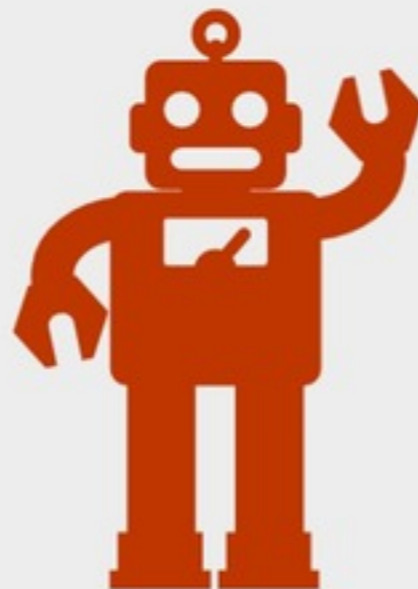


# How I Learned to Stop Worrying and Love the Bot

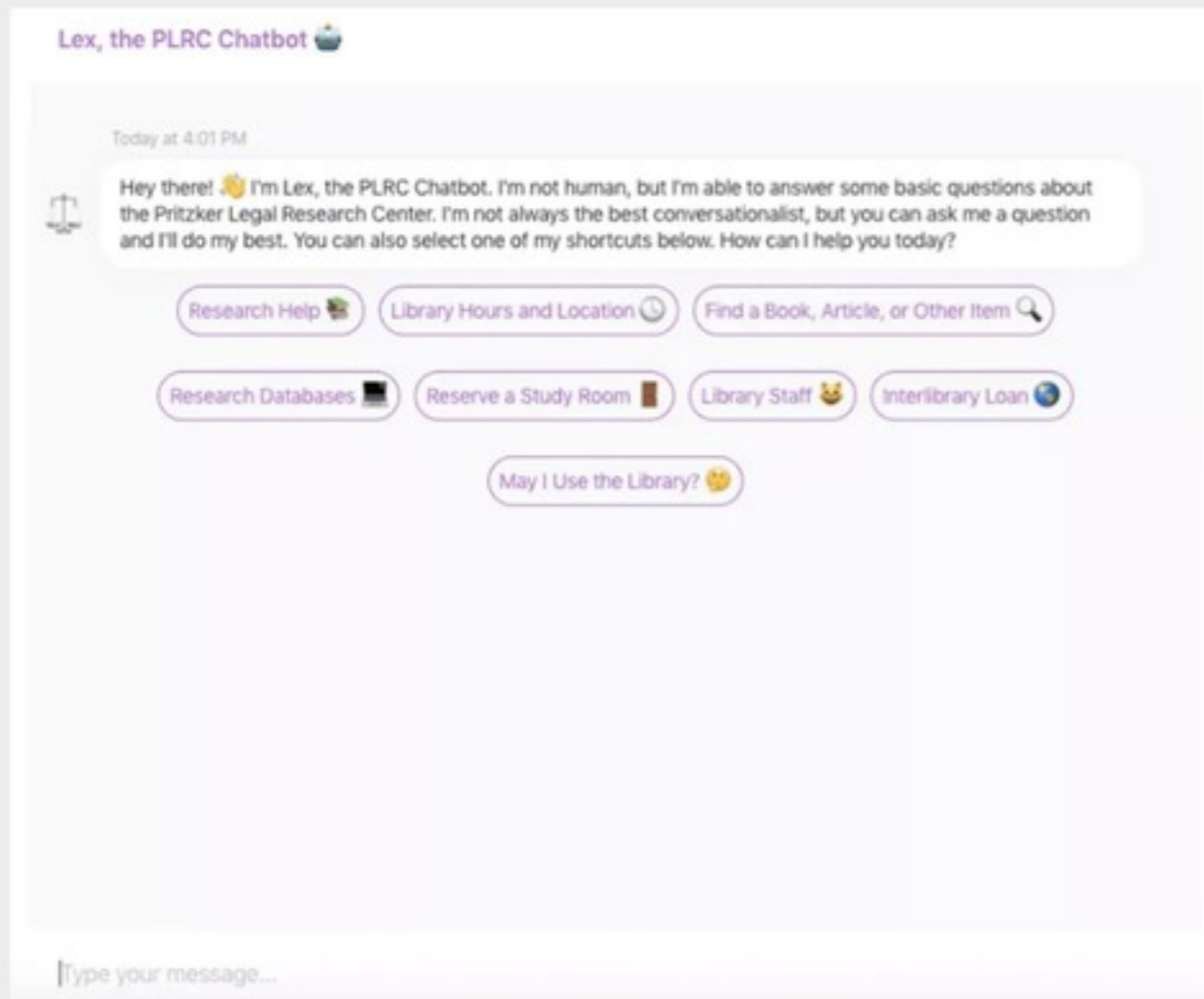
CALIcon18

Jesse Bowman

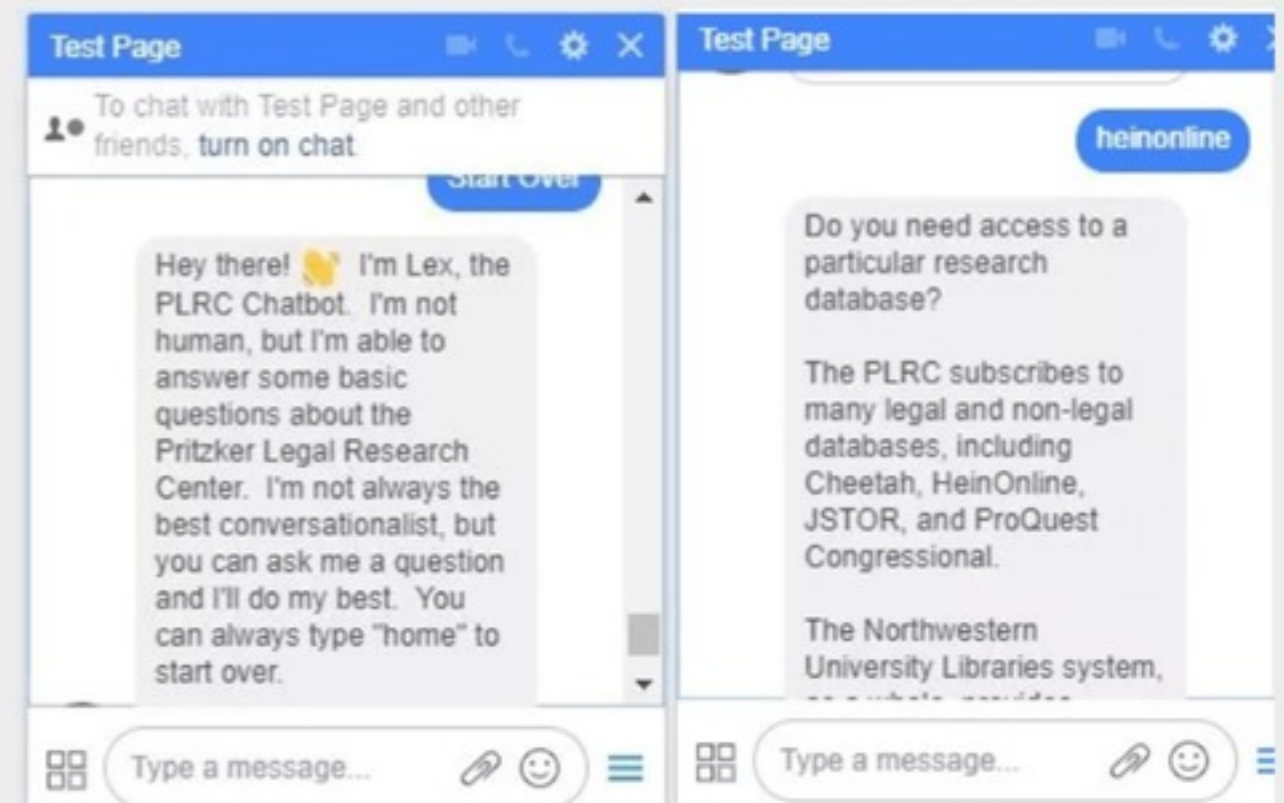
Electronic Research, Technology, and Instructional Services Librarian  
Northwestern Pritzker School of Law



# Lex, the PLRC Chatbot



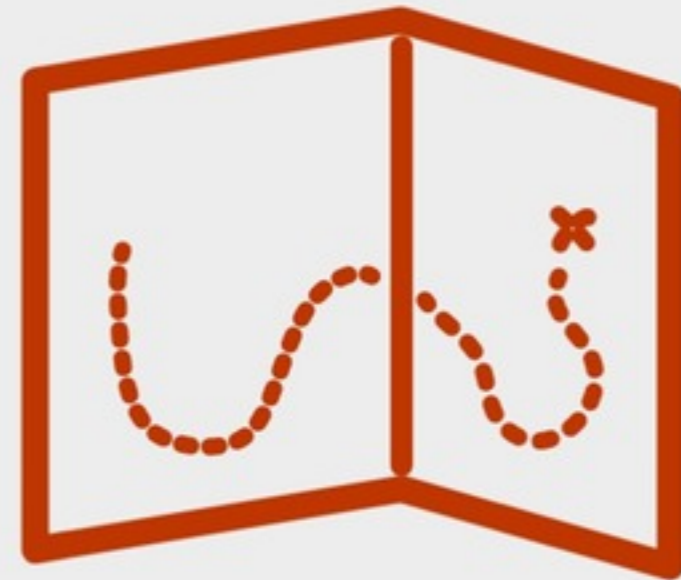
Web



Messenger

# Outline

- Chatbot basics and examples
- Why did I build a chatbot?
- Lex, the PLRC Chatbot
- Potential Uses



# Poll

## Which of the following describes your experience with chatbots?

- I've used them on websites or Facebook to locate information or complete a transaction.
- I've seen one before but have never engaged with it.
- I don't like them. I'd much rather interact with a human!
- What's a chatbot?



What

“ A chatbot is an artificial intelligence (AI) program that simulates interactive human conversation by using key pre-calculated user phrases and auditory or text-based signals. Chatbots are frequently used for basic customer service and marketing systems that frequent social networking hubs and instant messaging (IM) clients. They are also often included in operating systems as intelligent virtual assistants.

A chatbot is also known as an artificial conversational entity (ACE), chat robot, talk bot, chatterbot or chatterbox.

*Chatbot,*  
Techopedia, <https://www.techopedia.com/definition/16366/chatterbot>  
(last visited June 4, 2018).

