRIS RASCHKA/Getty Images

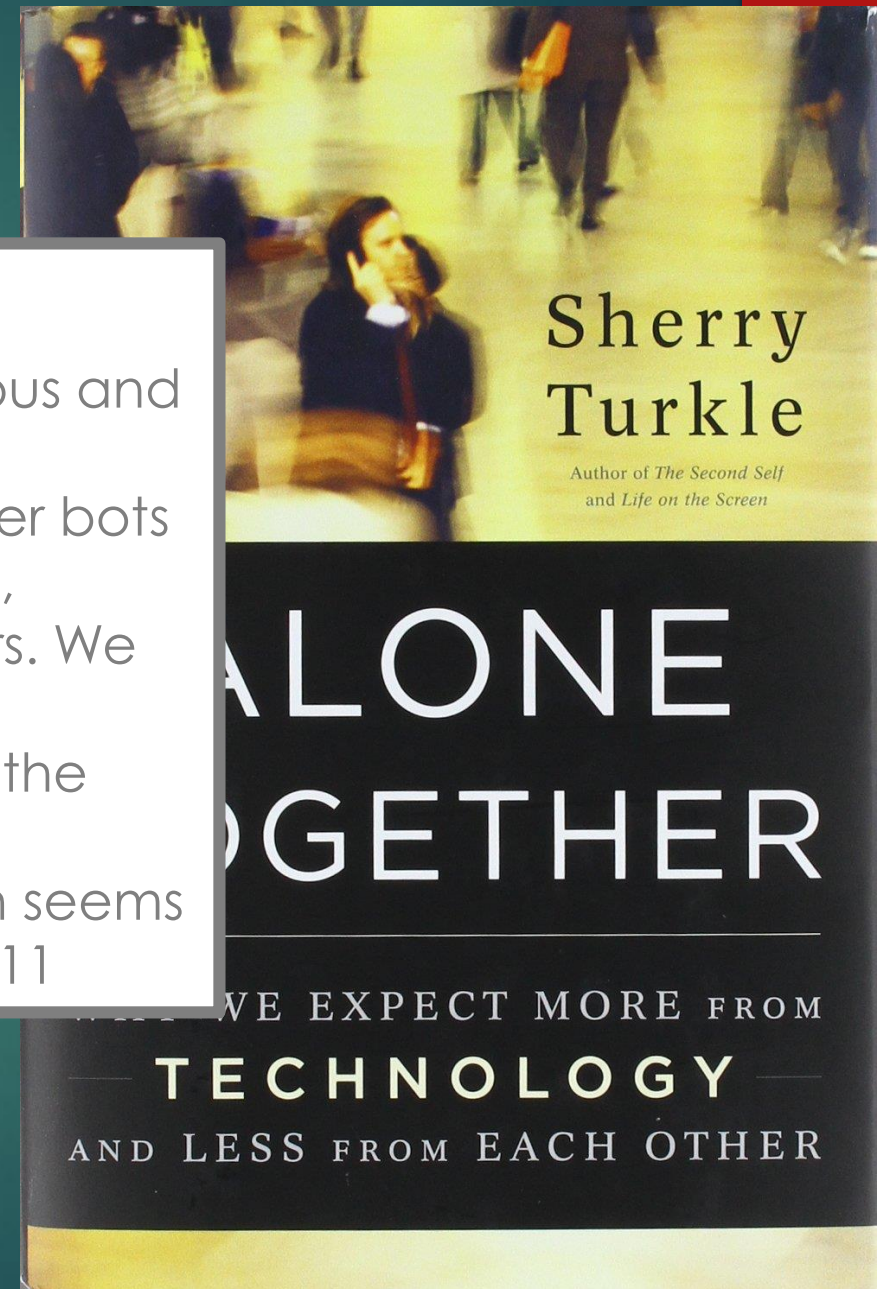
(After **two months of e-mails** I started to get, well, not suspicious exactly but at least concerned.)

