Botsourcer: Crowdsourcing Volunteers for a Political Cause Using Online Bots

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ABSTRACT

Political organization have untapped potential to empower volunteers career and skill development. Currently, political organizations do not invest time to train and give volunteers a clear career path. Politicians consider time spent on training is time not spent on their political cause. As a result, the skills of volunteers usually remain static and volunteering in general does not help individual advance their own goals. In this paper we seek to offer a solution that can benefit both parts.

We present Botsourcer an online platform that transforms volunteering for a political cause into learning opportunities to advance a person's career goals. Botsourcer converts volunteer tasks into tutorials that guide people to learn skills and do work for the community and political organizations. Botsourcer also integrates feedback from the crowd, including expert volunteers, professionals, and politicians, to generate better learning opportunities from volunteering that helps the individual and also a political cause.

INTRODUCTION

It is believed that one of the most effective ways to improve volunteering for a political cause is to offer people ways to grow [3, 13, 16, 39]. For instance, this could be giving people the opportunity to build new skills or professional relationships while helping out in political campaigns [10, 19]. However, while politicians do offer training for growth, rarely do they match the personal goals of volunteers. It is rare to find politicians that can cover the individual needs of their volunteers [3, 16].

Many political campaigns and politicians avoid providing training all together to their volunteers. Even if the training could help their objectives in the long term [8]. Politicians usually consider that time spent on training is time not spent on their political campaign or promoting their political cause. Consequently, politicians prefer if volunteers simply finish their tasks quickly to help their political cause faster [8,

30].As a result, the skills of volunteers usually remain static, and volunteering in general does not help individuals advance their own goals. This is actually one of the main reasons why volunteers drop out of political causes [19]: they are forced to find other outlets to achieve their life plans

Dropouts are extremely problematic in political campaigns because: (1) they directly impact the lifespan of a political cause and (2) having dropouts means political groups will be slower to produce action (as new recruitment is first needed). With volunteering capable of being integrated into the daily lives of all individuals [35], it is critical to articulate how volunteering and personal development will integrate with one another. Addressing this might allow large on-demand volunteer workforces that tackle political societal problems on a larger scale.

To start to address the challenge of catering to both the goals of political causes and individuals, we introduce *Botsourcer*. Botsourcer is an end-to-end system that transforms volunteering for a political cause in to learning opportunities that help volunteers advance their professional goals. Given a person's career goals, *e.g. "become a publicist,"* Botsourcer first identifies the most relevant skills to reach the goal, *e.g. "brand building," or "blogging."* Next, the system identifies the volunteer tasks related to such skills, *e.g. "blog about the politician's fund raising events."* Botsourcer subsequently transforms the task into tutorials that guide people to learn the skill while executing the work. Botsourcer also works to integrate feedback from the crowd, including expert volunteers, professionals, and politicians, to generate better volunteer learning opportunities that more effectively advance the goals of individuals and politicians.

