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# Technologies for Refugee Community Resilience

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## **Abstract**

The exploration of technologies for refugee community resilience is a new area of research as both the concept of community resilience and the designing of technologies to be used by refugees are novel within the humanitarian field. In this position paper, I present the research I have conducted on the role of technologies in building the community resilience of Syrian refugees residing in informal settlements in Lebanon.

## **Author Keywords**

Refugees; HCI4D; Community Resilience

## **Introduction**

This proposal intends to shed light on the research I am conducting with Syrian Refugees with a focus on the research's (1) motivation, (2) goals, (3) approach, (4) preliminary findings (5) progression and (6) expected contributions.

## **Researcher's Background**

I am currently a student pursuing a PhD titled "Exploring the Role of Technology in Building Refugee Community Resilience" at Open Lab, Newcastle University in the United Kingdom. My PhD is conducted in collaboration with the Center for Research on Population and Health at the American University of

## Definitions of Community Resilience

**Magis [6]:** The ‘existence, development and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability and surprise’

**Department of International Development [2]:** The ability of a community to bounce back/prepare for disaster to result in more positive outcomes/contexts than what was before the disaster

**IFRC [5]:** The ability of individuals, communities, organizations or countries exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses without compromising their long-term perspective

Beirut in Lebanon and is co-supervised by Dr. Kyle Montague, Dr. Madeline Balaam, Dr. Hala Ghattas, Dr. Vera Araujo-Soares and Dr. Balsam Ahmad. Prior to starting my PhD I attained a Masters in Public Health (MPH). Throughout my undergraduate and graduate studies, I have conducted research with marginalized communities in Lebanon including Bedouin communities in rural Lebanon, Palestinian refugees in urban camps and Syrian refugees in urban and rural settlements.

## Research Motivation

### *Refugee Crisis*

Lebanon has received 1,011,366 Syrian refugees [15] and the context has become that of a protracted nature as the conflict in Syria is still ongoing. With such a large refugee population exacerbating the already under-resourced infrastructures and institutions in Lebanon, there is a growing pressure to explore new and innovative approaches to providing aid.

### *Community Resilience*

There has been a push within the humanitarian field to adopt a ‘community resilience approach’ to the provision of aid. While the approach has been explored in development studies, its application in humanitarian contexts is novel. The term community resilience, is conceptualized and applied in different ways [8] (figure 1). The concept ‘community resilience’ has been criticized as an approach that facilitates the shifting of responsibility of community development from governments and international institutions to the communities in need themselves [3]. Additionally, it has been criticized to overlook the root causes of why communities are vulnerable [4]. Based on such critiques, frameworks stemming from research and practice may be evaluated against criteria that maintain

advocacy and holding institutions accountable. One such framework is the International Federation of Red Cross and Red Crescent’s (IFRC) community resilience framework. Based on a literature review and a subsequent evaluation of frameworks, the IFRC’s community resilience framework has been chosen to guide the research being presented in this paper. One of the pathways to community resilience identified by the IFRC is having a healthy community in which access to (1) health services and (2) healthy and nutritious foods are paramount. Therefore, my research focuses on improving Syrian refugee access to healthcare and food security in Lebanon as a means of building community resilience.

### *Human Computer Interaction (HCI) for Refugees*

The current refugee crisis has been characterized as the first refugee crisis that is occurring within the digital age [11], in which digital technologies are being developed and used by humanitarian organizations to improve aid provided to refugees. Within the HCI community there has been an increasing interest in the role of HCI research within responding to the refugee crisis with several workshops and Special Interest Groups (SIGs) being held at HCI conferences [11,14]. To date HCI research has explored (1) the information communication behaviors of refugees [16], (2) the design considerations that need to be accounted for when developing technologies for refugees [10], (3) shelter design [9], (4) refugee integration [7], and (5) refugee education [1]. I situate my research within this space by exploring the role of technologies in improving refugee access to healthcare and food security as pathways to community resilience.

Figure 1 Some of the definitions of community resilience

## **Research Goals**

My PhD aims to bridge between community resilience and HCI as a means of exploring how technology can improve refugee community resilience. More specifically I aim to:

1. To explore how improving food security and access to healthcare builds community resilience of Syrian refugee communities residing in rural Lebanon.
2. To co-design with refugee community members technologies that aim at improving refugee food security and access to healthcare.
3. To deploy and evaluate the above mentioned technologies with a refugee community with the aim of testing acceptability and feasibility of use.

## **Originality**

The concept of community resilience is novel especially in regards to refugee communities. Furthermore, the ubiquity of technologies among refugee communities has created a space in which humanitarian innovation and technology is not restricted to humanitarian organizations but rather can be co-designed, co-developed and used by refugee communities. Traditionally, refugees have been viewed as recipients of aid, where participatory approaches are only an item within intervention design and evaluation rather than being the overall approach for the inclusion of refugee communities as stakeholders within the aid system. My research is situated within these novel changes taking place within the humanitarian field.