Review

Critical Questions

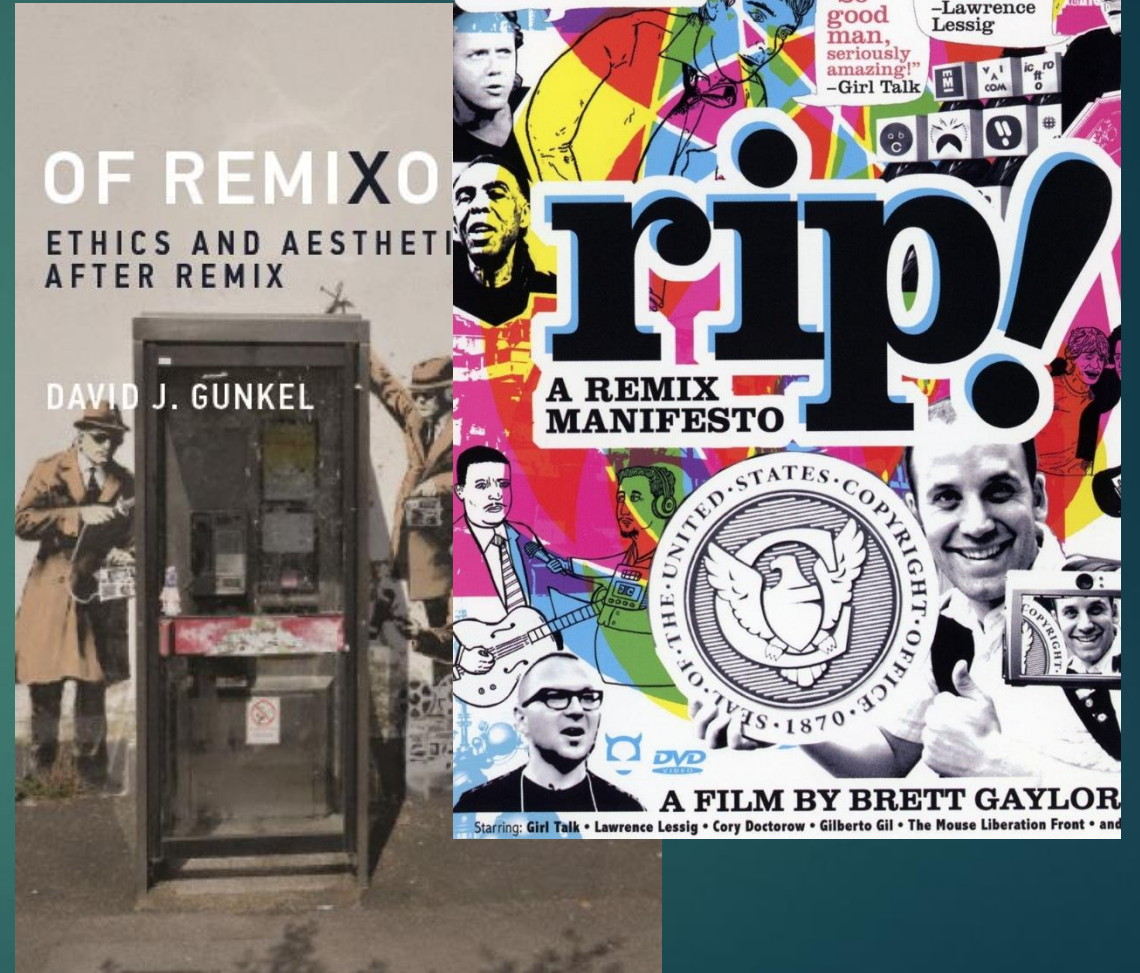
4. Social Problems

- Are interactions with chatbots dangerous and antisocial?
- “I find people willing to seriously consider bots not only as pets but as potential friends, confidants, and even romantic partners. We don’t seem to care what their artificial intelligences ‘know’ or ‘understand’ of the human moments we might ‘share’ with them...the performance of connection seems connection enough.” – Sherry Turkle 2011



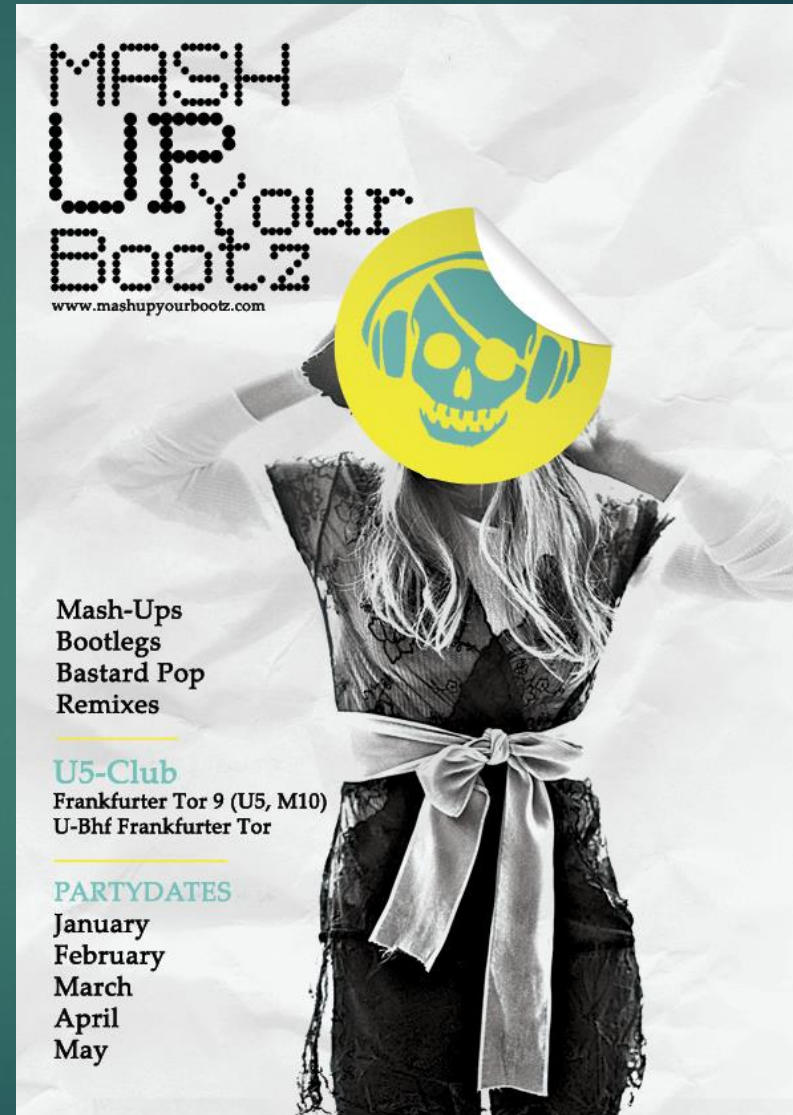
Review

- ▶ Digital Media & Remix
 - ▶ *Rip! A Remix Manifesto* (video)
 - ▶ *Of Remixology* – Intro & Premix



