



SAMMONS CENTER
FOR INNOVATION AND RESEARCH
IN OCCUPATION BASED TECHNOLOGY

Request for Proposals

The Sammons Center for Innovation and Research in Occupation Based Technology invites proposals for funding awards of up to \$3000.00 for a product that will enable people to actively engage and participate in everyday occupation. These products can be devices, technology apps, teaching and learning technologies, and other innovative ideas. The Sammons Center WILL NOT fund personnel or indirect costs. The grant applicant may use funds from the award towards fees that directly support the innovation, such as consulting fees for the design of a product including mechanical, print, video, or computer based applications.

APPLICATION

Proposals are accepted throughout the year with no set deadlines. Fill out pages 1-9 and pay close attention to the comments to guide you through the application. Please submit your proposal to Dr. Holly Grieves, Co-Director, Sammons Center at holly.grieves@wmich.edu.

Audrey Lackey and Cory Kalkowski

B.A., OTDS

Name(s) of Lead Innovator(s)

Credentials of Lead Innovator

audrey.m.lackey@wmich.edu

(248) 513-2799

cory.s.kalkowski@wmich.edu

Preferred Contact #

Email Address

Grant Proposal:

Accessible Assistive Technology

WMU OTD Capstone Project

Audrey Lackey, OTDS

WMU Occupational Therapy Student

Contact info: audrey.m.lackey@wmich.edu, (248) 513-2799

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Section A: Resume or CV of lead innovator and team members

Audrey LackeyEmail: audrey.m.lackey@wmich.edu, Cell: 248-513-2799**Education****Doctor of Occupational Therapy**

Western Michigan University - Kalamazoo, MI

*Anticipated Degree Completion: April 2026***Bachelor of Science in Exercise Science, Business Minor**

August 2022

Western Michigan University - Kalamazoo, MI

Level I Fieldwork Experiences

Unified Clinics Pediatric Clinic - Kalamazoo, MI

January 2025 - April 2025

- Diagnoses: Autism Spectrum Disorder and Attention-Deficit Hyperactivity Disorder (combined type).
- Assessment experience: QNST-3, Peabody, Handwriting without Tears
- Intervention focus: Self-regulation, social skills, fine motor control, and gross motor control.
- Documentation experience: PNC – point of service, assessment reports, daily notes

Kalamazoo Psychiatric Hospital - Kalamazoo, MI

September 2024 - December 2024

- Diagnoses: Schizoaffective Disorder, MDD, Bipolar Disorder, Alcohol/Substance Abuse Disorder, GAD, Pica, and OCD.
- Assessment experience: Cognition Self-Assessment Rating Scale (C-SARS), Patient-Specific Functional Scale (PHQ), Barratt Impulsivity Scale (BIS), and Depression, Anxiety, and Stress Scale (DASS).
- Intervention focus: group intervention to address social skills, communication skills, and life skills.
- Documentation experience: SOAP Notes

Unified Clinics Adult Clinic - Kalamazoo, MI

May 2024 - August 2024

- Diagnoses: Stroke and GSW/Amputation.
- Assessment experience: Vitals, ROM, Ashworth Tone Scale, Manual Muscle Testing, Grip & Pinch Strength, Occupational Self-Assessment, Tinetti Balance, and Monofilament.
- Intervention focus: Functional mobility, IADLs, social skills, cognition, and tone management.
- Documentation experience: PNC – point of service, assessment reports, daily notes

Research Experience

WMU OTD Program - Kalamazoo, MI

September 2023 - April 2025

- Research Study: Factors Associated with Walking among Older Adults Living in Subsidized Housing

Work Experience

Y-Mind Program - Kalamazoo, MI

October 2024 - April 2025

- Member: The Y-MIND program's goal is to expand the mental health workforce and improve access to care in Michigan. Students gain knowledge to ensure they're providing quality care that is culturally appropriate and incorporates the interdisciplinary team.

WMU HCOP Program - Kalamazoo, MI

November 2024 - August 2025

- Mentor: Paired with a high school student interested in the Occupational Therapy program. Meet monthly virtually providing guidance on career selection, extracurriculars, classes, etc. Provide feedback on professionalism, such as interview skills and resume critiques.
- Mentor: Paired with an undergraduate WMU student interested in the Occupational Therapy program. Meet monthly in person providing guidance on career selection, extracurriculars, classes, etc. Provide feedback on professionalism such as interview skills and resume critiques.

WMU West Hills Athletic Club - Kalamazoo, MI

April 2021 - Present

- Front desk position: Greet members and potential members entering our facility. Knowledge expands across rates for membership and group fitness classes, scheduling appointments, special event details, and ringing up products.

WMU Center for Disability Services - Kalamazoo, MI

July 2022 - May 2023

- Day staff: The Center for Disability Services works with vulnerable populations, known as consumers. Staff helps consumers with Activities of Daily Living as well as work on physical, verbal, and mental development through activities and games.

Volunteer/Leadership Experience

Lending Hands - Portage, MI

October 2024 - Present

Volunteer 2hr/month

- Responsibilities: Detail assistive devices - wheelchairs, walkers, and crutches. Report necessary repairs. Check in devices returned.