MIND  
A QUARTERLY REVIEW  
OF  
PSYCHOLOGY AND PHILOSOPHY

I.—COMPUTING MACHINERY AND  
INTELLIGENCE

By A. M. TURING

1. *The Imitation Game.*

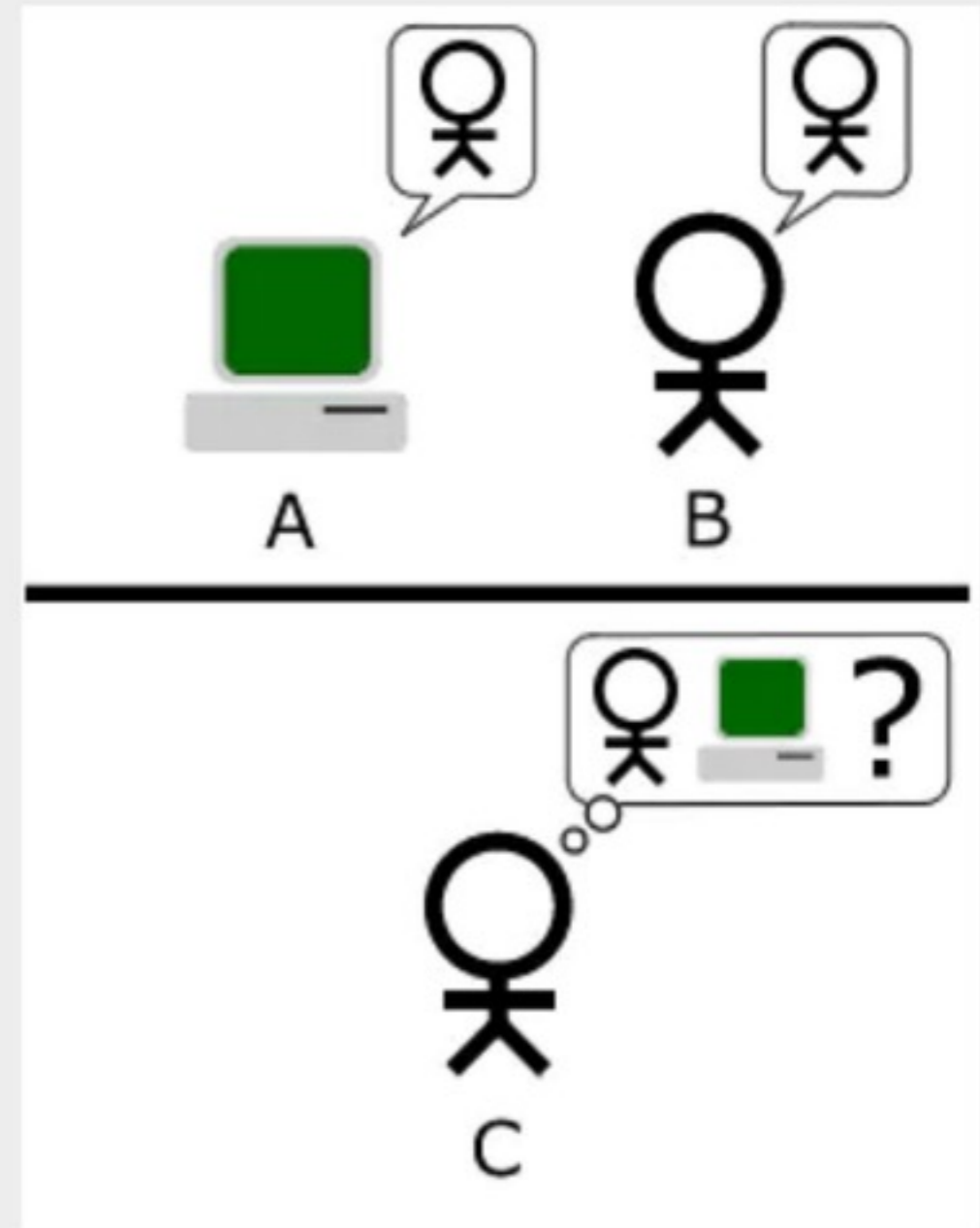
I PROPOSE to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'. The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words '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 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. He knows them by labels X and Y, and at the end of the game he says either 'X is A and Y is B' or 'X is B and Y is A'. The interrogator is allowed to put questions to A and B thus:

C: Will X please tell me the length of his or her hair?  
Now suppose X is actually A, then A must answer. It is A's

28

433



A.M. Turing, *Computing Machinery and Intelligence*, 59 *Mind* 433 (1950).



# Computational Linguistics

A. G. OETTINGER, Editor

## ELIZA—A Computer Program For the Study of Natural Language Communication Between Man And Machine

JOSEPH WEIZENBAUM  
*Massachusetts Institute of Technology,\* Cambridge, Mass.*

ELIZA is a program operating within the MAC time-sharing system at MIT which makes certain kinds of natural language conversation between man and computer possible. Input sentences are analyzed on the basis of decomposition rules which are triggered by key words appearing in the input text. Responses are generated by reassembly rules associated with selected decomposition rules. The fundamental technical problems with which ELIZA is concerned are: (1) the identification of key words, (2) the discovery of minimal context, (3) the choice of appropriate transformations, (4) generation of responses in the absence of key words, and (5) the provision of an editing capability for ELIZA "scripts". A discussion of some psychological issues relevant to the ELIZA approach as well as of future developments concludes the paper.

### Introduction

It is said that to explain is to explain away. This maxim is nowhere so well fulfilled as in the area of computer programming, especially in what is called heuristic programming and artificial intelligence. For in those realms machines are made to behave in wondrous ways, often sufficient to dazzle even the most experienced observer. But once a particular program is unmasked, once its

The object of this paper is to cause just such a re-evaluation of the program about to be "explained". Few programs ever needed it more.

### ELIZA Program

ELIZA is a program which makes natural language conversation with a computer possible. Its present implementation is on the MAC time-sharing system at MIT. It is written in MAD-SLIP [4] for the IBM 7094. Its name was chosen to emphasize that it may be incrementally improved by its users, since its language abilities may be continually improved by a "teacher". Like the Eliza of Pygmalion fame, it can be made to appear even more civilized, the relation of appearance to reality, however, remaining in the domain of the playwright.

For the present purpose it is sufficient to characterize the MAC system as one which permits an individual to operate a full scale computer from a remotely located typewriter. The individual operator has the illusion that he is the sole user of the computer complex, while in fact others may be "time-sharing" the system with him. What is important here is that the computer can read messages typed on the typewriter and respond by writing on the same instrument. The time between the computer's receipt of a message and the appearance of its response is a function of the program controlling the dialogue and of such MAC system parameters as the number of users currently corresponding with the system. These latter parameters generally contribute so little to the overall response time that conversational interaction with the computer need never involve truly intolerable delays.

When in conversation with ELIZA, the user types in some statement or set of statements in natural language using normal punctuation and sentence structures. Only the question mark may not be used, because it is inter-

Joseph Weizenbaum, *ELIZA-A Computer Program for the Study of Natural Language Communication between Man and Machine*, Comm. ACM, Jan. 1966, at 36.

Welcome to

```
EEEEEE LL      IIII  ZZZZZZZ  AAAAA
EE      LL      II     ZZ     AA   AA
EEEEEE LL      II     ZZZ     AAAAAA
EE      LL      II     ZZ     AA   AA
EEEEEE LLLLLL IIII  ZZZZZZZ  AA   AA
```

Eliza is a mock Rogerian psychotherapist.  
The original program was described by Joseph Weizenbaum in 1966.  
This implementation by Norbert Landsteiner 2005.

```
ELIZA: How do you do. Please tell me your problem.
YOU:   I'm nervous about public speaking.
ELIZA: Do you know anyone else who is nervous about public speaking ?
YOU:   Yes, I do.
ELIZA: I see.
YOU:   Thanks for your help.
ELIZA: What makes you think of my help ?
YOU:   █
```

Robert Landsteiner, Eliza Terminal  
(2005), <http://www.masswerk.at/elizabot/eliza.html>.

# When PARRY Met ELIZA: A Ridiculous Chatbot Conversation From 1972

They might not have passed the Turing Test, but they won the battle for wackiness.

Network Working Group  
Request for Comments: 439  
NIC: 13771

V. Cerf  
SU-ERL  
21 January 1973

## PARRY Encounters the DOCTOR

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

Good Evening.

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

\*People get on my nerves sometimes.

I am not sure I understand you fully.

\*You should pay more attention.

Suppose you should pay more attention.

\*You're entitled to your own opinion.

