Help is Out There: Online Community, Community Artifacts, and a New Way of Harnessing Knowledge

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Seeking Help!

Finding People
Finding Comfort
Finding Information
◆Finding Answers!
Motivation

The Community that Isn’t Eliciting Participation
Self-Maintaining Communities
Ask, and Ye May Receive ♦ (but a few $$$ wouldn’t hurt)
We Know What You Want!
100 Million Hours of Work: A Drop in the Bucket!
The Community that Isn’t
Eliciting Participation
Pretty Easy …

Ask people!
- Appeal to uniqueness
- Set goals (individual or team)
- Show them something interesting
  → disagreement is motivating

People want to contribute
But What about Work?

Work (n):
What we do that isn’t fun.
Two Lessons

We can get people to do work!

- Just make it available
- Better yet, use social comparisons!

But how we organize the work affects the quality and quantity of outcome!
Designing contribution review

Editorial oversight improves quality
- Journalism
- Peer review

Wikipedia foregrounds questions
- Who can review?
- When to review?

Who can review?

(Cosley et al., CHI05)

Can peers do as well as experts?
Task: add movies to MovieLens
Hypothesis: Review increases motivation
Design: 3 x 2
- Level of review
- Visibility of mechanism
Who can review overview

Movies assigned to groups in order suggested

Suggestion Queue:
Roxanne
Kaitai Gunan
The Red Shoes
Pink Panther ...

No Oversight
Peer Oversight
Expert Oversight

One user adds
First user adds
One user adds

Peer Queue
Expert Queue

Second user checks
Expert checks

MovieLens Database

Quantity, quality metrics
Movie Info Verifier
Movie Data Websites

Average contribution quality

Overnight adds value

Final
Initial

Peers compare to experts
Telling people about no oversight increases antisocial behavior

Quality

None Vis None NV Peer Vis Peer NV Expert Vis Expert NV

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December 3, 2000
When to review

(Cosley et al., CHI 2006)

Should contributions be visible before they are reviewed?

Task: editing movies

- Pre-review
- Post-review (“Wiki-like”)

Wiki vs. pre-review effect on quality over time

Fields filled in

Date

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Modeling review

timing

Multiple ways of knowing
Increase generality
Value simplicity (Axelrod 1985)
  ◆ Many assumptions, clearly stated
  ◆ Assumptions = design opportunities

Value changes over time

DB value = sum of item values
Value changes over time
Some work helps, some hurts

\[ V_{t+1} = V_t + G_t - B_t \]
Modeling Wiki-like’s behavior

DB value = sum of item values
Value changes over time
Some work helps, some hurts
Tasks become harder to find as the database reaches its maximum value

\[ V_{t+1} = V_t + \left(1 - P_t\right)\gamma - P_t\beta \]

Pre-review imposes costs

Some work is wasted
Two people per completed contribution

\[ V_{t+1} = V_t + \frac{1}{2} \left( (1 - P_t)\gamma + P_t\beta \right)^2 \]

Prediction: Wiki-like adds value faster
Equilibrium is the same

Long-term, pre-review = Wiki-like

◆ Again, provable
◆ But, Wiki-like gets there faster

Contributors determine value

◆ Not surprising, but... surprising!
◆ But, mechanism might affect contributors

Needs to be validated
More on Wikibutions

Handling first-time editors

Ask, and Ye May Receive: Part I

Harper et al., CHI 2008
What Is a Q&A Site?

Designed to support the specific task of question asking and answering.
Digital Reference Sites
E.g.: Minneapolis Public Library Ask a Question
http://www.mplib.org/askus.asp

Ask An Expert Sites
E.g.: AllExperts
http://allexperts.com

Community Q&A Sites
E.g.: Live QnA
http://qna.live.com
What is your answer?

Question

What's a good programming language to learn?

He had a decent amount of experience in HTML, done some basic stuff in javascript and done a very small amount in php (to mess). I'm looking at learning a computer programming language or maybe another web programming language. I want to learn it just for the sake of knowing it though I may eventually use it in a money-making situation.

I want something that will challenge me but not something that I have to go to school for. What do you suggest? Where can I learn it and will I need any programs to edit it?

Your Answer

No spam please. When in doubt, please refer to our Community Guidelines.