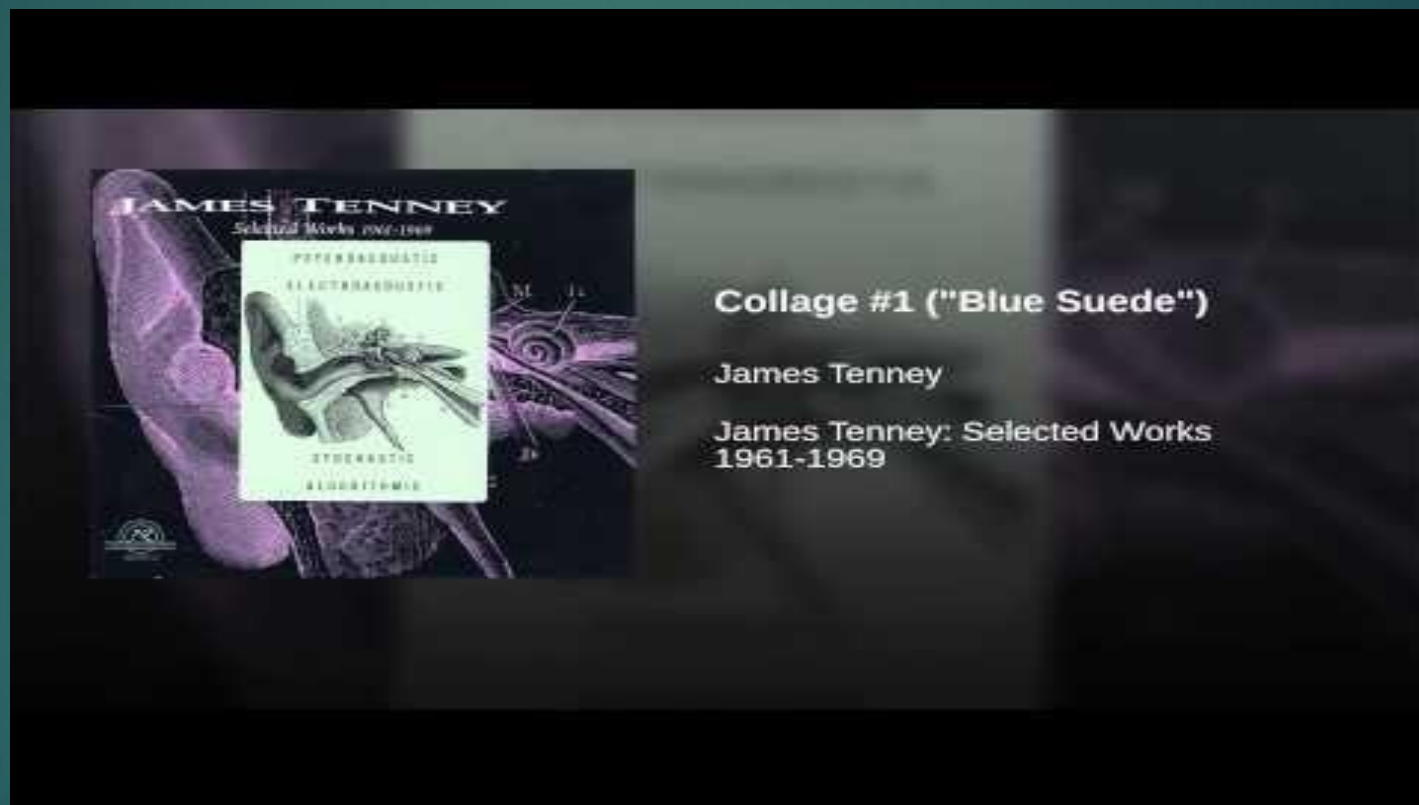
Remix Exercise

- ▶ Examples
- ▶ Tools
- ▶ Techniques



Examples

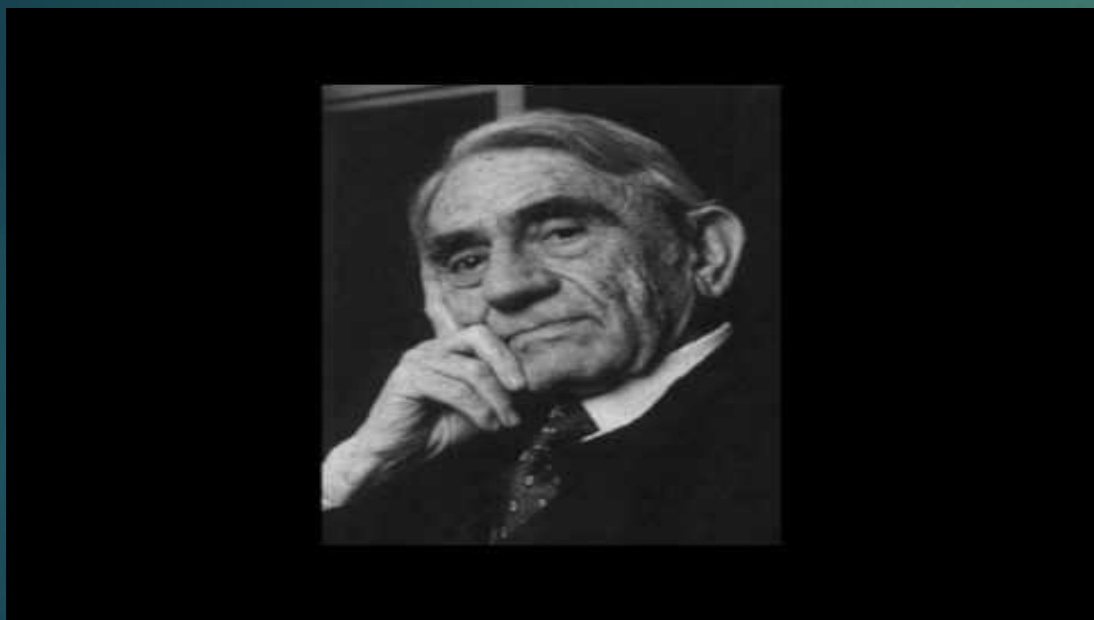
Audio Collage



James Tenney - "Collage #1 (Blue Suede)" 1961

Examples

Musique Concrete



Pierre Schaeffer "Etude noire" (1948)



Beatles "Revolution No. 9" (1968)