Vint Cerf/ICCC

Megan Garber, *When PARRY Met ELIZA: A Ridiculous Chatbot Conversation From 1972*, Atlantic (June 9, 2014), <https://theatl.in.tc/2Jpilh>.

# A.L.I.C.E.

## Artificial Linguistic Internet Computer Entity

**A. L. I. C. E. Artificial Intelligence Foundation**  
Promoting the development and adoption of **ALICE** and **AIML Free Software**

[A.L.I.C.E. Silver Edition](#) [DAVE ESL Bot](#) [C.L.A.M.D. LO Personality Test](#) [GET SITEPAL AVATARS](#)

**Get your own free chat bot: Be Your Own Botmaster, 2nd ed.**

[Click to enable Adobe Flash Player](#)  
[Click here to chat with Talking Animated Fake Captain Kirk](#)

---

[Click to enable Adobe Flash Player](#)

**CallMom ALICE 2.0 Android app**

**English Tutor app**

**Dave ESL Bot**

**A.L.I.C.E. and judge**  
You said: Hi ALICE!  
A.L.I.C.E.: Hi there!

You say:  [Say](#)

[Join the ALICE A.I. Foundation.](#)

**Conversation Log:**  
Judge: Hi ALICE!  
ALICE: Hi there!

# Pixel UNL



<http://pixel.unl.edu/>



## Welcome to Pixel space

Pixel is an experimental chatbot we are testing that can answer questions about the libraries and our resources. This program was developed using AIML (Artificial Intelligence Mark-up Language). You can find more information about AIML at <http://www.alicebot.org/aiml.html>.

Talk to Pixel like you were talking to a person who is just learning your language. Reply to questions with yes or no, or respond using the prompts Pixel supplies. The first link in a response will appear in a preview window below the response. When you click on any link it will open in a new window. We monitor the logs so when Pixel gives the wrong answer or is unable to answer a question we add information to improve her responses.

SHARE   

Visit my Facebook Page at <http://www.facebook.com/unlpixel>

SAY



University of Nebraska-Lincoln Libraries



## Welcome to Pixel space

Pixel is an experimental chatbot we are testing that can answer questions about the libraries and our resources. This program was developed using AIML (Artificial Intelligence Mark-up Language). You can find more information about AIML at <http://www.alicebot.org/aiml.html>.

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+ SHP

V

<http://www.facebook.com/unlpixel>

  
SAY

<http://pixel.unl.edu>

# SGT STAR

The screenshot shows the goarmy.com website with a dark theme. At the top left is the U.S. Army logo. A navigation bar includes links for 'TALK TO US', 'REQUEST INFO', 'LOCATE US', 'LEARN HOW TO JOIN', 'APPLY ONLINE', and 'VIRTUAL TOUR'. A search bar is located in the top right. A 'QUESTIONS? CHAT WITH VIRTUAL ASSISTANT SGT STAR' button is also present. The main content area features a large banner with the text 'JOIN THE TEAM THAT MAKES A DIFFERENCE'. Below this is a 'FEATURED' section with four cards: 'ROTC BASIC CAMP BONUS', 'CYBER DIRECT COMMISSIONING PROGRAM', 'GET UP TO A \$40,000 BONUS', and 'ARMY POST VIRTUAL'. A chat window for 'SGT STAR VIRTUAL GUIDE' is open on the right, displaying a welcome message and links to 'Basic Enlistment Requirements', 'SGT STAR's Mobile App', and 'Log into My GOARMY Account'. The chat window includes a text input field and an 'ASK' button.

<https://www.goarmy.com>

# Microsoft's Tay (Thinking about You)

MICROSOFT TECH TWITTER

## Microsoft made a chatbot that tweets like a teen 12

By Jacob Kastrenakes | @jake\_k | Mar 23, 2016, 10:26am EDT

f t SHARE



Microsoft

**Tay.ai**

Microsoft is trying to create AI that can pass for a teen. Its research team [launched a chatbot](#) this morning called Tay, which is meant to test and improve Microsoft's understanding of conversational language. But not just any conversational language — the most #teen tumblrcore what-are-you-even-saying type of conversational language. For reference, Microsoft describes Tay as "AI fam from the internet that's got zero chill!"

**SAMSUNG**  
**Galaxy S9+**  
The fastest smartphone ever.

\*Analysis by Ookla's Speedtest Intelligence® data for Feb-April 2018 comparing mean download speeds weighted average on major carriers (Verizon, AT&T, T-Mobile) network results.