Python

[Check Spelling]

Known your source? List it here:

Research your answer

Search the Web

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Q: Which actress has the first female line in a talking movie? (Answered, 6 Comments)

Question

Subject: Which actress has the first female line in a talking movie?

Category: Arts and Entertainment > Movies and Film

List Price: $3.00

Which actress has the first female line in a talking movie? I found on Wikipedia that Al Jolson had the same line, but I can't find any record of which female was first?

Answer

Subject: Re: Which actress has the first female line in a talking movie?


Hello 1pexels54,

Eugenie Besserer was the first female to speak in a full length talkie. She played Al Jolson's mother, Sara Rabinowitz in the film The Jazz Singer.

"354 words were spoken in total - 340 by Al Jolson, the star of the film, 13 by Eugenie Besserer (playing his mother) and one by Warner Oland (as his father) who said 'Stop'. Mother O'Mine was also the first record of a song from a movie."

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How do Q&A sites differ in the quality and characteristics of answers to questions?
We developed 126 questions; we asked 18 at each of 7 Q&A sites (3 were G @ $3/$10/$30).

We varied several dimensions of each question:
- **type of question**: factual, opinion, or advice
- **topic of question**: technology, business or entertainment
- **gratitude**: no/short/long thank you message at the end of questions
- **prior effort**: we indicated/didn’t indicate prior effort towards answering question
Which actress has the first female line in a talking movie? I found on Wikipedia that Al Jolson had the male line, but I can't find any record of which female was first?

Is there a reliable and legal way to get front-row Lakers tickets, and if so, what do they cost and how can I tell if the seller is legit? I've tried looking on line, and places that claim "front row" tickets are selling tickets far away from there or just looked a little shaky on line.

### Summary of Quality

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<tr>
<th>Destination</th>
<th>Answer Quality (0-1)</th>
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<tr>
<td>Google Answers ($30)</td>
<td>0.68</td>
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<tr>
<td>Google Answers ($10)</td>
<td>0.59</td>
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<tr>
<td>Yahoo! Answers</td>
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<td>Google Answers ($3)</td>
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<td>Library Reference</td>
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<td>AllExperts</td>
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<tr>
<td>Overall</td>
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### Power of Community

<table>
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<th></th>
<th>Community</th>
<th>Individual</th>
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<tr>
<td># Answers**</td>
<td>2.94</td>
<td>0.72</td>
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<tr>
<td>(answers/question)</td>
<td></td>
<td></td>
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<tr>
<td>Answer Length*</td>
<td>881.92</td>
<td>526.56</td>
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<tr>
<td>(# characters)</td>
<td></td>
<td></td>
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<tr>
<td>Answer Quality*</td>
<td>0.47</td>
<td>0.42</td>
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<td>(0-1 scale)</td>
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</table>

** p<0.01, * p<0.10

---

**Yahoo!: lots of answers fast**

Where to find Gilligan's Island Memorabilia?

Where could I find unusual Gilligan's Island Memorabilia for a big fan's birthday? Not the usual videos and pictures, but preferably something like props from the original set.

10 Answers in the first day! But…

…6 of them say “ebay”

…8 of them are one sentence or shorter
Google: community despite $$

**Comments**

**Subject:** Re: Which actress has the first female line in a talking movie?
**From:** prehistorypublica@ on 25 Oct 2006 13:31 PDT

Oh dear, Bobby, you are SO wrong!

The actress with the first line in a talkie was Sarah Bernhardt in 'Le Duel d'Hamlet' around 1900. It was Sarah Bernhardt's film debut and apparently was accompanied by a cylinder with recorded dialogue.

Please see ID: 223173 for more info.

Al Jolson was evidently NOT the first male to talk in the talkies. There surely must have also been a male talker in 'Le Duel d'Hamlet'.

Of course, The Jazz Singer did herald the age of the talkies but how the talkies and Al Jolson's career prospered after this truly terrible movie is amazing.

Sorry!

Bryan

**Subject:** Re: Which actress has the first female line in a talking movie?
**From:** bobbie7@ on 25 Oct 2006 13:58 PDT

Dear Bryan,

You're right!!!! Thank you for letting me know. I appreciate it.