<https://www.youtube.com/watch?v=SNdcFPjGsm8>

Examples

Mashup

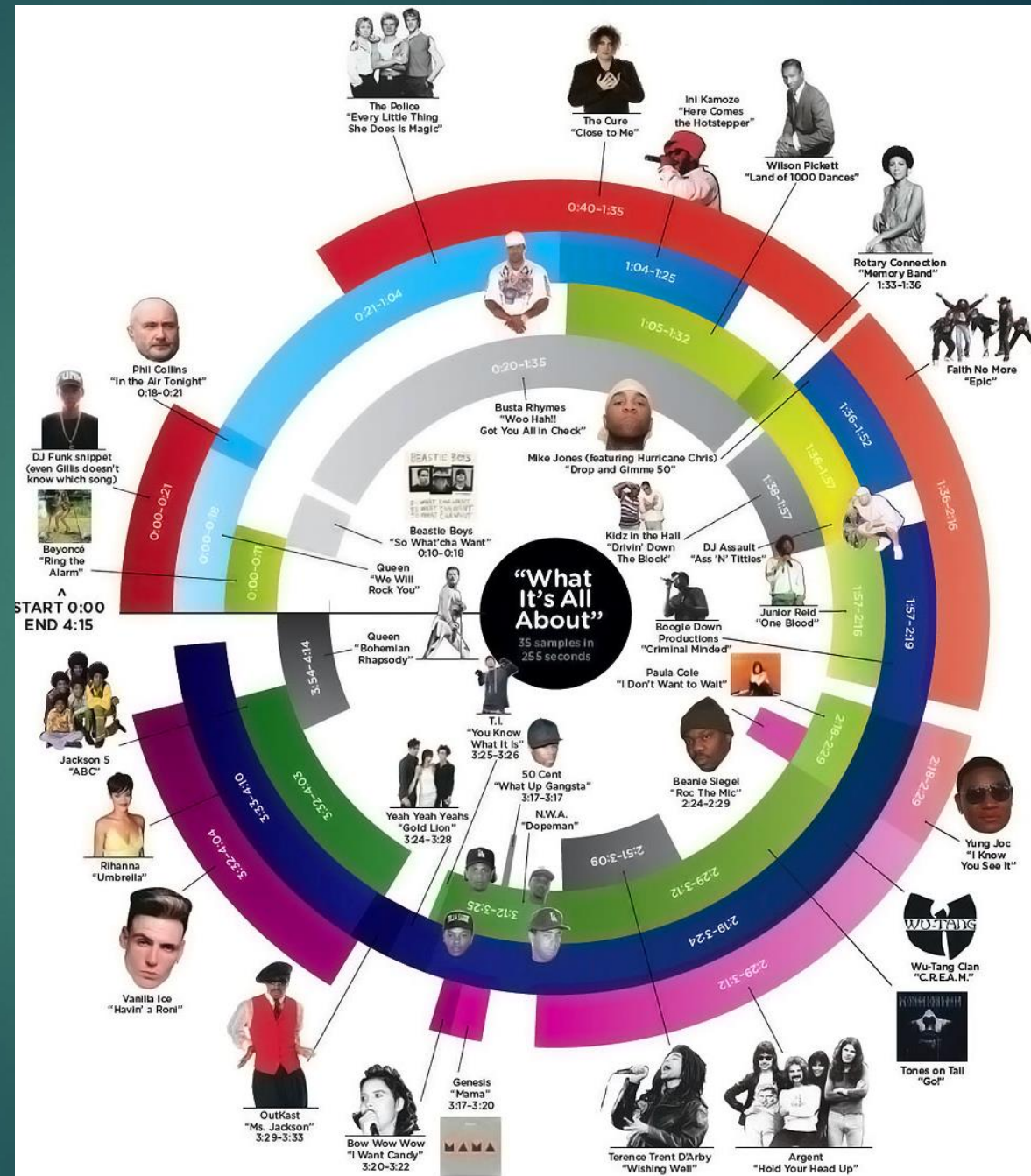


Girl Wants (to say goodbye to) Rock And Roll

Examples

Remix

Girl Talk (Gregg Gillis)
"What It's All About" (2008)



Tools



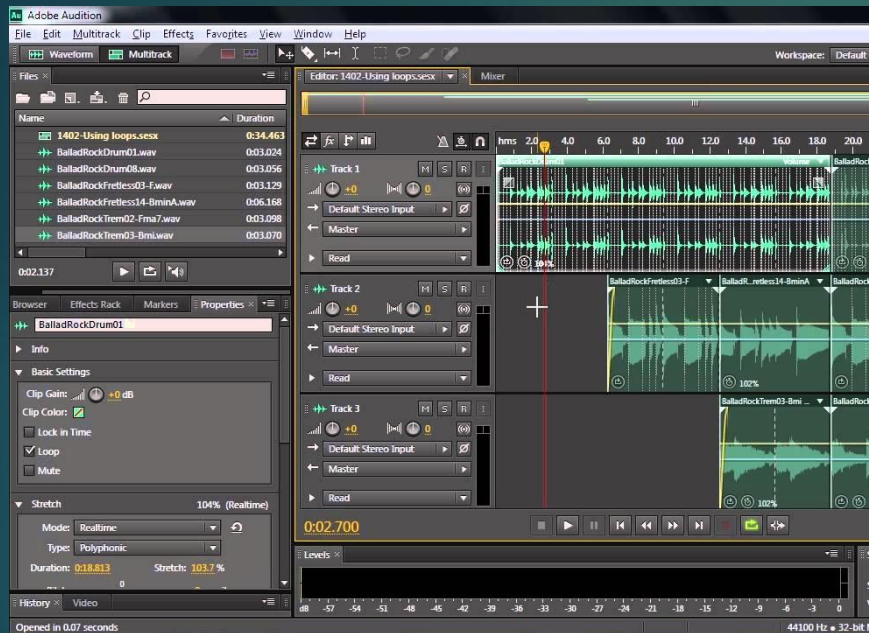
Audio Tape
Pierre Schaeffer (1948)



