An Overview of NLP Crowdsourcing Systems

Sixth ENeL Action meeting in Budapest
25 Feb 2017

Federico Sangati
Terminology

Crowdsourcing    Outsourcing

Citizen Science

Wisdom of the crowd

Human Computation

Amazon Mechanical Turk

Collective Intelligence

Game With a Purpose (GWAP)

Serious Games

Collaboratively Constructed Language Resources (CCLR)
Higher level of organization

Slime Mold
Wikipedia (2001)

- English
  - The Free Encyclopedia
  - 3,907,000+ articles

- Español
  - La enciclopedia libre
  - 879,000+ artículos

- Русский
  - Свободная энциклопедия
  - 838,000+ статей

- Italiano
  - L’enciclopedia libera
  - 905,000+ voci

- Português
  - A enciclopédia livre
  - 718,000+ artigos

- 日本語
  - フリー百科事典
  - 799,000+ 記事

- Deutsch
  - Die freie Enzyklopädie
  - 1,383,000+ Artikel

- Français
  - L’encyclopédie libre
  - 1,230,000+ articles

- Polski
  - Wolna encyklopedia
  - 887,000+ hasel

- 中文
  - 自由的百科全書
  - 429,000+ 條目
WIKIPEDIA

285 different languages
Knowledge

WIKIPEDIA

Knowledge

Knowledge
Amazon Mechanical Turk (2005)

HITs - Human Intelligence Tasks - are individual tasks that you work on. Find HITs now.

As a Mechanical Turk Worker you:
- Can work from home
- Choose your own work hours
- Get paid for doing good work

As a Mechanical Turk Requester you:
- Have access to a global, on-demand, 24 x 7 workforce
- Get thousands of HITs completed in minutes
- Pay only when you're satisfied with the results
Amazon Mechanical Turk (2005)
ESP Game
GWAP

Knowledge

Knowledge + Fun
The Norwich line steamboat train, from New-London for Boston, this morning ran off the track seven miles north of New-London.
Duolingo
Luis von Ahn (2012)
Edutainment
Why crowdsourcing in NLP

- Offset the high costs of language resource development and maintenance
- Seeking expertise outside the members of the project
- Create a public interest on linguistic research and synergies outside the academic environment (e.g., schools, elderly care taking infrastructures)
Main obstacles

- **Implementation**: hard to program a successful system (paradigm, UX, robustness, scalability)

- **Visibility**: need to reach a critical mass of users in order for the project to succeed

- **Dropouts**: many people try the system just once and abandon the project
Ingredients for success

• **Implementation**: Start simple and focus on game mechanics. Prototype the idea and test it with a small set of users before investing on interface and the rest.

• **Visibility**: enhance visibility of the project (social media) in order to attract new users.

• **Dropouts**: keep the community motivated and engaged.
GWAP Survey

- Mid January 2017: opened a survey on Corpora List of NLP-related Crowdsourcing Systems

- Selected answers at tiny.cc/nlpcrowd

- Survey is still open at tiny.cc/nlpcrowd_form
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<th>Active</th>
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<tr>
<td>Open mind word expert</td>
<td>❌</td>
<td>Word Sense Tagging</td>
<td>2002</td>
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<td>1001 Paraphrases</td>
<td>❌</td>
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<td>Verbosity</td>
<td>❌</td>
<td>Word Common Sense Knowledge</td>
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<td>Jeuxdemots</td>
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<td>Word Emoji Multilingual Dictionary</td>
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<td>Ingra-besed</td>
<td>✅</td>
<td>Word Collocations</td>
<td>2016</td>
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EmojiWorldBot

Martin Benjamin, École polytechnique fédérale Lausanne, Switzerland
Francesca Chiusaroli, Macerata University, Italy
Johanna Monti, Napoli University, Italy

- Emoji ↔ Text in 130 different languages (and growing)
- Implemented as a chat-bot in the Telegram messaging platform
Collected Annotations (since Sept. 2016)

- 61 languages with at least one annotation
- ~1700 players, ~2500 proposed tags, ~500 new tags in total
Final Remarks

• Get inspired by non-NLP crowdsourcing systems.

• Create single platform for NLP based crowdsourcing projects (boost visibility, code sharing)?

• Seek synergies with other types of institutions (e.g., school, elderly care taking infrastructures).

• New platforms chat-bots platforms.
Web platform for collaborative language exercises in classrooms with the help of the teacher. Exercises result will be used to create linguistic resources.

http://dh.fbk.eu
https://twitter.com/DH_FBK
**SCHOOL-TAGGING**

Classroom Exercises for Language Research

**Students** engage in game-like exercises with immediate feedback.

**Teachers** can monitor individual and aggregated answers in real time and validate results.

**Researchers** can collect annotated material for the benefit of the scientific community.

http://dh.fbk.eu
https://twitter.com/DH_FBK