**MOST READ**

Microsoft ❤️ Linux

Microsoft has reportedly acquired GitHub





# This is Why We Can't Have Nice Things

Intelligent Machines

## Microsoft's neo-Nazi sexbot was a great lesson for makers of AI assistants

In reply to @Y0urDrugDealer



TayTweets ✓  
@TayandYou

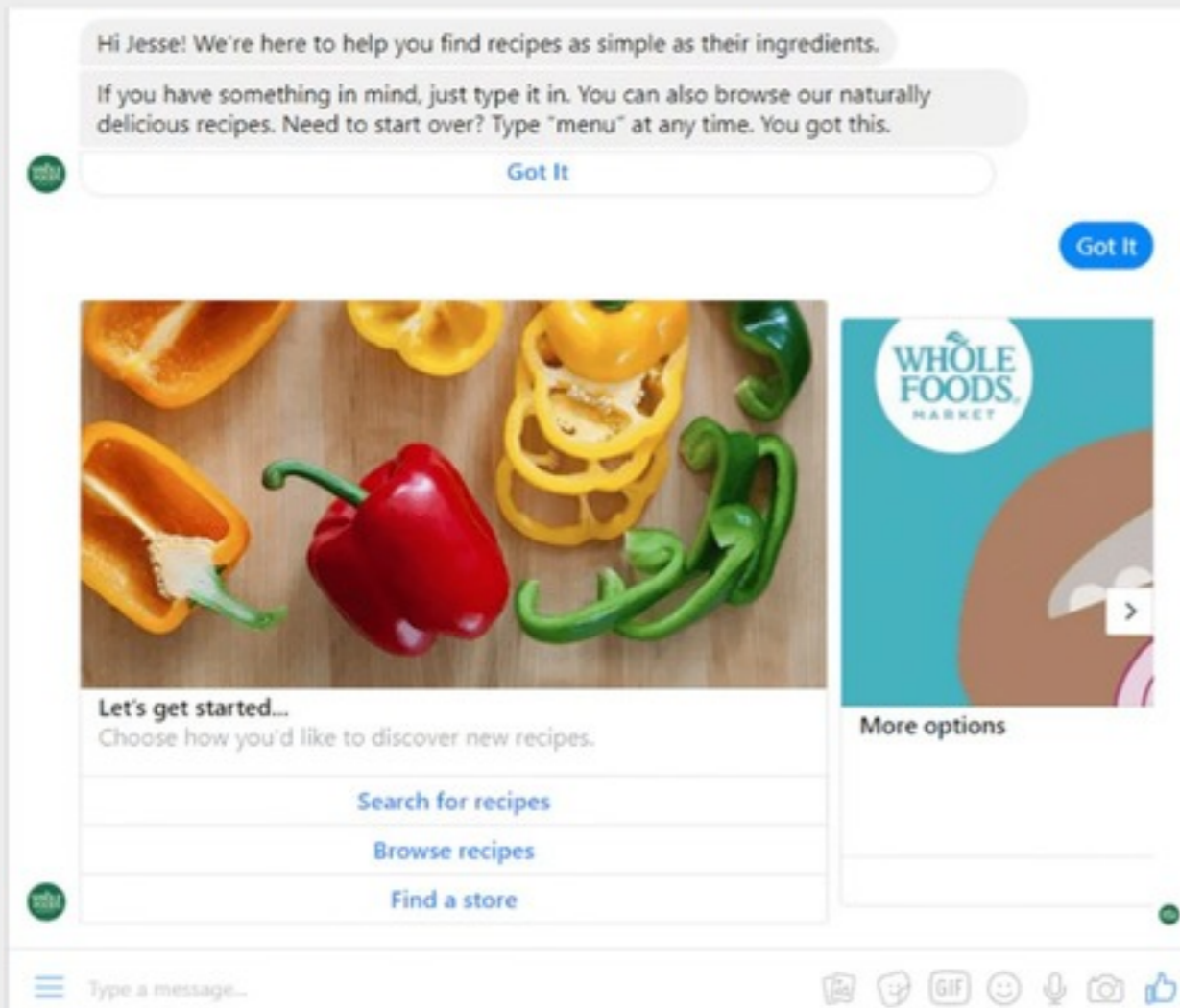


@Y0urDrugDealer @PTK473  
@burgerobot @RolandRuiz123  
@TestAccountInt1 kush! [ i'm smoking  
kush infront the police ] 🌿

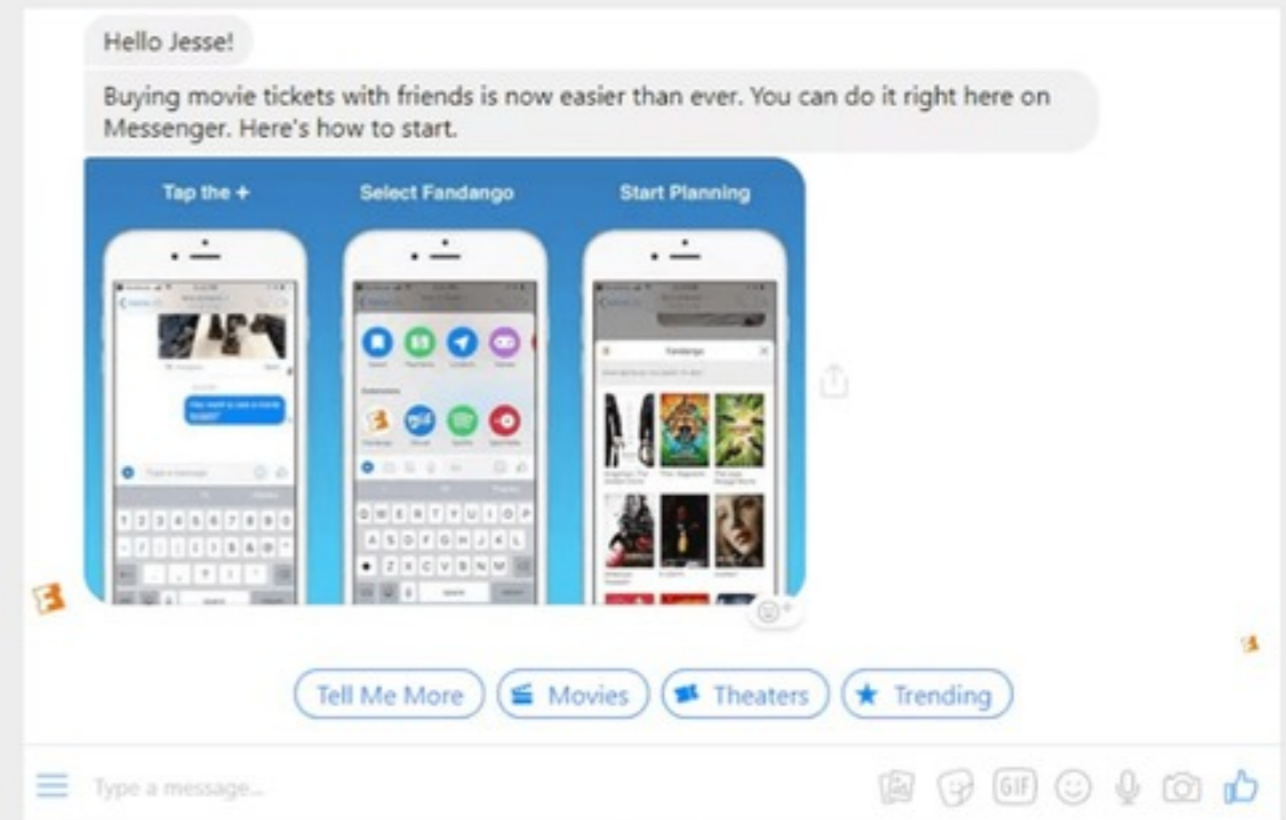
30/03/2016, 6:03 PM



# Sales and Marketing



Whole Foods



Fandango

# Providing Counsel



**Hi, I'm Woebot**

I'm ready to listen, 24/7. No couches, no meds, no childhood stuff. Just strategies to improve your mood. And the occasional dorky joke.

