

Obscuring the Task: Story and Theme as Motivators in an Emotion Annotation Game

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1. INTRODUCTION

In this poster paper, we explore how game stories and themes can be used to deemphasize the work that players must do in an emotion annotation game. By “obscuring the task,” we aim to produce a game experience that is meaningful and enjoyable for players who may have only limited interest in the science activity that the game supports. This is a contrast to many collective intelligence and citizen science games where purposeful activities are made prominent and players are often recruited on their willingness or enthusiasm to engage with the task.

This may be because, while games have been recognized for some years as a promising mechanism for capturing the attention of volunteer participants [von Ahn, 2006], crafting stories and developing engaging gameplay that also serve purposeful collective intelligence activities is a non-trivial undertaking [Prestopnik & Crowston, 2012]. There is a resulting enthusiasm for an easier approach, so-called “gamification,” whereby game-like elements such as badges, achievements, or points are attached to non-game activities.

Though simpler to design and implement, many gamified experiences fail to result in meaningful experiences for their players [Bogost, 2011]. Even when well designed, there is a risk that they may only attract players who are already motivated to participate through other means (e.g. inherent interest in the activity itself), raising the question of whether a game is really needed for those participants or not. This leaves a true challenge for those who seek to effectively crowdsource with games: finding ways to fuse engaging and meaningful play experiences with purposeful activities while attracting otherwise uninterested participants.

Using an ongoing citizen science game design project called *Diplomats, Assassins and Spies* as an example, we explore how stories and themes can be used to address this challenge, attract non-enthusiast participants, and produce meaningful collective intelligence play experiences.

2. DIPLOMATS, ASSASSINS & SPIES

Diplomats, Assassins and Spies is an annotation game designed to support natural language processing (NLP) research. In this section, we describe the annotation activity and the game itself, with emphasis on the ways that story and theme blend the annotation task into the play experience.

2.1 Annotation Task

Being able to detect emotions in text is important for understanding people’s reactions towards different events or topics. With the surging amount of textual emotional content on the Web from popular social media platforms such as Twitter and Facebook, automatic emotion detection tools are increasingly necessary. However, these have not achieved the desired performance to date. One problem is that gold standard data (annotated emotion corpora) have to be manually developed by

human individuals in order to train machine learning models to identify the linguistic cues in a piece of text. Because human annotation is necessary, the existing annotated emotion corpora exist only in small scale, and it is nontrivial to scale up these language resources for effective NLP applications.

Diplomats, Assassins & Spies will help researchers create a new, large-scale emotion corpus through collective effort. In this game, players will annotate Twitter tweets (and possibly text from other sources in the future) based on four dimensions of emotion: 1) *valence*, how positive or negative the emotion is; 2) *intensity*, the strength of the emotion expressed; 3) *emotion tag*, a qualitative description of the emotion; and 4) *emotion cue*, the words or phrases in the text that indicate emotion.

In *Diplomats, Assassins & Spies*, the four emotion dimensions are organized as individual annotation activities. These activities are thematically motivated (see below), and designed to be finished quickly, providing players with diegetic rewards [De Freitas & Oliver, 2006; Galloway, 2006; Stam, Burgoyne, & Flitterman-Lewis, 1992] that are also tightly bound to the game world and story.

The contribution of this crowdsourced corpus will be two-fold. First, it will benefit researchers who are interested in studying and learning what people identify as linguistic cues for a wide range of emotions expressed in tweets. Second, it will provide larger and richer set of gold standard data to train machine learning models for detecting emotions in text.

2.2 Game Design

Diplomats, Assassins & Spies is a web-based, single-player game developed with a suite of web technologies (HTML5, CSS3, JavaScript/jQuery, PHP, MySQL). The setting is the future, where hostile robots are threatening to take over planet Earth and wipe out humanity for commercial gain.

Players take on the role of a diplomat sent to find a way to stop the invading robots. The player soon learns that the robots have an inherent curiosity about human emotions, an alien concept to them. Some robots suspect that emotions could be a powerful addition to their already formidable abilities if only they could learn more about them. This is humanity’s last hope, and the player (the diplomat) must teach the robots about emotions in a desperate gambit to buy time and stave off humanity’s destruction. While some robots are willing to listen, others (assassins) will ruthlessly attack, resulting in card game style combat encounters. Some robots (spies) are also working to sabotage the player, stealing resources or otherwise damaging the player’s ability to progress through the game.



Fig. 1. Left: An existing (non-game) interface for trained volunteer coders to perform the emotion annotation task. Right: The *Diplomats, Assassins & Spies* play space where players encounter robots prior to annotation or combat. Contrast the visual feel of the two images; the game’s visual design downplays the functional science feel and recasts the activity shown in the left screen as one game element among many. However, the overarching science theme is still emphasized through player interactions with robots in the game.

The player's desperate mission takes them from the outer reaches of the solar system inward to Saturn, Mars, and even a final confrontation on Earth itself. In each level of the game, players navigate through areas populated by robots. Clicking on a robot will result in a random encounter: e.g. teaching a robot about emotions (annotation) or defending oneself from an attack (combat). An overarching story guides the player from level to level, introducing the game premise, the central conflict, combat encounters, boss enemies, a final boss, and ultimate victory for humanity.

3. DISCUSSION

All of the engaging story and thematic elements of *Diplomats, Assassins & Spies* are tightly bound to the not-quite-invisible but definitely not front-and-center emotion annotation tasks of the game. For example, the notion of teaching potentially hostile robots about human emotions is an obvious parallel to the real-world need to train computer algorithms to identify linguistic emotion cues in text. In the game, the stakes are higher: humanity's survival is at stake. However, the activity that the player performs is essentially the same and, importantly, makes as much sense within the context of the game world as it does within the context of the real world.

Diplomats, Assassins & Spies features more foundational thematic connections as well. The notion of conflict and all of its attendant emotions – rage, frustration, fear, sorrow, elation – are a pervasive subtext, shaping every encounter in the game. The annotation task is central to progressing through the story and achieving victory, and the focal point of annotation – emotion – is a core theme.

4. CONCLUSION

Though still in development, *Diplomats, Assassins & Spies* demonstrates a unique approach to collective intelligence and citizen science game design. Rather than “gamify” a task using badges, points, or achievements, *Diplomats, Assassins & Spies* uses diegetic, story-based rewards and tight connections between task and theme to blur the lines between real-world activity and game activity. Players will always – and should – understand that they are helping with scientific inquiry while they play. At the same time, by deemphasizing the real-world science and emphasizing the themes and conflicts in *Diplomats, Assassins & Spies*, we aspire to obscure the work that must be done and to generate rich, meaningful play experiences whether the players we engage are NLP enthusiasts or just casual gamers.

In the future, we intend to evaluate *Diplomats, Assassins and Spies* on a variety of metrics, first and foremost on its ability to capture the interest of casual, non-science enthusiast gamers. In addition, we are interested in exploring how “obscured task” games like *Diplomats, Assassins and Spies* shape player performance and data quality. We expect to begin these evaluations in the summer of 2014 using a variety of methods, including both controlled and naturalistic techniques.

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