As a first step to explore whether we can offer professional development while volunteering for a political cause, we focus on the problem of skill development. We study whether or not real-world volunteering experiences can serve people to start learning new skills for their professional goals while also serving a political cause. Once we identified that volunteer tasks could act as educational opportunities for professional development, we propose a model wherein online bots integrate volunteer tasks into tutorials that help to slowly educate the volunteers in skills aligned with their professional goals and that also help advance a political cause. The bots then guide volunteers to execute the tutorials and produce work
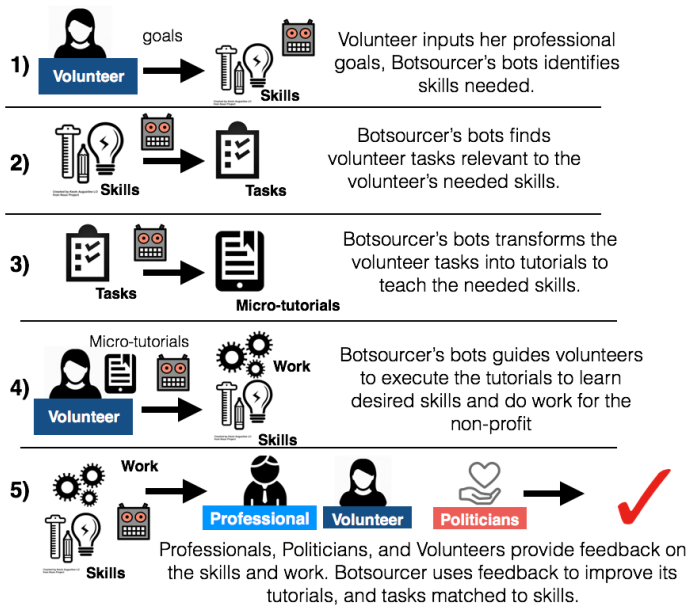
Figure 1. Steps involved for Botsourcer to transform volunteering into learning opportunities that advance individuals' personal goals and help politicians. Botsourcer also obtains feedback from volunteers, professionals, and politicians to improve the learning opportunities it crafts.

for the political cause. After volunteers finish the tutorials and work, Botsourcer's online bots reach out to professionals and politicians to provide micro-feedback. The feedback helps Botsourcer to craft tutorials that are better suited for what industry and politicians need. Botsourcer also requests feedback from the volunteers themselves. This allows Botsourcer to improve from the perspective of the learner. Overtime, Botsourcer evolves to provide improved learning opportunities from volunteering for a political cause.

In a field experiment comparing Botsourcer to traditional volunteering interfaces, Botsourcer successfully helped volunteers to learn new skills, while producing quality work for the politician. Professionals improved Botsourcer's tutorials by sharing helpful resources and motivating the use of new technologies. Professionals also helped to better match volunteer tasks to individual volunteers personal career goals. Professionals provided insiders advice into what volunteers needed to do to reach their dream jobs. politicians helped to better motivate volunteers and their work. The politicians helped to emphasize in the tutorials why certain work mattered and would impact the community. Volunteers helped polish and break up the tutorials into chunks that could be of greater educational value for others. Volunteers also helped to better match tasks associated with their work with the skills they felt they learned while volunteering.

RELATED WORK
Political Participation and volunteerism

Political organizations usually have a small set of core members who participate full time with the cause. However, to achieve their goals, political organizations cannot rely en-

tirely on their core members. They usually require a larger crowd of volunteers who can perform small actions, e.g. individuals who can support their cause in the community [30]

Traditionally, politicians have used word of mouth and traditional media to recruit volunteers. Recently, new technologies,such as social media, have helped political organizations build the support of casual volunteers [22]. Facebook and Twitter has been particularly useful to recruit and coordinate volunteers [37] and to advocate for the organization and its cause. Nevertheless, social media is primarily being use as a one-way communication. These significant limitations in use are particularly striking given political organizations reliance on building relationships with volunteers and encouraging participation [37].

Furthermore, research suggest that volunteer organizations should provide opportunities that afford benefits matched to their volunteers' motivations and, in so doing, lessen the rate of turnover in their volunteer labor force [7].

Several investigations have focused on creating computational systems and methods to increase volunteer workforces [4], especially for political causes [25]. Some systems focus on dispatching tasks that can be completed in seconds to attract more volunteers [35]. Other systems bootstrap off social media to access large pools of people and more easily recruit. Brady et al. [4] showed that it was feasible to recruit volunteers from people's Facebook friends to help the blind. Savage et al. [25] showed the potential of using online bots to recruit people from Twitter to do micro-volunteering for a cause. Nevertheless, these platforms are at present incomplete. Such systems have not addressed how we can retain volunteers longer term [27]. While these approach can bring an influx of volunteers to a collaborative effort, they rarely maintain the volunteers long-term [14]. This is especially because the recruitment is not followed by any mechanism to engage the citizens. With Botsourcer we study how by providing volunteers with the opportunity to grow professionally; they might be more engaged to continue participating in the collective effort.