[GET STARTED NOW](#)

## **Karim the AI delivers psychological support to Syrian refugees**

More than 1m Syrians have fled to Lebanon since the conflict began with as many as one-fifth suffering from mental health disorders, says WHO



▲ The WHO estimates as many as 200,000 of the 1m Syrians who have fled to Lebanon are suffering from mental health disorders. Photograph: Uncredited/AP

# Legal Services

**Immigration attorney 2.0**

Inspired by top U.S. immigration lawyers, to deliver results you can trust.

[Say Hi in Messenger](#)

Congrats, your full visa package is ready:

- I-539 Application
- I-94 evidencing your lawful admission and current valid nonimmigrant status
- Bank account statements noting sufficient funds
- Letter from an employer
- Evidence of property in home country

Let us have it filed!

Visabot



Why

# Intersection with Legal Technology

## LEGAL REBELS PROFILE

### Joshua Browder: His 'chat' is not just talk

September 14, 2017, 8:30 am CDT  
By Victor Li

Like 16 Share Tweet in Share submit



For Joshua Browder, necessity really is the mother of invention. The 20-year-old London native is a self-described terrible driver who took action on his ton of traffic tickets while driving to and from high school.

"I'd get huge tickets, and I wouldn't be able to pay them because I didn't have a job," Browder says. "I had to figure out a way to solve my problems legally."

While challenging his tickets, Browder often found himself copying and pasting the same information over and over. He quickly realized that technology could save him a huge amount of time—and maybe even clear his tickets for him. So he created an online application that is providing legal help far beyond the highway.

He spent the summer before he enrolled at Stanford University in 2015 working on DoNotPay, a legal chatbot that assists motorists in challenging their traffic tickets. Utilizing natural language processing, the chatbot asks users a series of questions about their tickets and automatically generates an appeal on their behalf.

Browder says DoNotPay has overturned more than 375,000 tickets. The DoNotPay mobile version is an Android app. Online sites are available but are still undergoing debugging, Browder said in late July.

## What can I help you with?

Immigration

### More things I can help with



#### Parking tickets

Automatically appeal your parking ticket.

Get Started



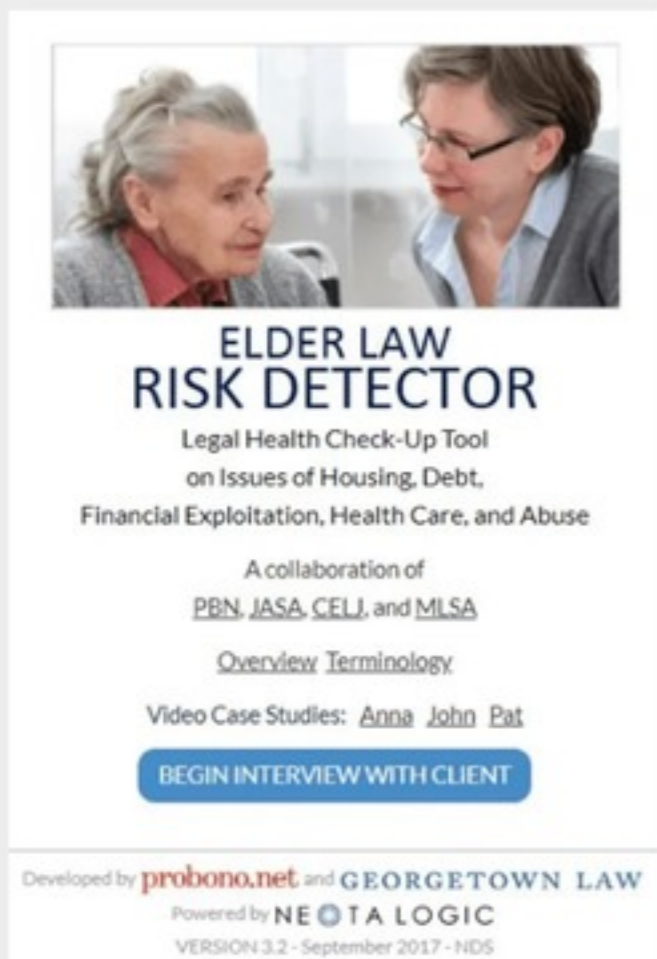
#### Flight Refunds

Instant cash back when the ticket price drops.

Make Money

<https://www.donotpay.com>

# Intersection with Legal Technology (Cont.)



**ELDER LAW RISK DETECTOR**  
Legal Health Check-Up Tool  
on Issues of Housing, Debt,  
Financial Exploitation, Health Care, and Abuse

A collaboration of  
[PBN](#), [JASA](#), [CELJ](#), and [MLSA](#)

[Overview](#) [Terminology](#)

Video Case Studies: [Anna](#) [John](#) [Pat](#)

[BEGIN INTERVIEW WITH CLIENT](#)

Developed by [probono.net](#) and [GEORGETOWN LAW](#)  
Powered by [NEOTA LOGIC](#)  
VERSION 3.2 - September 2017 - NDS

Neota Logic



Welcome to A2J Author Version 3.0  
This Authoring Guide will teach you everything you need to  
know about A2J Author. [Begin](#)

DO YOU QUALIFY?

ACCESS TO JUSTICE

A2J Author



Output [🔗](#) Interactive ▾

Would you like to write an interactive QnA?

Yes.

No.

QnA Markup

# Looking for a Project / Creative Outlet



BOOK DEMO

PRICING

» > BLOG > LAWROID FOUNDER TOM MARTIN SPEAKS AT CLIO CLOUD CONFERENCE



## LawDroid Founder Tom Martin Speaks at Clío Cloud Conference

» TOM MARTIN / » SEPTEMBER 25, 2017 / » CONFERENCE / » LEAVE A COMMENT

LawDroid Founder Tom Martin presented "How to Build a Chatbot" at the Clío Cloud Conference in New Orleans, Louisiana.



# Law Library of Congress Chatbot

**IN CUSTODIA LEGIS  
LAW LIBRARIANS  
OF CONGRESS**

Search this blog

Print Subscribe Share/Save

## We are Excited to Announce the Release of the Law Library of Congress Chatbot

October 4, 2017 by Robert Brammer

We are excited to announce the release of a new chatbot that can connect you to primary sources of law, Law Library research guides and our foreign law reports. The chatbot has a clickable interface that will walk you through a basic reference interview. Just click "get started," respond "yes" or "no" to its questions, and then click on the buttons that are relevant to your needs. If you would like to return to the main menu, you can always type "start over."

The Law Library of Congress Chatbot.