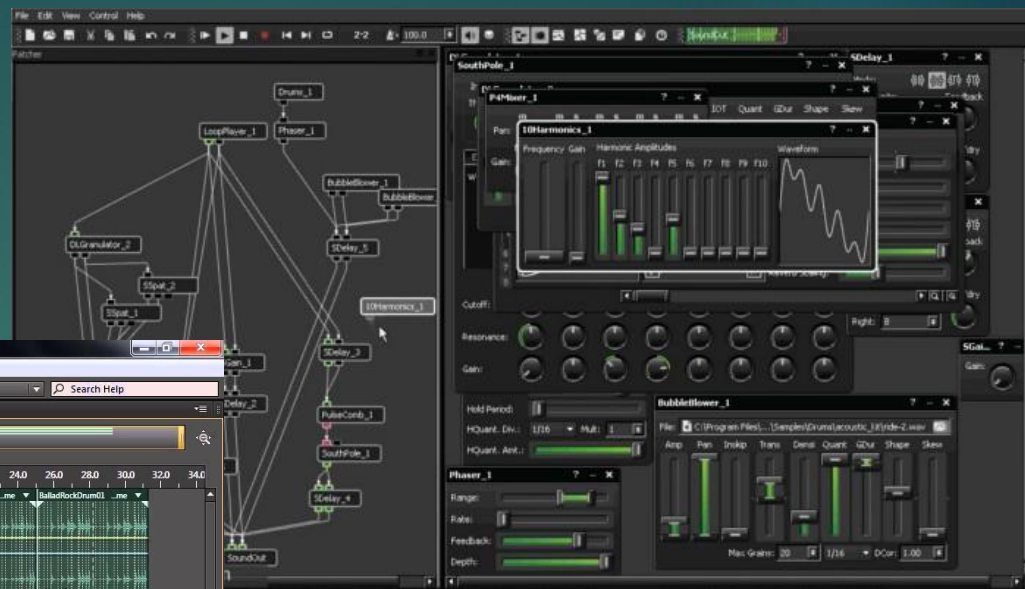
Turntables/Vinyl
Grandmaster Flash (1974)



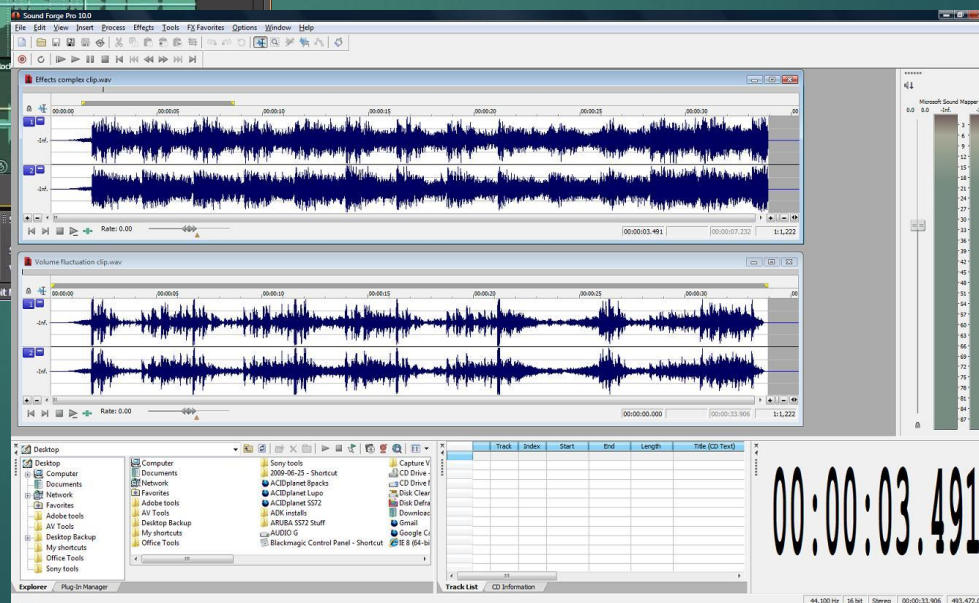
Laptop/digital samples
Girl Talk (2009)



Adobe Audition



Audiomulch



Sony Sound Forge

Tools

Audacity
<http://www.audacityteam.org>



The screenshot shows the Audacity website homepage. The header features the Audacity logo, a search bar, and navigation links: HOME, ABOUT, DOWNLOAD, HELP, CONTACT, GET INVOLVED, DONATE, and COPYRIGHT. The main content area has a large blue background with the text "Free, open source, cross-platform audio software". Below this, it states "Audacity is an easy-to-use, multi-track audio editor and recorder for Windows, Mac OS X, GNU/Linux and other operating systems. Developed by a group of volunteers as open source." To the right, there is a preview window titled "Concerto" showing the Audacity software interface. The interface includes a menu bar (File, Edit, Select, View, Transport, Tracks, Generate, Effect, Analyze, Help), a toolbar with various editing tools, a transport control section with play, stop, and record buttons, and a multi-track editor with two tracks labeled "Track 1" and "Track 2". The bottom of the website features a "DOWNLOAD AUDACITY" button with icons for Windows, Mac, and Linux, followed by the text "Latest version : 2.3.1" and links for "View Release Notes" and "Documentation".

Audacity®

HOME ABOUT DOWNLOAD HELP CONTACT GET INVOLVED DONATE COPYRIGHT

Free, open source,
cross-platform
audio software

Audacity is an easy-to-use, multi-track audio editor
and recorder for Windows, Mac OS X, GNU/Linux
and other operating systems.
Developed by a group of volunteers as open source.

Concerto

File Edit Select View Transport Tracks Generate Effect Analyze Help

Microphone (Realtek High Definition) 2 (Stereo) Recording Channels Speakers (Realtek High Definition)

Track 1 Track 2

Project Rate (Hz) Snap-To Audio Position

44100 Off 00 h 02 m 23.653 s 00 h 02 m 23.653 s 00 h 02 m 36.776 s

Stopped.

