### Towards



Zulekha Karachiwal

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#### Motivation

**Gap:** No foundational understanding of the needs of wound care through robotics

- 1) Identify areas to support nurses in wound care
- 2) **Develop** design recommendations for wound care robots
- 3) **Design** and **evaluate** wound dressing robo

### Methods

1. Observational study: Understand how nurses conduct wound care and identify supportive tasks for robots.

2. Analyze observational data and extract design recommendation s for wound care robots

3. Utilize desi recommendati in a case study developing th first wound dressing robo

## Case study: Development of would



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$IIa^1$	Annika Srinivasan <sup>2</sup> Ellen Le								ee		
gie Mellon University <sup>1</sup> , University of Illinois											
	Results										
	W	ound	car	re ta	ask <sup>.</sup>	tax	conor	my	Nur	se	
				Physic Interac	cal ction						
d	Materials			Patients			Wound				
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	Internal manipulation	Relocating			pation		Assessing	Undre	ssing	Brie	
	Manipulating clothes	Severing					Covering/securing dressing	Unpad	cking	Che	
ot	Moving equipment	Wetting					Drying	Wett	ting	Com	
	Raising/ lowering bed	Writing					Manipulating ostomy bag	Wip	ing		
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ions	Type	Ostomy	371	80	106	66	85	80	345	3	
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# Ethnographic Study of Nursing Practices and Recommendations

Andrew Dierkes<sup>3</sup> Zackory Erickson<sup>1</sup> Э' Urbana Champaign<sup>2</sup> and University of Pittsburgh<sup>3</sup>





# Henny Admoni<sup>1</sup>

ona	al note	2S	
go	"Nurse places auze over leg"	"Smooths down edges"	"Nurse lightly presses pad on wound to ensure stick"
"N a an	lurse wraps round the kle over the pad"	"Patient says its too tight, N unwraps ace wrap"	

### **Dressing Robot Design Recommendations**

otic Capability	Capability for Covering and Securing		
irasp Type	Precision grasp		
of Contact Regions	4 fingertips and thumb		
nanual Manipulation	Yes		
d Manipulation	On/over wound		
a for Manipulation	Edge of material		
e Manipulation	No		
mon Motions	In and out of plane, along plane		

### Future Work

- Improve compliance of robot
- Workshop the design with nurses
- Improve design from nurse feedback

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Center for Machine Learning and Health
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### Contact

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### 1) Observational study: Understand how nurses conduct wound care and identify supportive tasks for robots.

- 2) Analyze observational data and extract design recommendations for wound care robots
- 3) Utilize design recommendations in a case study of developing the first wound dressing robot



1. Observational study: Understand how nurses conduct wound care and identify supportive tasks for robots.

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