Undergraduate Thesis Prospectus

Smart Charlottesville: Designing the Future

(technical research project in Computer Science)

Efforts Toward Unity amid Disinformation and Division in the United States

(STS research Project)

by

Conner Hutson

December 5, 2019

technical project collaborators:
Cory Ayers
Luke Deni
Sanjana Hajela
Tony Lancaster
Kajal Sheth
Jared Tufts

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

signed: _____ date: _____

approved: _____ date: _____
Peter Norton, Department of Engineering and Society

approved: _____ date: _____
Ahmed Ibrahim, Department of Computer Science

General Research Problem

How can we resist division by online media and build unity for mutual benefit?

Diversity in beliefs, values, and ideas makes society rich and promotes innovation. Divisiveness, however, prevents cooperation across ideologies. For example, despite the scientific consensus on climate change, "the existence and danger of global warming hasn't translated into government action" due to divisive disagreement about the issue (Collins, 2017). We are struggling to cross divides for even the most grave problems facing humanity. How can we bring fragmented groups together in common cause?

Smart Charlottesville: Designing the Future

How can we bridge the divides between the university and the adjacent region to achieve a better future for both?

The implementation of technical online platforms has become an increasingly popular idea to engage residents of a city with local government, and the University of Virginia plays a vital role in this due to its technical expertise. Professor Ferguson and Professor Ku are part of the STS department at the University of Virginia, and they are conducting research with their STS 4500 students to develop research ideas for transforming Charlottesville into a smart city. These ideas, however, need a platform that can be viewed and contributed to by both residents and the local government. The research problem to be solved is how to efficiently communicate these ideas, and others, to the Charlottesville community to improve the city for the future.

Currently, there is no viable platform that solves this problem of lacking communication in Charlottesville, since the research problem demands different user types and custom databases that are unavailable with platforms such as WordPress. The work done by the current capstone

group of this academic year will provide the first iteration of a solution to bridge the gap for collaboration between the university and Charlottesville. The capstone project will last the entire academic year of 2019-2020.

Creating a web application public to all users will address the problem in a positive way, by working to provide a safe, non-anonymous site for community members to share ideas of changes they want in the community through engaging discussions. The website will have a feature for users to submit blueprints for proposed projects where they can also add file attachments such as pictures. The platform will require users to register and login to submit posts and interact with other users. The users will be able to look at the projects and comment on them, mark projects as "favorites" for easy access later, and connect with the authors of the blueprints via email. Community members can also submit smaller problems around the city to gain attention from other members so they can be fixed. There will be an "about us" tab where interested visitors can get in contact with the creators of the site and learn more about this initiative. The landing page will have a map that shows the Charlottesville area with ongoing projects pinned so users can explore projects in different areas by clicking specific pins on the map. Finally, there will be a resources tab describing places users can go to learn more about projects and current city work in general.

To build this website a strict set of requirements will be collected from Professor Ferguson and Professor Ku. Requirements contain the attributes and properties of features of a system that the user wants to help solve their problems. It is important to gather system requirements to correctly understand the goals of the client and to facilitate the work of the developers to best cater towards the stakeholder's needs. Listed below are the capstone group's minimum, desired, and optional requirements:

Minimum Requirements:

1. As a user, I want to be able to comment on a blueprint to give my support or feedback.
2. As a user, I want to be able to filter through blueprints based on what category they fall under.
3. As an administrator, I should be able to manage blueprint content by hiding or removing it.
4. As an administrator, I should be able to manage the privileges of other users (students, community partners, and community members).
5. As a student, I should be able to create my own blueprint space so that others may view it.
6. As a student, I should be able to view other students blueprints.
7. As a community member, I should be able to leave comments on a students blueprint.
8. As a community member, I need to be able to post blueprints.
9. As a community member, I need to be able to like specific comments or blueprints.

Desired Requirements:

1. As a user, I should be able to search for keywords that define the type of blueprints posting I want to look at.
2. As a user, I should be able to view blueprints based on specific location

Optional Requirements:

1. As a user, I should be able to comment on other comments.
2. As a student, I should be able to tag my post with specific categories.

At the end of the project, we will have a collaborative, online workspace reachable by both the Charlottesville community and academics at the university. Users will be able to post ideas, gather feedback, collaborate, and connect with university resources; the university can do the same, as well as be able to identify problems in the community that may have otherwise remained hidden.