DOWNLOAD AUDACITY

Latest version : 2.3.1

View Release Notes

Documentation

Techniques

1. Source material

- Obtain your own
- Use my samples

<http://gunkelweb.com/coms465/remix.html>

COMS 465: Remix Exercise

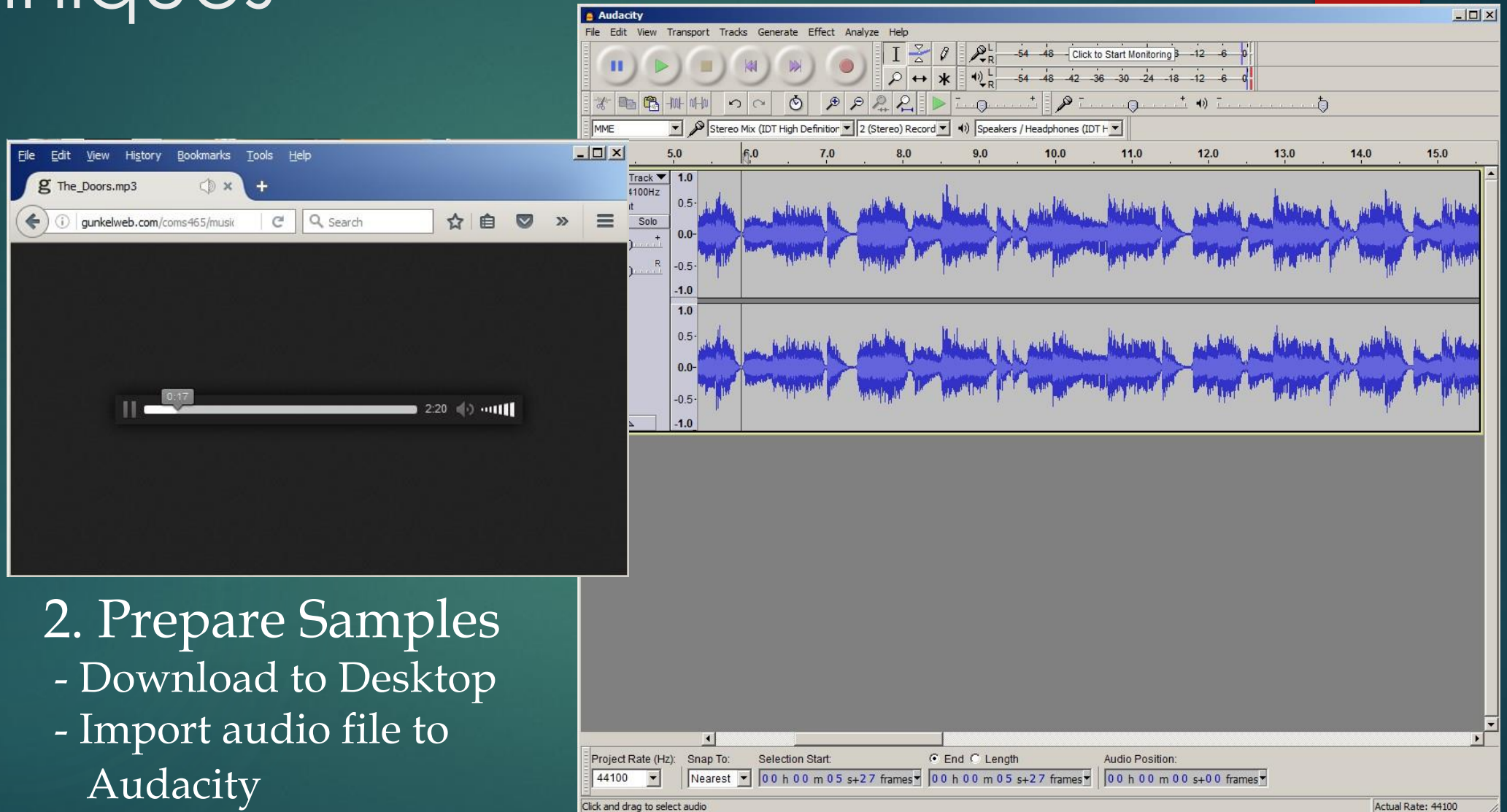
Acapella Vocals

- [Blondie - Heart of Glass](#)
- [Carly Rae Jepsen - Call Me Maybe](#)
- [Maroon 5 - Moves Like Jagger](#)
- [REM - Losing My Religion](#)
- [Rihanna - Diamonds](#)
- [Snoop Dogg - Next Episode](#)
- [The Doors - Riders on the Storm](#)

Music (without vocals)

- [Nirvana](#)
- [Led Zeppelin](#)
- [Generic](#)
- [Beatles](#)
- [Joy Division](#)