## **Research Approach**

The overall approach adopted throughout this research is that of an embedded researcher. I work with Syrian refugee communities residing in informal settlements in Lebanon over long periods of time in which I conduct research with the community that responds to their needs. However, I also explore how I can support the community through my skills (e.g. tutoring children in English, communicating to Non Governmental Organizations pressing issues the community is facing). Furthermore, at the beginning of a study the methods to be used are discussed with participants and are amended based on the preferences and suggestions of participants. Additionally, I partake in the meetings of United Nations High Commissioner for Refugee's health working group and work closely with local NGOs and the Lebanese Ministry of Public Health. As I have progressed with my research I have learnt and adopted new methods, therefore the methods used through my research range from traditional qualitative methods (e.g. focus groups) to experience centred design and co-design methods.

### **ACCESS TO HEALTHCARE**

In exploring the role of technology in improving Syrian refugee access to healthcare in Lebanon; Firstly, I conducted interviews with healthcare providers and focus groups with refugee communities in order to surface barriers to refugee access to healthcare and the ways in which technology can be used to overcome these barriers [13]. I then piloted with a refugee community radio health shows mediated through a Synchronous Interactive Voice Response (IVR) system and paper mock ups [12]. Currently, I am working on further developing the IVR system and working with the Ministry of Public Health and a local NGO on scaling up



Figure 2 Images showing dialogue cards that represented different resources and individuals within the community

and improving sustainability. Additionally, I am conducting an ethnographic study where I am observing interactions within healthcare clinics in order to compare them to interactions mediated through the community health shows.

#### FOOD SECURITY

As a first step in exploring how technology may improve refugee food security, and in turn community resilience, I conducted statistical analysis using STATA on data from a national survey on refugee food security in Lebanon. Based on the analysis dialogue cards were created that facilitated individual and group card sorting activities around food security, coping strategies and interactions with others around providing food for their families. These engagements resulted in the co-design of a booklet in which refugee women give advice to newly arrive refugees on how to provide food for their families.

### Primary Findings

#### *Access to Healthcare*

The research I conducted around the role of technology in improving refugee access to healthcare in Lebanon identified that one of the main barriers to refugee access to healthcare in Lebanon is the low agency they experience within the healthcare system. Additionally, I identified that technologies can provide a medium in which engagements, trust and understanding between refugees and healthcare providers can be improved. Technology may also increase refugee agency within the healthcare system.

#### *Food Security*

The research being conducted on how technology may improve refugee food security is yet at its early stages.

Preliminary findings surfaced how the experience of food insecurity is intimately influenced by access to healthcare and education as well as Syrian refugee rights within the Lebanese labor market. Additionally, it was found that refugees undergo a stage of learning how to cope with poverty and food insecurity. Indeed there is a stage of adaptation to their changing realities that is facilitated through the exchange of peer-to-peer knowledge and resources. Lastly, there is potential for technologies to mediate the collective purchasing of food with a stage of price negotiation and the leveraging of refugee knowledge in the selection of vendors to partake in aid mechanisms such as food vouchers.

#### *Methods*

Throughout the research I have been collecting data evaluating the methods utilized in the studies as well as reflecting on my interactions and relationships with the communities I am working with. Regarding methods used, participants have indicated that experience centered design methods and co-design methods provide a more logical platform for them to express their needs than other data collection methods. However, not all methods are appealing, participants were not enthusiastic to illustrate their experiences and opted for their children drawing instead of them. Additionally, keeping a diary was not common and they preferred vocalizing to the researcher their experiences. Lastly, a key findings has been that methods should account for community dynamics and tensions.

Preliminary analysis of field notes and reflections on my interactions and relationships with members of the refugee community indicate how implicit and explicit

forms of care characterize the growing relationship between me and participants.

### Research Progress

As a follow up to the piloting of synchronous IVR community shows as a means of improving refugee access to healthcare I am planning further deployments to be conducted in 2018. Additionally, audio clips from the shows will be used within workshops that aim to elicit feedback from stakeholders working within the humanitarian and public health system on how to move the project forward.

Further co-design activities and interviews with vendors are going to be conducted in order to inform the design of technologies that allow for (1) collective purchasing of food and the negotiation of food prices and (2) leveraging the knowledge of refugees regarding vendors they prefer to interact with. This will be further augmented with interviews with stakeholders providing aid to refugees aiming at improving refugee food security.

### Expected Contributions

At the end of my PhD I intend to contribute several case studies to the literature that exhibit how technology can be designed and used to address refugee health and food needs. Additionally, the research will culminate with an analysis of how technologies may be configured to address the critiques of community resilience as well as play a role in enhancing refugee community resilience. Lastly, I aim to contribute to the literature on methods and methodological approaches to designing technologies with vulnerable communities such as refugees.