Other approaches have focused precisely on creating work flows that engage volunteers to encourage them to stay. Such platforms have sometimes sandboxes where newly recruited volunteers can have personalized and detailed feedback on their work from experts [24]. The sandboxes let newly engaged volunteers to become integrated into the cause under a friendly welcoming environment. This can help in their retention. However, the approach also requires experienced volunteers to invest a great amount of time providing assistance. This can limit and affect their own contributions. Other approaches have engaged new crowds of volunteers with simple lightweight feedback processes [6]. These approaches showcase how new citizen volunteers can be retained while not imposing a large burden on others.

Note that these techniques usually only operate with volunteers who already have a clear plan of how they want to participate. However, most people cite not having a clear vision on how to take part in a political cause as one of the main

reason why they stop volunteering, or do not even begin [38, 31, 36, 37]. Most potential volunteers have a difficult time just finding tasks to which they can contribute [17]. Some also decide to not volunteer because they lack a vision of how the activity might personally benefit them. Sociologist believe that if organizations showed how volunteering translates into professional opportunities, the organizations might have a larger and longer term volunteer turnout [39].

Botsourcer: Learning By Doing

Botsourcer's design is based on previous research in education that emphasizes how learners benefit from *doing* real world examples. We first review literature in education, with a focus on the advantages of learning by doing. We then review literature on career development in the politician sector.

Cognitive apprenticeship considers that learning should always be crafted in a form that is similar to craft apprenticeship where learners take on real world domain tasks and learn by doing and obtaining feedback from experts [26]. This method has had success in web-based courses for P-12 teacher education [11] and high schoolers learning design skills [20].

It is also known that motivation is the most critical factor in learning [5].Learning and performance is highly influenced by motivation [29, 2, 21]. Intrinsically motivated students tend to employ strategies that demand more effort and enable them to process information more deeply [18].Learners are more motivated when they can see the usefulness of what they are learning and when they can use that information to do something that has an impact on others [23, 9].

The type of tasks that students execute to learn a skill can also motivate students' learning.Ideally, tasks should be challenging but achievable; defining tasks in terms of specific, short-term goals can help students to associate effort with success [32].

It is widely recognized that we learn faster and more effectively when we have a sense of how well we are doing, and what we need to do in order to improve [28]. It has also been reported that in order to establish an effective learning environemnt, increasing opportunities for students to receive feedback to improve the learning process must exist [1].

Therefore, skill development through micro-tasks that help politicians is a method of providing student a way to find intrinsic motivation while doing good. We propose that if volunteers perform tasks of a politician with which they have empathy, they could be more motivated tho complete the task and, at the same time, improve their skills to be one step further of getting their dream job.

Botsourcer: Interfaces That Help You Learn and Volunteer

Research on crowdsourcing has identified the phases of the remote contribution process .The first phase is matchmaking where both work performer and work provider agree on the task to be done.The next one is task execution. After that

validation is performed to asses the work. Finally the reward is given on successful completion of the task [34].

Different volunteer services support different phases of this process. [15].General purpose volunteering services, such as *VolunteerMatch* , act as bridges between volunteers and non-profits, focusing mostly on the matchmaking phase, but execution and validation are virtually not implemented. [34]. Therefore, it is not possible to have a record on the performance of the volunteer, nor the quality of the work done. Other volunteering services such as *Distributed Proofreaders*, are much less flexible in terms of matchmaking but they have higher support in terms of execution and validation [34]. Both services present a great example of how people volunteer online to help different causes. However, this services do not track achievement and/or offer volunteers the necessary tools to track their achievements or give them clear opportunities to grow professionally.

On the other hand learning is now increasingly happening online and opportunistically [12]. We combine this notions by creating Botsourcer, a system that let volunteers select task that can help them achieve the skills necessary to get their dream job, but also, we provide students with the necessary feedback to help them improve.