Techniques



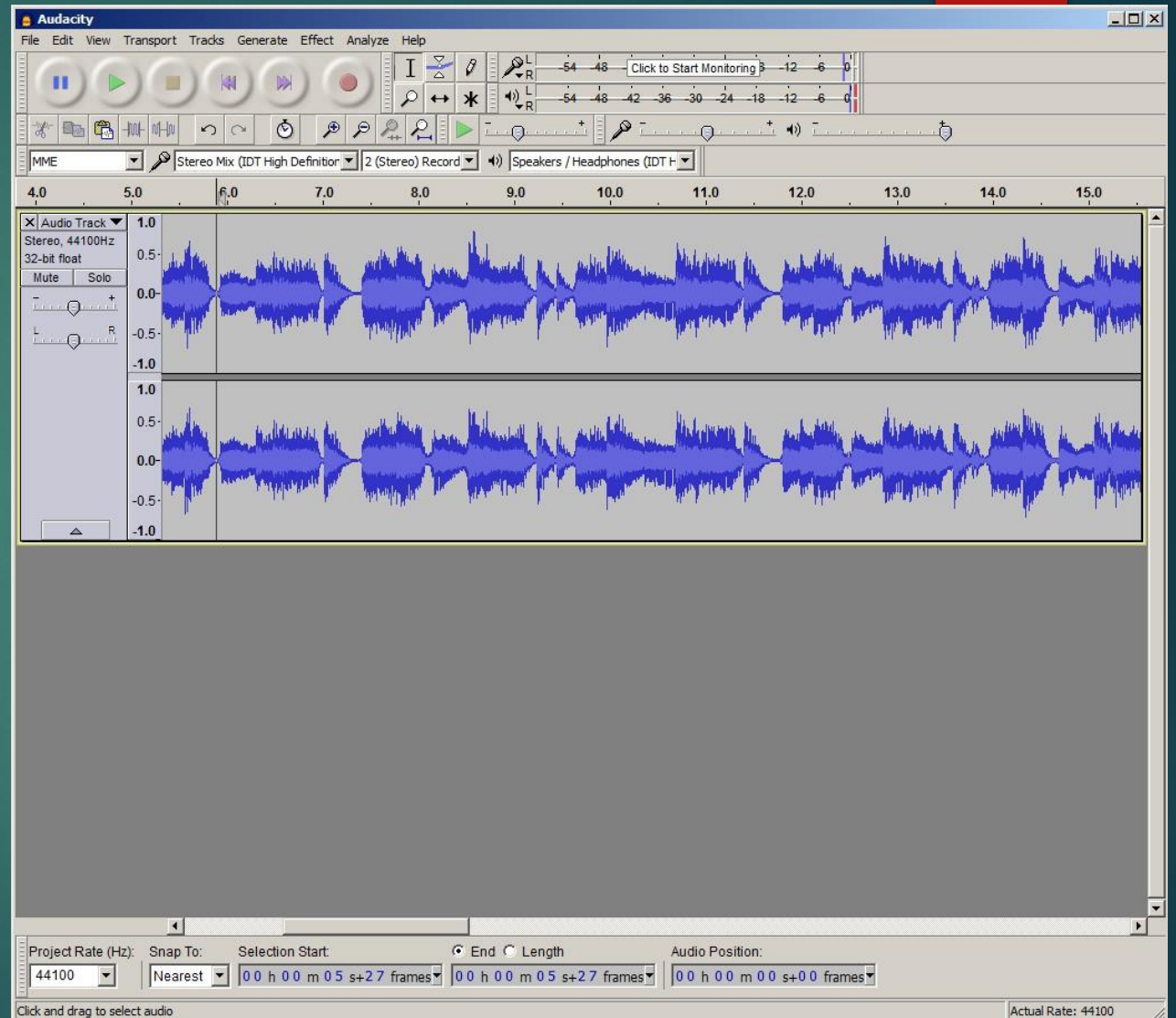
The image displays two software interfaces side-by-side. On the left is a web browser window showing a music player for 'The_Doors.mp3' from 'gunkelweb.com/coms465/musik'. The player has a progress bar at 0:17 of a 2:20 duration. On the right is the Audacity audio editing software. The top toolbar shows standard audio controls like play, stop, and record. The main workspace features two tracks of a stereo audio waveform, with a time axis at the top ranging from 5.0 to 15.0 seconds. The bottom status bar provides technical details: Project Rate (44100 Hz), Snap To (Nearest), Selection Start (00 h 00 m 05 s +27 frames), End (00 h 00 m 05 s +27 frames), Audio Position (00 h 00 m 00 s +00 frames), and Actual Rate (44100).

2. Prepare Samples

- Download to Desktop
- Import audio file to Audacity

Techniques

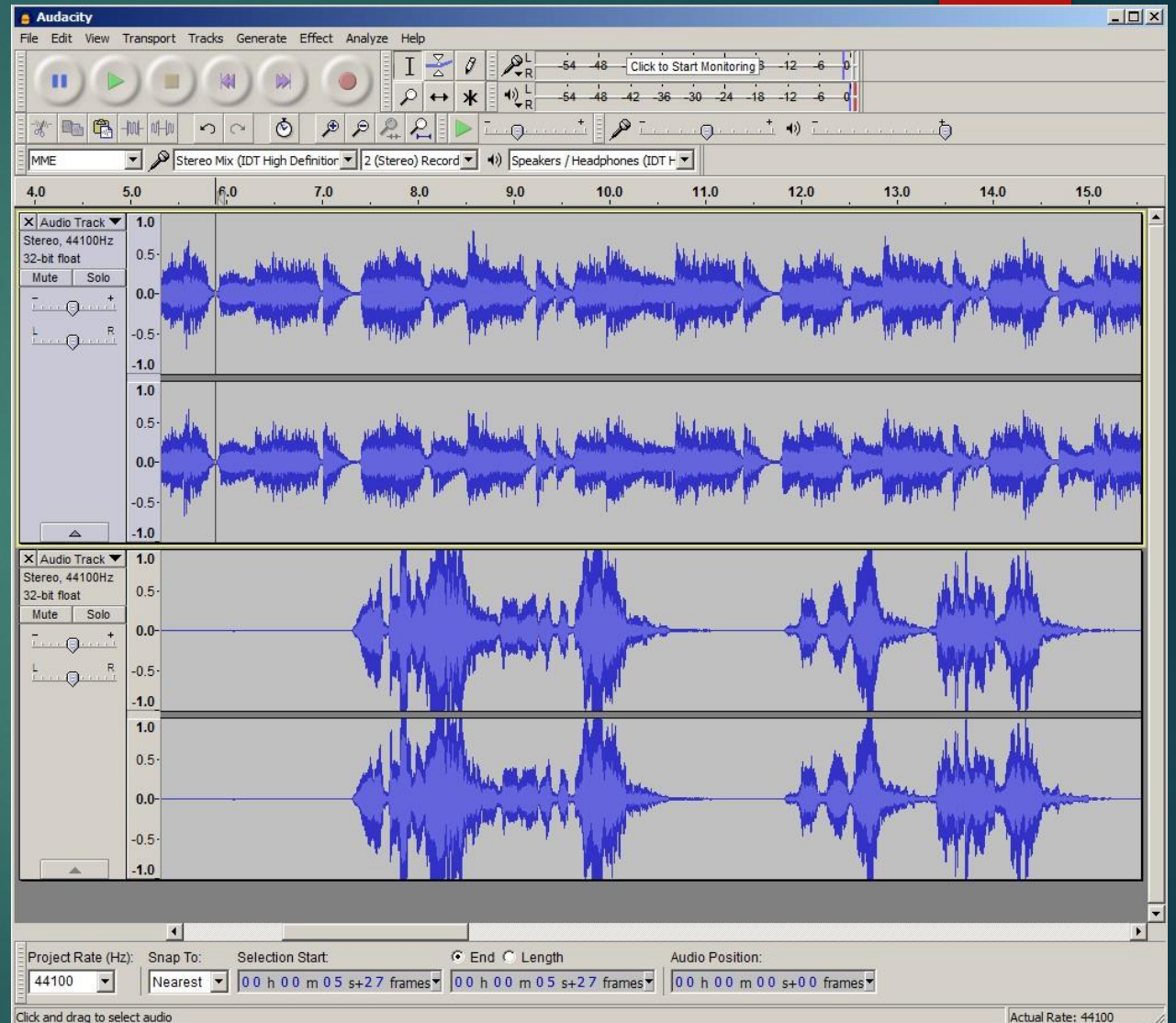
- ## 3. Edit the sample
- Trim the audio sample
 - Use Effects to shape it