### References

1. Negin Dahya and Sarah Dryden-Peterson. 2017. Tracing pathways to higher education for refugees: the role of virtual support networks and mobile phones for women in refugee camps. *Comparative Education* 53, 2: 284–301. <http://doi.org/10.1080/03050068.2016.1259877>
2. Department for International Development. 2011. *Defining Disaster Resilience*. London, UK. [http://doi.org/https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/186874/10](http://doi.org/https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/186874/10)
3. Mark Duffield. 2012. Risk management and the bunkering of the aid industry. *Development Dialogue*, 58: 21–36. <http://doi.org/10.1177/0967010612457975>
4. Brad Evans and Julian Reid. 2014. *Resilient Life: The Art of Living Dangerously*. John Wiley & Sons.
5. IFRC. 2014. *IFRC Framework for Community Resilience*. Retrieved from [http://www.ifrc.org/Global/Documents/Secretariat/201501/1284000-Framework for Community Resilience-EN-LR.pdf](http://www.ifrc.org/Global/Documents/Secretariat/201501/1284000-Framework%20for%20Community%20Resilience-EN-LR.pdf)
6. Kristen Magis. 2010. Community Resilience: An Indicator of Social Sustainability. *Society & Natural Resources: An International Journal* 23, 5: 401–416. <http://doi.org/10.1080/08941920903305674>
7. Marcel Neuenhaus and Maha Aly. 2017. Empathy Up. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in*

- Computing Systems (CHI EA '17)*, 86–92.  
<http://doi.org/https://doi.org/10.1145/3027063.3049276>
8. S Patel, B Rogers, R Amlot, and J Jubin. 2017. What do we mean by “community resilience”? A systematic literature review of how it is defined in the literature. *PLOS Currents Disasters*: 1–32.  
<http://doi.org/10.1371/CURRENTS.DIS.DB775AFF25EFC5AC4F0660AD9C9F7DB2>
  9. Samar Sabie, Jay Chen, Azza Abouzied, Fatma Hashim, Harleen Kahlon, and Steve Easterbrook. 2017. Shelter Dynamics in Refugee and IDP Camps: Customization, Permanency, and Opportunities. In *Proceedings of the Workshop on Computing Within Limits (LIMITS '17)*, 11–20.  
<http://doi.org/https://doi.org/10.1145/3080556.3080560>
  10. Maximilian Schreieck and Manuel Wiesche. 2017. Supporting Refugees in Every Day Life – Intercultural Design Evaluation of an Application for Local Information. In *Proceedings of the Pacific Asia Conference on Information Systems*.
  11. Reem Talhouk, Syed Ishtiaque Ahmed, Volker Wulf, Clara Crivallero, Vasilis Vlachokyriakos, and Patrick Olivier. 2016. Refugees and HCI SIG: The Role of HCI in Responding to the Refugee Crisis. *Proceedings of the CHI Extended Abstracts on Human Factors in Computing Systems (CHI'16)*, ACM, 1073–1076.  
<http://doi.org/http://dx.doi.org/10.1145/2851581.2886427>
  12. Reem Talhouk, Tom Bartindale, Kyle Montague, et al. 2017. Implications of Synchronous IVR Radio on Syrian Refugee Health and Community Dynamics \*. *Proceedings of the 8th International Conference on Communities and Technologies*, ACM, 10 pages.  
<http://doi.org/10.1145/3083671.3083690>
  13. Reem Talhouk, Sandra Mesmar, Anja Thieme, et al. 2016. Syrian Refugees and Digital Health in Lebanon: Opportunities for Improving Antenatal Health. *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI'16)*, ACM, 331–342.  
<http://doi.org/http://doi.org/10.1145/2858036.2858331>
  14. Reem Talhouk, Vasilis Vlachokyriakos, Konstantin Aal, et al. 2017. Refugees & HCI Workshop: The Role of HCI in Responding to the Refugee Crisis. *Proceedings of the International Conference on Communities and Technologies (C&T'18)*, 312–314.  
<http://doi.org/http://doi.org/10.1145/3027063.3027076>
  15. Unhcr. 2015. Syria Regional Refugee Response (Bekaa). *Inter-agency Information Sharing Portal*. Retrieved September 19, 2017 from <http://data.unhcr.org/syrianrefugees/region.php?id=90&country=122>
  16. Ying Xu and Carleen Maitland. 2016. Communication Behaviors When Displaced: A Case Study of Za'atari Syrian Refugee Camp. In *Proceedings of the International Conference on Information and Communication Technologies and Development (ICTD '16)*.

<http://doi.org/http://dx.doi.org/10.1145/2909609.290964>

2