

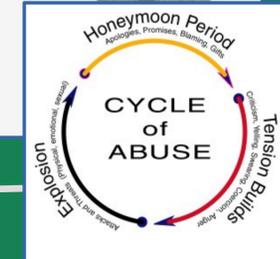
Robotic Assisted Mediation of Domestic Violence

Spatial Temporal Modeling

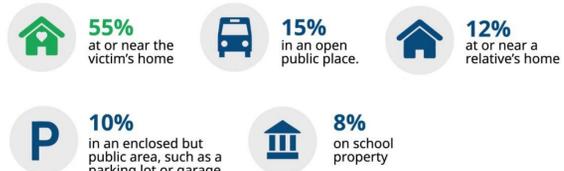
Spatial Temporal Modeling takes a theater of war approach to questions of risk and security. When and where risk changes and the potential for violence changes are the critical questions asked in the context of robotic assisted mediation.

In his book On War, Carl von Clausewitz defines the term Kriegstheater as one that:

Denotes properly such a portion of the space over which war prevails as has its boundaries protected, and thus possesses a kind of independence. This protection may consist of fortresses, or important natural obstacles presented by the country, or even in its being separated by a considerable distance from the rest of the space embraced in the war. Such a portion is not a mere piece of the whole, but a small whole complete in itself; and consequently it is more or less in such a condition that changes which take place at other points in the seat of war have only an indirect and no direct influence upon it. To give an adequate idea of this, we may suppose that on this portion an advance is made, whilst in another quarter a retreat is taking place, or that upon the one an army is acting defensively, whilst an offensive is being carried on upon the other. Such a clearly defined idea as this is not capable of universal application; it is here used merely to indicate the line of distinction.



BREAKDOWN OF LOCATIONS WHERE SEXUAL ASSAULT OCCURS



National Sexual Assault Hotline | 800.656.HOPE | online.rainn.org
Please visit rainn.org/statistics/scope-problem for full citation.

Preliminary Questions:

1. Can a 'Theater of war' approach be used as a framework for general robotics design in this context?
2. How do Spatial-temporal factors correlate to threat assessments and variance in risk?
3. How do you treat, from a data and analysis perspective, the fuzzy nature of a domestic partner as an assailant?

PRELIMINARY CONCLUSIONS:

1. The Home is the Most Dangerous Place for a Woman to be, in the context of a potential abuser.
2. More than half of all assaults occur near or in the victim's home.
3. The cycle of abuse can most easily be ACTUATED in a home environment
4. From the perspective of Domestic Violence, the home meets every definition of a 'theater of war'
5. The same threat assessment models and types of technologies to mediate violence should be considered as in a regular theater of war

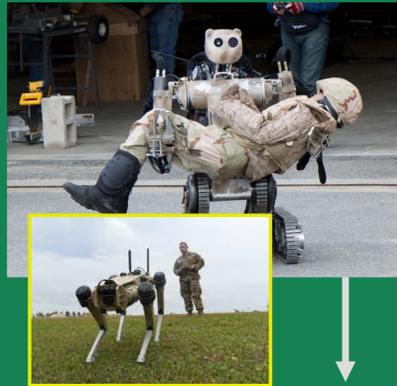
Images like those above are 'taken-for-granted' - and yet, if we were to transpose those images into the 'theater of violence' model below, it might seem at first entirely out-of-context and absurd. Despite the fact that many more women are injured every day in the home than soldiers are in the battlefield.

RESEARCH OVERVIEW

I am researching applications of robotic technologies to mediate and reduce domestic violence. I am conducting research on this topic from two different perspectives: a problem-based perspective and a robotics-platform based perspective. The problem-based perspective seeks to classify the spatial-temporal conditions under which a quantifiable threat or hazard of domestic violence occurs for women. The working hypothesis is that a spatial-temporal classification model is a requisite for developing a robotic-assisted model of mediation and threat reduction.

This spatial-temporal classification model of threat is fundamentally different than other models of threat in the context of domestic violence. Current models of risk assessment are primarily based on the abuser and on risk factors associated with the emergence or persistence of abuse. In the context of robotic technologies, however, the model is based on the possible types of mediation and harm reduction strategies that robotic technologies may provide.

The robotics-platform based perspective seeks to determine the functional limits of embodied AI in providing an enhanced security function to mediate and reduce domestic violence. My working hypothesis is based on a 'threat-transference theater' - since many advanced in robotic technology are based on military applications, the theater (as in space of operation) of domestic violence is a natural carryover; for women the situation of domestic violence resembles a battlefield in many ways: there is a constant enemy that can cause psychological and physical harm at a moment's notice. As such, the very same robotic technologies that can assist a soldier in the field can, in theory, also assist a women mediating and reducing the threat of domestic violence.



A PERCEPTION GAP EXISTS

1. Governments spend billions of dollars developing advanced technologies in robotics, AI, kevlar, drones, etc...to minimize the threat of lethal violence in 'normal' theaters of war.
2. It's politically acceptable to make these investments as long as the 'theater of war' is one of men fighting other men.
3. Protecting men from other men through robotics and technology is such an accepted standard of defense budgeting and thinking that it is absolutely taken for granted.
4. Protecting WOMEN from MEN where the threat of lethal violence is the same if not higher is, on the other hand, absolutely not considered in robotic and technological development.
5. The use of robotics and advanced technologies to protect bodies is ENTIRELY a gendered project, focusing exclusively on MEN.

The Problem Based Approach asks the question - what kinds of problems, specific to domestic violence, can robotics mitigate or prevent?

