



CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

Name(s) Yusra Arub	Project Number S1002
Project Title Smart+Connected Doorbell with Real-time Coordinated Continuum of Care Information: A Path to End All Homelessness	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Despite nationwide attempts to solve homelessness, the main problem lies in the the lack of coordinated outreach programs and CoC provider data between shelters. According to the Department of Housing and Urban Development, over 500,000 people across the nation remain homeless, and 15% of them are families, veterans, drug addicts, or unemployed in spite of over 5,000 shelters and \$45,000 invested annually in supportive housing placements for homeless families.</p> <p>To address this problem, the Smart+Connected Doorbell, a self-learning, data-driven system, presents the user with comprehensive information about available housing options and various resources such as food, clothing, medicine, and other services. Additionally, Connected Doorbell tracks, reports, and presents shelter information to homeless individuals which is then shared with participating shelters thereby enabling the shelters to monitor and meet their needs.</p> <p>Methods/Materials To build the Smart+Connected Doorbell, SPDT miniature rocker switch (represents bell) with center off was fit into a picture frame. The doorbell was attached to a Raspberry Pi and a 7-inch interactive touch-screen display. This display is connected by a Raspberry Pi Flex Cable. Data from various Continuum of Care providers was collated by the Doorbell. Doorbell Hub, a cloud-based, data driven system hosted on an Amazon web server. Additionally, the BellTracker(TM) implemented within doorbell evaluates the number of times the bell was rung by individuals and the shelter preferred by the user. Effective bell rate is determined by correlating the raw bell count against the actual number of participants that show up at the CoC provider because of the information presented by the Doorbell.</p> <p>Results When implemented in LifeMoves and Rahima Foundation shelters, the average number of user clicks was 55 and the effective bell rate was 8. SmartCities around the globe are significantly increasing. Mathematical models was constructed to study effect of Doorbell. When the rates of homelessness that were proportional to the demand for housing were graphed against the BellTracker(TM) , a clear decrease in homelessness was shown because of the BellTracker system</p> <p>Conclusions/Discussion Effect BellRate generated from BellTracker# has proven to be effective in eliminating homelessness over a period of time.</p>	
Summary Statement As demonstrated by Field Tests, Smart+Connected doorbell can be this first ring to eliminate homelessness from our societies.	
Help Received I would like to thank volunteers at LifeMoves and Rahima for their continued feedback to improve the Smart+Connected Doorbell User Interface and Provider Content.	