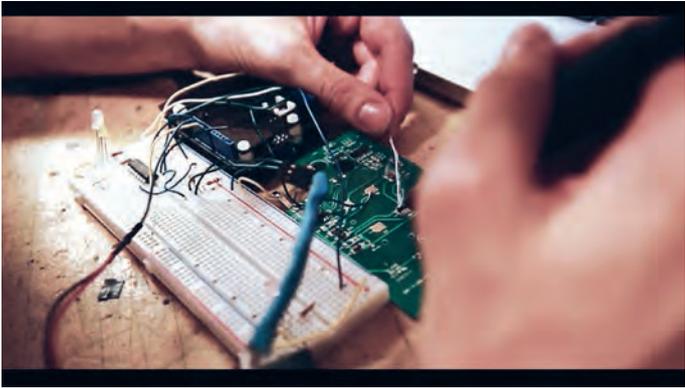


# LUNA LIGHTS



# ILLUMINATING SOLUTIONS



When student team members learned about the dangers of nighttime falls for older adults, they designed a bright new tool that could potentially save lives.



**WATCH THEIR STORY AT [BIT.LY/LUNALIGHTS](http://bit.ly/lunalights)**

**Matthew Wilcox understands the terrifying nature of falls:**

He has watched more than one of his grandparents struggle after experiencing one. Not only did they endure long hospital stays and grueling physical therapy sessions, they experienced long-lasting emotional trauma.

“It made them feel like they were getting old,” recalls Wilcox, a senior in mechanical engineering. “And that was depressing for them. They lost their confidence.”

Wilcox’s grandparents’ experience is not unusual. According to the Centers for Disease Control, one in every three adults aged 65 or older will fall each year. For that same age group, falls are the number one cause of death and injury. And after an older adult falls, the chances of falling again increase significantly.

While walkers and wheelchairs might be associated with the loss of independence, Luna Lights is unseen by others, eliminating the stigma users might feel for being “old.”

“We wanted to create an invisible, seamless solution that people wouldn’t have to interact with,” Wilcox says. “Luna Lights allows people to be safe without compromising the way they are already living.”

With help from students in a mechanical engineering design course, the team created several prototypes to present to The Mather. Residents tested the product and found that at less than a half-millimeter thick, the pressure pad felt undetectable. The soft illumination of the lights was also less harsh and jarring than traditional lamps and overhead lights.

# FOR OLDER ADULT SAFETY

“LUNA LIGHTS ALLOWS PEOPLE TO BE SAFE WITHOUT COMPROMISING THE WAY THEY ARE ALREADY LIVING.”

**MATTHEW WILCOX**

So when administrators from The Mather, a retirement community in Evanston, asked a Northwestern Design for America (DFA) team how to reduce falls among older adults two years ago, team member Wilcox was excited to look for solutions to a problem that affected him so personally.

Over the summer, he worked with team members Donovan Morrison, a senior in biomedical engineering, Wesley Youman, a junior in civil engineering, Melissa Sobin (WCAS '13), and Catherine Chung (SESP '15) to find a way that they, a small team, could design a solution to a major public health issue.

“We talked to doctors and professionals and found that nighttime falls were the biggest concern for older adults,” Youman says. When getting out of bed to use the washroom or pour a drink of water during the night, older adults often forget to use walkers or canes and are more likely to trip or become disoriented in the darkness.

After brainstorming several different solutions, the team developed Luna Lights, an automated lighting system to reduce nighttime falls. The system requires users to sleep on a thin, pressure-sensing pad. When the user sits up, the system uses radio frequencies to trigger a system of small, portable lights to illuminate a pathway. Unlike a traditional nightlight that glows all night, Luna Lights only turns on when it is needed, saving energy and allowing adults to sleep in complete darkness. The lights are portable and battery-operated, so there are no limitations to where they can be placed.

The product was met with much excitement from residents and their adult children. “We explained the project, and one senior said ‘You mean I don’t have to do anything? It just works and makes me safer?’” Wilcox says.

Last quarter the team began working with Matthew Patrick, a graduate student in mechanical engineering, to add tracking software. The software senses when a person gets out of bed and for how long. Based on a set time limit, it can send an alert to a caregiver or family member via text message if someone has been out of bed for too long, which could indicate a fall. The software can also tell if a user is sitting up in bed or merely shifting around while sleeping, so it does not trigger the lights unnecessarily.

This summer, the Luna Lights team will embark on a month-long study with six participants from Mather Lifeways. Three men and three women over the age of 65 will test the product every night. During that time, participants will keep a journal to log their experiences. After the study, the team will continue refining the product.

“We’ve had a lot of positive feedback,” Youman says. “People have told us that they wish they could have had Luna Lights to help their parents or grandparents when they struggled with falls. That’s a great motivator.”

AMANDA MORRIS