This approach is rooted in a threat identification model (from the potential victim side) and a competency identification model (from the robotic side). It looks at the integration of ability with specific types of problems.

The Spatial-Temporal approach, by contrast, uses a 'theater' model that situates agents (human and non-human) in a common space without qualifications of either problem categories or competency categories.

Sophia, the AI robot from Hanson Robotics (www.hansonrobotics.com), is one of the most sophisticated robots in the world from an AI perspective. Her programming may hold the key to a specific type of protection against domestic violence.



PROBLEMS IN ETHICS INTERSECT WITH PROBLEMS IN ACCEPTANCE, INTERACTION and the so-called 'UNCANNY VALLEY'...

Asimov's Robot Ethics:

A robot may not injure a human being or, through inaction, allow a human being to come to harm.

A robot must obey orders given to it by human beings, except where such orders would conflict with the First Law.

A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

Source URL: Doyle, D. J. (2014). *Robots, Androids, and Cyborgs in Warfare: Ethical and Philosophical Issues. Ethics in Biology, Engineering and Medicine: An International Journal*, 5(1).

Problem Based Modeling

Homicide & Injury from Domestic Violence

from DomesticShelters.org

While the country focuses on death and injury from auto accidents, health ailments and drug abuse, a shocking number of deaths and injuries are the result of domestic and intimate partner violence. Almost one-third of all female homicide victims are killed by an intimate partner. Tens of thousands of women and men have died, and hundreds of thousands of been injured, at the hands of their abuser over the last few decades.

Almost one out of five or 16.3% of murder victims in the U.S. were killed by an intimate partner; women account for two out of three murder victims killed by an intimate partner.



Access to firearms yields a more than five-fold increase in risk of intimate partner homicide when considering other factors of abuse, according to a recent study, suggesting that abusers who possess guns tend to inflict the most severe abuse on their partners.



Asthma, irritable bowel syndrome, frequent headaches, chronic pain, difficulty sleeping, and poor physical or mental health are nearly twice as common among women with a history of rape or stalking by any perpetrator, or physical violence by an intimate partner, compared to women without a history of these forms of violence.



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SPOT ENTERPRISE

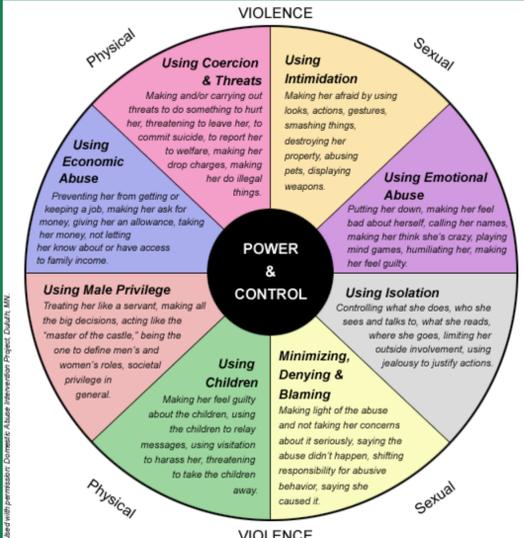
TRUE AUTONOMY
Self-charging allows Spot to autonomously perform routine or on-demand data collection in remote locations with no human interaction. Built-in dock detection and an easy-to-use tablet interface allows Spot to return home to charge at the push of a button or call of a program, without any other operator directions.

UPGRADED FUNCTIONALITY
In addition to all the basic capabilities Spot Explorer has, the Spot Enterprise package leverages upgraded hardware to further improve safety, communications, and behavior on remote sites. With longer Autowalk missions, enhanced WiFi, and Ethernet connection while docked, Spot Enterprise provides ultimate autonomous data capture and post-mission data download.



FEATURE	EXPLORER	ENTERPRISE
Tablet control	Not included	Included
Autowalk	Missions limited to 1000m in length	Unlimited mission lengths
WiFi	2.4GHz b/g/n	Dual band 802.11ac support (availability dependent on region)
Payload power	Always on	Toggle via software in tablet or API
Self-charging	Not included	Includes dock
High-speed data offload	Not included	Quickly offload mission data through dock Ethernet connectivity
Metrics opt-out	Not included	Opt-out of sending robot performance metrics back to Boston Dynamics
Enhanced safety options	Not included	Safety stop function PL category 3 per ISO 13849-1 available on payload ports

- Automated Communication with Trusted Agents
- Automated Audio Recording
- Automated Communication with Authorities
- Physical Intervention
- Verbal Intervention
- Deflection Tactics
- Automated Communication with Authorities
- Automated Video Recording
- Secure Communication System
- Controlled Defense Mode
- Controlled Offense Mode



Perhaps a more significant challenge to social geography is the potential for robots and robotic technologies to stake out a position as caring subjects. This is not an area with which geographers have recently engaged, although scholars in related fields have done so (e.g. Stoate, 2012; Frennert and Östlund, 2014; Kaerlein, 2015). The growth of the caring robot industry suggests a need for interrogating robots in the making of caring spaces. Frennert and Östlund (2014) caution that the robotic caring industry for the aging has focused much more on the robots themselves than on those for whom the robots are meant to provide care. There are fundamental questions - social, cul-tural, ethical, economic, political - that arise from the intersections of robotic technologies and the geographies of caring. Can robotic technologies produce spaces of love and com-fort? Can robots produce new forms of inclu-sion?

Source: Del Casino Jr, V. J. (2016). Social geographies II: robots. *Progress in Human Geography*, 40(6), 846-855.