Efforts Toward Unity amid Disinformation and Division in the United States

How are social groups resisting the online spread of divisive information and its resultant tribalism?

Virtual platforms in online media allow people to connect, communicate, and learn from anywhere in the world, but they can be misused for malicious purposes, such as to "distort election campaigns, affect public perceptions, or shape human emotions" (West, 2017). Social media is increasingly a primary source of news for Americans (Newman, 2017). In 2017 the Pew Research Center asked Americans where they read their online news in the last two hours: 36 percent reported a website or app of a news organization, while 35 percent reported social media (Mitchell et al., 2017). Social media is also plagued by bots and disruptors intending to cause division. With carefully selected keywords and interactions, they can "magnify their influence and affect national or global conversations, especially resonating with like-minded clusters of people" (Vicario et al., 2016). Hence they exacerbate the "echo chambers" and "information cocoons" that social media encourages through confirmation bias (Wason, 1960). People prefer to consult sources whose views align with theirs, so far as to cause "suboptimal information-seeking decisions and errors in judgement" (Marks et al., 2019). Social media is exacerbating political polarization. How can we resist division in the face of these forces and come together in common cause?

Related research problems have revealed causes to our polarization. Murat Somer explains that polarization and division is inevitable, however polarization that draws from "a programmatic response to socioeconomic problems and the need for change in society" can give options in policies as opposed to choice solely "in terms of personalities and oppositional

identities" (Somer & McFaul, 2019). More research is needed on how groups are bridging existing divides.

Participants include instigators who seek to cause disruption and division by deliberately crafting or distributing divisive information, and online media organizations (social or news) that are seeking to prevent the spread of divisive information. Twitter, a social media organization, has announced a ban on political ads on the platform to prevent "unchecked misleading information" as political ads "bring significant risks to politics" (Dorsey, 2019). As businesses, these companies depend in part on public approval.

Some social include groups seek to cross ideological barriers. For example, Bridge Alliance (2019) contends that "civil discourse is necessary for genuine problem-solving to address our great challenges," No Labels (2019) is "fed up with the dysfunction" and inaction of the government stemming from inability to compromise, and Unite America (2019) argues we must "put the public interest ahead of any partisan or special interest."

References

beHBG (2016). About. *City of Harrisburg*. http://behbg.com/about/

Bridge Alliance (2019). The Four Principles. *Bridge Alliance*. https://www.bridgealliance.us/the_four_principles

Collins, N (2017). The Psychology of Climate Change Inaction. *Pacific Standard*. https://psmag.com/news/the-psychology-of-climate-change-inaction

Dorsey, J. October 30, 2019. https://twitter.com/jack/status/1189634360472829952

Marks, J., Copland, E., Loh, E., Sunstein, C. & Sharot, T. (2019). Epistemic spillovers: Learning others' political views reduces the ability to assess and use their expertise in nonpolitical domains. *The Cognitive Science of Political Thought.*

Mitchell, A., Gottfried, J., Shearer, E., Lu, K. (2017). How Americans Encounter, Recall, and Act Upon Digital News. *Pew Research Center*.

Newman, N (2017). Digital News Sources. *Reuters Institute for the Study of Journalism*.

No Labels (2019). Why We Matter. *No Labels*. https://www.nolabels.org/why-we-matter/

Somer, M & McFaul, M. (2019). Overcoming Polarizing and Authoritarian Politics. *Standford University.* https://fsi.stanford.edu/news/overcoming-polarizing-and-authoritarian-politics-qa-murat-somer

Unite America (2019). Principles. *Unite America*. https://www.uniteamerica.org/principles

University of Virginia (2019). OpenGrounds Mission. *Rector and Visitors of the University of Virginia*. https://opengrounds.virginia.edu/mission

Vicario, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., Caldarelli, G., Stanley, E., & Quattrociocchi, W. (2016). The Spreading of Misinformation Online. *PNAS*.

Wason, Peter (1960). On the Failure to Eliminate Hypotheses in a Conceptual Task. *Quarterly Journal of Experimental Psychology,* 12:3.

West, D. (2017). How to Combat Fake News and Disinformation. *Brookings Institution.* https://www.brookings.edu/research/how-to-combat-fake-news-and-disinformation/