Coney: A Conversational Approach to Enhance Engagement in Surveys

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Abstract

Citizens' participation to research activities is a key element in bridging the gap between science and society. Researchers need to collect data from participants and, usually, questionnaires are the primary employed means. In this respect, research is focusing on improving the user experience to facilitate data collection.

Coney is an innovative survey instrument to enhance user engagement. It exploits a conversational approach, by administering questionnaires mimicking a chat. On the one hand, Coney enables researchers to model a conversational survey with an intuitive graphical editor; on the other hand, Coney allows publishing and submitting surveys through a conversational interface.

Coney relies on a graph-based data model for surveys. Coney allows defining an arbitrary acyclic graph of interaction flows, in which the following question depends on the previous answer provided by the user. This offers a high degree of flexibility to survey designers that can simulate a human-to-human interaction, with a storytelling approach that enables different personalized paths.

Coney adopts a quantitative research method: survey questions are internally associated with a set of latent variables and each possible answer option is internally coded to allow for the numerical interpretation of the collected answer. To this end, Coney also offers a dashboard to support the statistical analysis of results.

To implement FAIR principles, to pave the way for the adoption of Coney within Open Science and to promote responsible and reproducible research, we offer the graph-based model of Coney as an open ontological model; this allows to publish and to share on the web both the surveys and their collected answers as linked data research objects.

Conference Themes

RRI and Open Science: bridging the gap
- Citizen Science and Public and Societal Engagement

Keywords

Conversational interface; Survey tool; Citizen Science; FAIR principles; Open Science; RRI.

Audience

Researchers; Citizen Science campaign organizers; Citizen Scientists; Survey designers.

Demo presentation content

Coney is a solution designed to offer an innovative approach for research activities requiring collections of data through questionnaires. Coney aims at improving the user experience and at enhancing the user engagement submitting surveys via a conversational interface [1]. The demo will showcase the Coney toolkit, which is based on three main components addressing the design, evaluation, and analysis of questionnaires for survey research [2].

The first component is CONEY Create, a drag-and-drop editor tool which allows for the graphical design of a questionnaire. Coney offers a generic model for surveys and allows the designer drawing an arbitrary acyclic graph to specify the possible branches and paths the conversation may follow with respect to answered questions. CONEY Create allows building the conversational survey by interconnecting three basic elements: question blocks to model questions and to select their visualization (star rating, options, emoji, slider, open), answer blocks to model each available predefined option offered to the respondent, talk blocks to model conversational/storytelling elements (messages, images or links). The graph-based model is very flexible, helps to better mimic human interaction, e.g. providing different textual feedback on different answers.
The Coney toolkit is designed to support a quantitative research method, by overcoming the existing challenges [3]: the questionnaire creator can transparently annotate the survey elements at design time, by linking questions to the latent variables they refer to, and answer options with their coding.

The second component is *CONEY Chat*, a Web-based user interface to administer the designed conversational surveys through a chat-based interaction. *CONEY Chat* simulates a message exchange by texting users and posing questions according to the defined flows, and collecting the provided answers from users' replies. The interface is similar to one of instant messaging services and adapts itself giving to the user different possibilities of interaction with respect to the type of question, e.g. displaying emoji options instead of the usual textual buttons. We are also evaluating the feasibility to administer our conversational surveys through existing chat channels, like Messenger or Slack.

The third component is *CONEY Inspect*, a dashboard to simplify the statistical analysis and visualization of the answers collected through the conversational survey. Given the possibility to tag questions with the investigated latent variable and to tag answers with their numerical coding, *CONEY Inspect* facilitates the basic analysis on collected data (e.g., frequency statistics on answers, coherence of questionnaire items, potentially also hypothesis testing on the interplay between the latent variables). Moreover, *CONEY Inspect* allows visualizing common paths followed by survey compilers and drilling down to an individual user's followed path.

The demo will finally showcase also the graph data model used "behind the scenes" of the different Coney components. This data schema not only optimizes the toolkit functioning, but also simplifies the entire open science approach, because it facilitates the sharing of survey data (both questionnaire design and collected answers) and paves the way for reproducibility and transparency of the research process according to the FAIR principles.

References

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