TrustCare: Better Trust, Better Care

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Objectives

- We propose a **real-time** video processing AI solution to monitor residents' daily activities and detect emergencies in long-term care facilities.
- ***TrustCare*** facilitates the communication between the residents' families and the care facilities.

Background

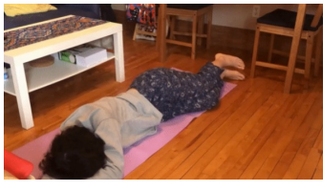
- Increasing size of elderly population leads to increasing burden on the healthcare system both domestically and globally:

Region	Statistics	2020	2050
World [1]	Population 65+ (million)	727	1549
	% of total population	9.3	16
Canada [2]	Population 65+ (million)	6.8	11.8
	% of total population	18.0	25

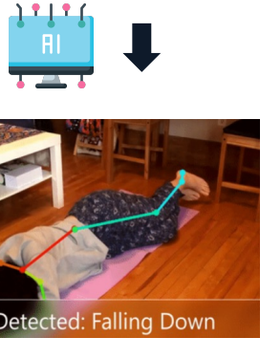
- Overloaded and short-staffed long-term caregivers are becoming overwhelmed in trying to respond to residents' needs and emergencies in time.
- Family members of residents in long-term care facilities know this and fear lapses in quality of provided care.
- Increasing number of data-intensive technological strategies are being applied in healthcare fields: 1) wearable health monitor/locator; 2) sensor or camera; and 3) information management system.
- None has focused primarily on facilitating the communication between the elders' families and the care facilities.

AI System Pipeline

1. Install cameras in residents' rooms.



2. Take videos of scenarios going on.



3. AI agent extracts features from videos in real-time.

Activity	Flag
Patient in Room	Yes
Patient in Bed	No
Eating	No
Fall Down	Yes
...	...

4. Features are converted into textual data.

5. Textual data is transmitted to app on family members' and care givers' mobile phones.

Study Design

We conducted surveys and stakeholder interviews to implement engagement research.

- **89%** families and care givers desire to obtain real-time status of the elder residents.
- **67%** elder residents are willing to be observed.
- **75%** facilities would plan to use our system to improve the quality of provided care.

Future Work

- Continue optimizing our action detection model to improve its performance and reliability.
- Extend our engagement research to larger population.
- Implement our pipeline in local facilities and early adaptors' home to evaluate the performance of our proposed solution.

Acknowledgement

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References

1. World Population Ageing 2020 Highlights, Oct 2020. https://www.un.org/development/desa/pd/
2. Statistics Canada (1971-2010) and Office of the Superintendent of Financial Institutions (2020-2080)