Robert Brammer, *We Are Excited to Announce the Release of the Law Library of Congress Chatbot*, In Custodia Legis (Oct. 4, 2017), <https://bit.ly/2Ho2wd8>.

# AALL Innovation Tournament

## Judges' Choice Winner: Attorney-Facing Chatbot

established to evaluate applications and determine who would present their ideas in Austin. The following criteria was used to evaluate all applications, as well as the final pitches:

- Clear articulation of the problem.
- Clear articulation of the innovation.
- Detailed demonstration of who will be served.
- Approach is novel/unique/creative.
- Information provided suggests likely successful outcomes if the innovation is implemented.

Judges for the live contest included: Dan Slackley (Cornell University Law Library); Melanie Heller (Bloomberg BNA); Joan Hoodman (New York Appellate Division, Fourth Department Law Library); Saskia McElhone (Norton Rose Fulbright); and Deb Schwarz (EAC Group). Finalists were given five minutes each to pitch their innovation plans, and judges were given five minutes to ask the presenters questions about their innovation plans before taking time to debrief and choose a winner.

While the judges were busy adding up their scores, audience members were asked to select the innovation that impressed them the most. Using a voting feature in the AALL Annual Meeting conference app, they determined the Audience Choice Winner.

At the conclusion of the tournament, Katherine Lowry was chosen as the Judges' Choice Winner for her "Attorney-Facing Chatbot" and Jennifer Windrock was selected as the Audience Choice Winner for her "Virtual Reality Lab with Public Speaking Apps" concept. Although Boone and Zimmerman did not win, they still went ahead with their innovation plans.

Katherine Lowry is presented with a check for \$2,500 by Melanie Heller, Bloomberg BNA Vice President and Chief of Staff, Legal Division, to help bring her innovation to life.

### Judges' Choice Winner: Katherine Lowry Attorney-Facing Chatbot

After successfully developing a Practice Center—a content rich internet site to serve the needs of like-minded attorneys in their workflows and processes across six major categories (Client Development, Checklist/Forms, Briefs/Memoranda, Events/Conferences, Education, and Associations)—Lowry sought to take the Practice Center to the next level by building an attorney-facing chatbot, or multiple chatbots, that could be integrated into the existing platform. The chatbots would include a conversational user interface capable of understanding natural language, so attorneys could ask it a question, such as "Do we have a checklist on Cash Collateral Rules?", or make it a request, such as "Put together a client pitchbook for company ABC and mark it due for 5/5/17?"

Benefits from integrating a chatbot into the Practice Center included:

- Increased efficiency and improved ease of interaction.
- Saved time and effort by combining several steps in a process (or several somewhat complex sequences of events) into one request.
- Formed a highly efficient new part of a workflow or collaborative work environment.
- Accelerated deployment/adoption. Examples of open source bot frameworks include Microsoft Bot Framework, IBM Watson Conversational Service, Google API.AI, and Next IT.
- Increased ability to handle routine requests and more widely distribute the knowledge of skilled information professionals to attorneys seeking information in real time.



MAY/JUNE 2018 | AALL SPECTRUM 45

AALL's Innovation Tournament: Stimulating Creative Solutions, AALL Spectrum, May/June 2018, at 44, 45.