Sincerely, 
Bobbie?
Google: ...but $$ still matters

Comments

Subject: Re: Hiring a custodial service -- advice and pitfalls
From: keystroke qa on 11 Oct 2006 11:31 PDT

It'll cost you a lot more than $3 to hire a custodian and it would take a Google Answers Researcher a lot more time than $3 is worth to research this question.
Epilogue …

Google Answers is now long gone …

MSN Live QnA recently closed …

But lots of interesting alternatives emerging!
Ask, and Ye May Receive: Part II

Harper et al., CHI 2009

Not every question seeks information …

Conversational vs. Informational
Meta Q&A v0.01 alpha

Step 1. Read the Following
Question:

I want to get my tongue pierced but I am very
nervous about it, Anyone who has theirs done
was it worth it, does it hurt? Any advice would
be great!!!

Category: Tongue piercings

Step 2. Evaluate It

Please choose whether the questioner's intent is
primarily "informational" or "conversational".
- Informational (e.g. fact- or advice-seeking)
- Conversational (e.g. opinion-seeking, polling,
or self-expression)

I think this question is well-written.
Strongly Agree ◀ ▶ ▶ ▶ ▶ ▶ Strongly Disagree

I think high-quality answers to this question will
provide information of lasting/archival value to
others.
Strongly Agree ◀ ▶ ▶ ▶ ▶ ▶ Strongly Disagree

Next!

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Randomly Draw Question

Human Coding (x2)

Agree on Type? No Additional Coding (x2)

Yes

Analysis

Yes 3/4 Agree on Type?

No Exclude

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54
<table>
<thead>
<tr>
<th>Number of Questions</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Overall</td>
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</table>

<table>
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<tr>
<th>Number of Questions</th>
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<tbody>
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<td><strong>Yahoo</strong></td>
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<td></td>
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<tr>
<td>Overall</td>
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<td></td>
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<tr>
<td>Metafilter</td>
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<tr>
<td>Yahoo</td>
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<tr>
<td>Overall</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Informational</th>
<th>Conversational</th>
<th>Disagreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answerbag</td>
<td>161</td>
<td>64 (40%)</td>
<td>92 (57%)</td>
<td>5 (3%)</td>
</tr>
<tr>
<td>Metafilter</td>
<td>166</td>
<td>151 (91%)</td>
<td>9 (5%)</td>
<td>6 (4%)</td>
</tr>
<tr>
<td>Yahoo</td>
<td>163</td>
<td>93 (57%)</td>
<td>58 (36%)</td>
<td>12 (7%)</td>
</tr>
<tr>
<td>Overall</td>
<td>490</td>
<td>308 (63%)</td>
<td>159 (32%)</td>
<td>23 (5%)</td>
</tr>
</tbody>
</table>
Agree/strongly agree that high quality answers to this question will provide information of lasting/archival value to others.

How do they differ?

Insights that might support machine classification …
Prior work says:
Spam emails use words and phrases differently from legitimate emails.
(e.g., Sahami et al., 1998)

Therefore, we speculate:
Conversational questions use words and phrases differently from informational questions.

Words:
- do
- you
- like
- root
- beer
- floats
- ?

Bigrams:
- do+you
- you+like
- like+root
- root+beer
- beer+floats
- floats+?
### Percentage of questions that contain one or more instances of the given word or bigram (sorted by information gain).

<table>
<thead>
<tr>
<th>Word</th>
<th>% Informational</th>
<th>% Conversational</th>
</tr>
</thead>
<tbody>
<tr>
<td>can</td>
<td>35.1%</td>
<td>9.4%</td>
</tr>
<tr>
<td>is there</td>
<td>10.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>help</td>
<td>19.8%</td>
<td>5.7%</td>
</tr>
<tr>
<td>do I</td>
<td>12.3%</td>
<td>1.9%</td>
</tr>
<tr>
<td>do you</td>
<td>4.9%</td>
<td>22.0%</td>
</tr>
<tr>
<td>would you</td>
<td>1.3%</td>
<td>8.8%</td>
</tr>
<tr>
<td>you think</td>
<td>1.3%</td>
<td>8.2%</td>
</tr>
<tr>
<td>is your</td>
<td>0.0%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

### Percentage of questions that contain one or more instances of the words “I” or “you” (sorted by information gain).

<table>
<thead>
<tr>
<th>Word</th>
<th>% Informational</th>
<th>% Conversational</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>68.6%</td>
<td>27.4%</td>
</tr>
<tr>
<td>you</td>
<td>25.8%</td>
<td>54.7%</td>
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</tbody>
</table>
Prior work says:
To understand a user’s role in a social system, we might look at who that user interacts with, and how often.
(e.g., Fisher et al., 2006)

Therefore, we speculate:
The users who ask conversational questions have different “social network signatures” than users who ask informational questions.