Learnsourcing using feedback from crowds to improve BOTSOURCER

Botsourcer is an online platform that by leveraging online bots transforms the volunteering tasks of a political cause into learning opportunities to help volunteers reach professional goals. Botsourcer's thus sources to volunteers tasks that help them to learn the skills needed for their professional goals. Botsourcer's online bots first craft tutorials that teach the skills that volunteers need for their dream jobs, and integarte the volunteer tasks as execrsies of the tutorial. By transforming volunteer tasks into tutorials Botsourcer guides volunteers to learn while helping a political cause.

After volunteers execute the tasks, Botsourcer's bots integrate feedback from politicians, professionals, and the volunteers themselves. The system uses the feedback to evolve and craft better learning opportunities for volunteers. These improved learning opportunities aim to help volunteers: (a) produce higher quality work for politicians; and (b) be better prepared to get their desired job.

Transforming Volunteering into Learning Opportunities
Without guidance, people have difficulty volunteering and advancing their personal goals. Botsourcer thus uses online bots to shepherd volunteers to execute tasks that help them to learn skills related to their professional goals, especially to obtain their dream jobs. For this purpose, Botsourcer: (1) identifies the skills needed for people's dream job; (2) finds volunteer tasks that require such skills; (3) converts the tasks into tutorials that guide volunteers to execute the work while learning the skills.

1. Discovering Skills Needed For Volunteers' Dream Jobs
Given a volunteer's dream job, Botsourcer identifies the skills that such job requires. To accomplish this, we use online bots
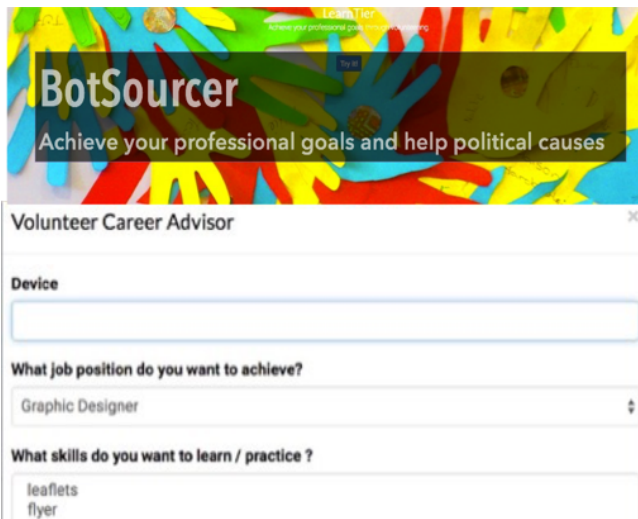
Figure 2. Botsourcer lets volunteers establish the job position they desire, and then identifies the skills needed for the job. The interface allows volunteers to decide the skills they want to start learning and then guides volunteers to execute tasks to build such skill.

on Linkedin to first find the skills that people with the job state to have. We use an approach similar to TF-IDF to favor skills that most people with the job mentioned; but that are not too general to be present in all Linkedin profiles. Botsourcer ranks skills based on their TF-IDF score, and then takes the top 5 skills as the ones to start teaching volunteers. If the volunteer already knows those skills, then Botsourcer iteratively takes the next top 5 skills. Figure 2 presents a screen shot of how Botsourcer lets volunteers select the skills they want to learn given their dream job. Note that we do not focus on identifying skills from job postings because most postings do not clearly state the skills needed for the job. However, most people on Linkedin do state on their profiles the skills they have.