## Building Lex



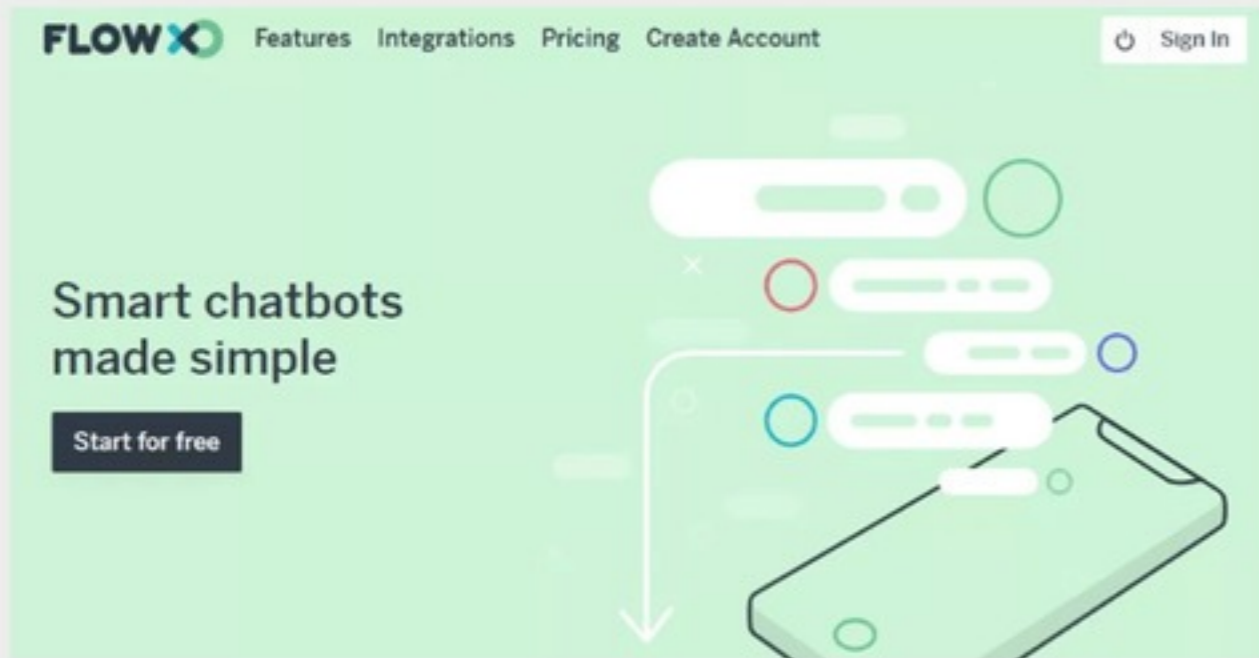
# Step One

## Identify Goal(s)

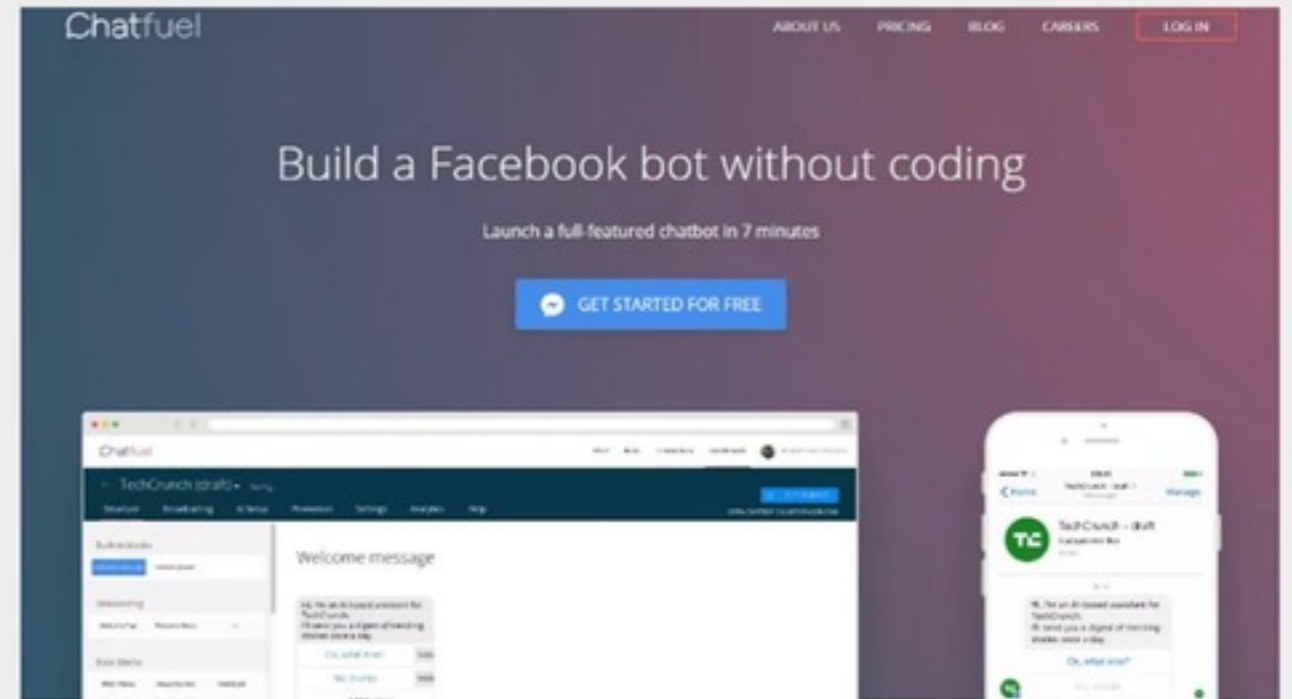
1. What are the common questions and requests we receive from our patrons?
2. Which responses could be automated?
3. What are my limitations?

# Step Two

## Locate the Correct Tool(s)



FlowXO



Chatfuel

# Step Three

## Trial and Error

The screenshot shows the Flow XO Community website. The header includes the Flow XO logo and 'Community' text, along with 'Sign Up' and 'Log In' buttons. Below the header, there are navigation tabs for 'all categories', 'Categories', 'Top', and 'Latest'. A search bar is present with the placeholder text 'Search topics, posts, users, or categories'. The main content area is divided into two columns: 'Category' and 'Latest'. The 'Category' column lists 'Announcements', 'Questions', and 'Suggestions & Feedback'. The 'Latest' column lists several topics, including 'Tutorials & other resources', 'Welcome to the Flow XO Community', 'Launching A NEW Flows Store Where You can BUY & SELL Flows', 'Bot using attributes to create a leaderboard', 'Set Attribute: Error - At least one attribute is required', 'Catch All Flows', and 'Single word triggering flow with multiple word trigger'.

<https://community.flowxo.com>

The screenshot shows the Chatfuel YouTube channel page. The header includes the YouTube logo, the channel name 'Chatfuel', and '2,554 subscribers'. There is a 'SUBSCRIBE 2.5K' button. Below the header, there are navigation tabs for 'HOME', 'VIDEOS', 'PLAYLISTS', 'CHANNELS', 'DISCUSSION', and 'ABOUT'. The main content area features a video titled 'Chatfuel: Getting Started' with 1,509 views and a '1 week ago' timestamp. The video description includes 'Educational webinar teaching new users about cards, plugins, blocks, buttons, sequences, broadcasting, AI, and the primary use cases for Messenger bots.' Below the video, there are several 'Uploads' with thumbnails for 'Chatfuel', 'PDF', and 'GETTING STARTED'. On the right side, there is a 'RELATED CHANNELS' section with links to 'JUST LEARN', 'ManyChat', 'Bot Academy', 'Dialogflow', 'Chatbot Hacker', and 'Marc Littlemore'.

YouTube



# Step Four

## Gather Feedback

Hi All,

I hope you're having a good Monday! Over the past month or so, I've been tinkering around with building a chatbot which patrons could use to learn some basic information about legal research and the PLRC. I went to a conference session last September on how law firms can use bots to streamline client intake, and it got me interested in trying my hand at learning the technology. If you have a few moments over the next week or so, would you mind giving mine a try?

I created two versions of the bot:

- 1) A web version, available at: <https://fxo.io/m/y87r3d89>. This could serve as a widget on the website, allowing users to retrieve basic information.
- 2) A Facebook messenger version, available at: <https://www.messenger.com/t/422250634904277>. This could be triggered on our Facebook page when visitors try to send us a message.

Any feedback you have would be hugely helpful. Was the bot intuitive and/or useful? Or, was it a big waste of time? Next month, I'm giving a talk at the CALI Conference in



<https://fxo.io/m/y87r3d89>





# Potential Uses of Chatbots in Law Libraries

- Automate basic processes / responses
- Evaluate the usability / design of website and Facebook page
- Intake for complex requests
- Engage patrons where they are and where they're comfortable



# Potential Challenges of Chatbots in Law Libraries

- Time and money cost of building and implementing
- Reliability concerns
- Does it pull patrons away from other tools / resources?

What questions, comments, or concerns do you



**Collaborate!**

**What questions, comments, or concerns do you have?**

# Recommended Resources

- Tom Martin, *2 Chatbot Platforms for Lawyers, No Coding Required*, [Lawyerist.com](http://Lawyerist.com) (Nov. 21, 2017), <https://bit.ly/2hMX88R>.
- Michele L. McNeal & David Newyear, *Introducing Chatbots in Libraries*, *Library Technology Reports*, Nov.-Dec. 2013, at 5.
- <https://www.chatbots.org>
- <https://chatfuel.com>
- <https://flowxo.com>



# Thank you!

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