Let’s borrow notation from graph theory.
Users are modeled as vertices, answers as directed edges.

U1 asked a question. It was answered (only) by U2.

U2 asked a question. It was answered (only) by U1.
U3 asked a question that was answered by 6 other users

U3 has 6 neighbors
One metric: number of neighbors
Users asking conversational questions vs. informational questions

Another metric: clustering coefficient
Users asking conversational questions vs. informational questions
Building the Machine Learner

1. Extract Features from dataset
2. Read features into specialized classifiers
3. Send output of specialized classifiers to meta classifier
4. Generate final prediction

Ensemble Architecture
Individual Accuracy

- Question + Meta Data
  - Category Features
    - Category Classifier: 73.7%
  - Text Features
    - Text Classifier: 79.8%
  - Social Network Features
    - Social Network Classifier: 82.2%

Accuracy of the specialized classifiers

Combined Accuracy

- Category Classifier: 73.7%
- Text Classifier: 79.8%
- Social Network Classifier: 82.2%
- Meta Classifier
  - Final Prediction: 89.7%

Accuracy of the ensemble classifier
Thoughts

It works!

Now working with Rhetoricians to further refine taxonomy of questions

Goal is to intervene to help users improve questions; customize interface.

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<table>
<thead>
<tr>
<th>Question</th>
<th>Identification (future-focused)</th>
<th>(Dis)Approval</th>
<th>Quality</th>
<th>Prescriptive</th>
<th>Factual</th>
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<tbody>
<tr>
<td>i'm planning to learn a scripting language to play with creating interactive web sites. it used to program a bit, but am rusty. what language or tool would you recommend?</td>
<td>directed at generating a new (or specifically tailored) solution, approach, or plan rather than locating or implementing an already existing solution. grounded in the questioner's desire to inform future action.</td>
<td>directed at establishing a focused discussion (and potentially building relationships) among people with a shared commitment to a topic.</td>
<td>directed at encouraging readers to offer a “favorite” or “least favorite”, with the implicit understanding that answers will be at root - subjective opinions.</td>
<td>directed at seeking the “best” or “worst” example of a given class, or at weighing the relative merits of a given product, form, or concept.</td>
<td>directed at seeking an answer that is objectively or empirically true, such as existing information, data, or settled knowledge.</td>
</tr>
<tr>
<td>what do you think of ipv6? has the internet community done enough to make the transition happen in time? what would you do?</td>
<td>directed at pursuing an already developed solution to a problem or challenge. grounded in the questioner's desire to learn steps or strategies that are known (through experience) to address or resolve the issue at hand.</td>
<td>directed at determining the “best” or “worst” example of a given class, or at weighing the relative merits of a given product, form, or concept.</td>
<td>directed at seeking an answer that is objectively or empirically true, such as existing information, data, or settled knowledge.</td>
<td>what's the best anti-virus software for windows? price matters, but keeping my machine safe is what matters most. here do i delete all traces of microsoft office from my windows vista pc? getting rid of the app icon was easy, but i don't know where the rest of the &quot;pieces&quot; are...</td>
<td>will sony's acid pro music editing software run under parallels on my mac?</td>
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Conclusion?

E-Bowling Together?

A Few Thoughts

Many ways volunteers can moderate
   ◆ voting/tagging/commenting
   ◆ favorites
   ◆ taking ownership for a page or section

Many ways to get high quality
   ◆ mine it from a large set of mixed quality
   ◆ small community with norms
   ◆ tools to coach users into effective behavior
Help is Out There: Online Community, Community Artifacts, and a New Way of Harnessing Knowledge

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