2. Identifying Relevant Volunteer Tasks

Botsourcer allows politicians to cross-post their tasks from different sites onto the platform (e.g., from their own personal website, Facebook page, Twitter among other sites). This allows politicians to offer volunteers the opportunity to grow while helping their organization. Politicians can choose to either state the types of skills that volunteers might build with each task; or simply describe the tasks as they normally do. For the case where Botsourcer does not have clear labels of the skills that could be built with a task, Botsourcer does simple keyword matching. For instance, if a task mentions in its description something about "posters," Botsourcer will consider that the task might serve to learn "poster making" skills. Note that this approach might not be the best for identifying tasks to learn certain skills. However, by later integrating feedback from volunteers, politicians, and professionals, Botsourcer evolves and better matches skills to tasks. This approach helps politicians to continue operating in the same form as before.

3. Transforming Volunteer Tasks into Tutorials

Learning and volunteering succeeds best with step by step achievable goals. For instance, by dividing tasks into step by step milestones crowd workers finish the tasks better and can also learn new skills. However, most politicians only provide long descriptions of their tasks without any breakup. Politicians in general lack experience on the best practices for guiding volunteers to execute the tasks they need. Worse, the lack of guidance can lead volunteers to do only repetitive tasks for which they feel comfortable. This can limit the personal growth of volunteers. Botsourcer thus aims to convert volunteer tasks into step by step tutorials. The tutorials allow volunteers to have guided instructions on how to execute the work. This enables volunteers to explore doing tasks outside their knowledge and facilitates the learning of new skills. This approach also helps politicians to not have to invest time and effort in learning best practices to guide volunteers.

For this purpose, Botsourcer first identifies the volunteering tasks that could help people to build the skills they need for their dream job using keyword matching. Next, it finds relevant online tutorials to help teach the skill (Botsourcer works primarily with tutorials from WikiHow[1] that step-by-step can help teach almost any skill). Botsourcer then interweaves these online tutorials with the volunteering tasks. Volunteer tasks are blended as practical real world exercises of the tutorial. As an example of how Botsourcer here functions, imagine a volunteer with the goal of becoming a *graphics designer*. The system might first determine that to have such job the person needs to have *poster-making* skills. Botsourcer will then leverage its online bots to guide volunteers to execute the tutorials on *how to make posters* intermixed with exercises on creating posters for politicians. Note that these tutorials with volunteer tasks as exercises might not be the most optimal to teach volunteers new skills. However, Botsourcer has the advantage of integrating feedback from volunteers, politicians, and professionals. This feedback allows the system to evolve and craft better learning opportunities for volunteers.

Integrating Feedback from Volunteers, Politicians, and Professionals

After volunteers finish executing the work, Botsourcer sends its online bots out to request micro-feedback from politicians and professionals. The aim is for this micro-feedback to help volunteers better learn the skills and produce higher quality work for the political campaign. Botsourcer also allows politicians and professionals to edit the tutorials it crafted. Professionals and politicians can thus choose to integrate additional steps into the tutorial; or reduce steps; as well as make recommendations of the type of tools and technologies that volunteers should use.

Botsourcer uses the feedback given by these crowds to learn over time the type of tasks that are best suited to teach particular skills. For this purpose the system uses reinforcement learning [33]. Botsourcer revises its knowledge through practice by interacting with subject matter experts, in this case politicians and professionals. Our approach s advantageous

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[1] **http://www.wikihow.com**

because the system can continuously evolve to guide volunteers to produce work that makes current sense for politicians, and that is also up to date with industry standards. Our method uses reinforcement learning to correct errors in the tutorials the bots generated and fill in gaps in the knowledge that the bots tailored.

CONCLUSION

In this paper we presented Botsourcer, an online platform that by leveraging online bots, is able to transform volunteering tasks of a political cause into learning opportunities to help volunteers learn the skills needed for their professional goals. For this purpose, Botsourcer identifies the skills that the volunteer needs in order to achieve their dream job. Botsourcer then finds tasks in a political campaign that require such skills and guides the volunteer to execute the work. This provides the volunteer with the opportunity of learning while also helping a political organization. We envision that Botsourcer will enable volunteers to take on challenging new tasks and ultimately expand their career opportunities in politics while they help their community at the same time.

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