Techniques

4. Layer Samples

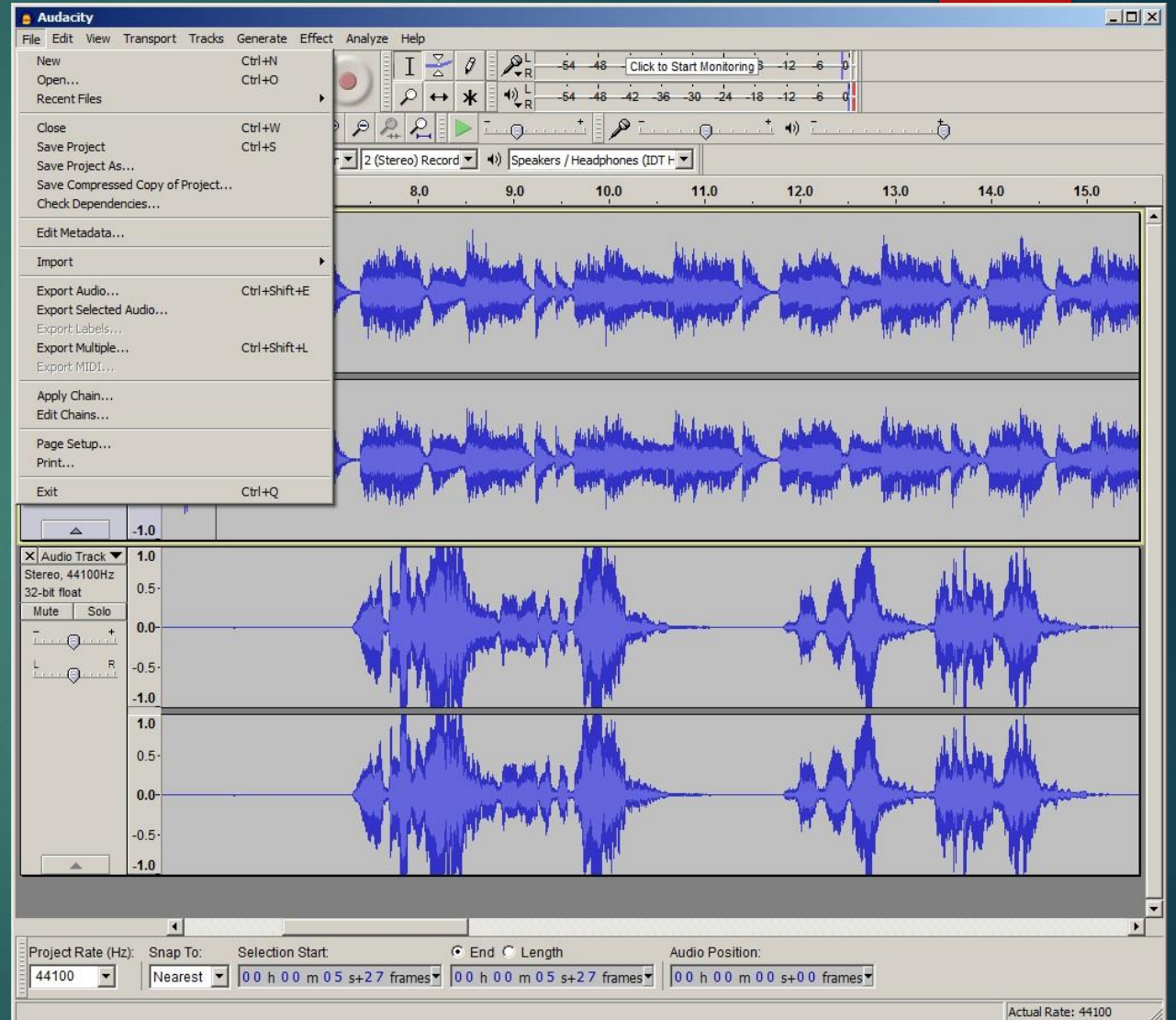
- Use multiple tracks
- Sync the tracks by adjusting Tempo and sample length



Techniques

5. Saving

- Save Project as you go
- Export WAV version of final mix
- Save to USB or Cloud



Techniques

▶ Helpful Hints

- ▶ Start small – short and simple
- ▶ Trial and error – no “right way” to do this
- ▶ Think strategically about source material
- ▶ Work hard, but keep it fun

Preview

- ▶ Remix – pt. 2
 - ▶ Remix Exercises
 - ▶ Ferguson – Everything is a Remix (Remastered)
 - ▶ Of Remixology – Remix & Postmix