U of M Pediatric Rehabilitation Center - Ann Arbor, MI February 2023
Shadowed 9 hours

- Shadowed Denise Justice OTRL, in the Brachial Plexus Program. Learned the anatomy of the diagnosis as well as the treatment plans. Observed patients with other diagnoses such as TBI and Autism. Learned the approach behind each individual's treatment plan.

KAT Strength and Conditioning - Kalamazoo, MI May 2022 - August 2022
Summer Intern

- Learned business operations of the gym and what it takes to run it successfully. Assisted clients with workout regimes. Anatomical knowledge has increased as well as exercise portfolio.

WMU Student Occupational Therapy Association (SOTA) - Kalamazoo, MI Fall 2023 - Spring 2024

- Member for the Fall 2023 - Spring 2024 Academic Year

WMU Exercise Science RSO - Kalamazoo, MI Fall 2020 - Spring 2022

- President for the Fall 2021 - Spring 2022 Academic Year
- Executive Secretary for the Fall 2020 - Spring 2021 Academic Year

WMU FOCUS Kalamazoo RSO (Community Service) - Kalamazoo, MI Fall 2018- Spring 2021

- Executive Secretary and Social Media Director for the Fall 2020 - Spring 2021 Academic Year
- Social Media Director and Site Leader for the Fall 2019 - Spring 2020 Academic Year
- Ambassador for the Fall 2018 - Spring 2019 Academic Year

Awards/Honors

Graduate: Recipient of AMBUCS scholarship 2023, Y-Mind Program 2024

Undergraduate: Cum Laude, Dean's List, Recipient of Bronco Merit Scholarship

Certifications

CPR: Basic Life Support for the Healthcare Provider, American Heart Association

Expiration: September 2025

CORY KALKOWSKI

KALAMAZOO, MICHIGAN
 CORY.KALKOWSKI@GMAIL.COM
 CELL (269) 998 3974

**LIGHTING DESIGNER / TOURING ELECTRICIAN
 FABRICATOR AND TECHNOLOGIST**
LIGHTING DESIGN

10/19	POST.FEST	MUSIC FESTIVAL	IRVING THEATRE, INIANAPOLIS, IN
05/19	KAIVON	MUSIC ARTIST	HILLSDALE COLLEGE, MI
10/18	OUTRUN THE SUNLIGHT	MUSIC ARTIST	POST FEST, INDIANAPOLIS, IN
07/16 - 17	MOPOP FESTIVAL	MUSIC FESTIVAL	DETROIT, MI
05/17	OUTRUN THE SUNLIGHT	MUSIC ARTIST	LINCOLN HALL, IL
04/17	THE TEMPTATIONS	MUSIC ARTIST	MIDWEST TOUR ONE OFFS
08/16	HOXEYVILLE FESTIVAL	MUSIC FESTIVAL	HOXEYVILLE, MI
03/15	CHARLOTTE'S WEB	DRAMA	SHAW THEATRE, WMU, MI
11/14	HAIR	MUSICAL	SHAW THEATRE, WMU, MI
05/13	*THE ONE WHO FLEW OVER CUCKOO'S NEST	DRAMA	WHAT A DO THEATRE, MI
02/13	*NEXT TO NORMAL	MUSICAL	WHAT A DO THEATRE, MI

PRODUCTION ELECTRICIAN

11/21-12/21	JERSEY BOYS NATIONAL TOUR '22.	DODGER PRODUCTIONS	Interpret draftings and work with high profile Designers and Assistants. Build rental equipment lists and requirements. Staff and Build shows that include; Purchasing, Renting, labeling, networking and network communication within lighting and some video networks, communicate with designers of any and potential flaws in the system. Start first draft of truck pack for tour. Build show tracks for Head electrician and assistants that include flow of day and assembly of lighting/video systems.
9/21-10-21	ANASTASIA NATIONAL TOUR '22.	NETWORKS PRODUCTIONS	Interpret draftings and work with high profile Designers and Assistants. Build rental equipment lists and requirements. Staff and Build shows that include; Purchasing, Renting, labeling, networking and network communication within lighting and some video networks, communicate with designers of any and potential flaws in the system. Start first draft of truck pack for tour. Build show tracks for Head electrician and assistants that include flow of day and assembly of lighting/video systems.

LEAD ELECTRICIAN

1/20	JERSEY BOYS NATIONAL TOUR (LD: HOWEL BINKLEY, ASSOC. LD: PATRICIA NICHOLS)	
10/19	ELF ON THE SHELF: FIRST NATIONAL TOUR (LD: PATRICIA NICHOLS)	
07/16-17	MOPOP FESTIVAL	DETROIT, MICHIGAN
04/17	BEACH BOYS / THE TEMPTATIONS	MIDWEST TOUR ONE OFFS
08/16	HOXEYVILLE FESTIVAL	HOXEYVILLE, MI
09/12	THREE MUSKETEERS (LD: PATRICIA NICHOLS)	SHAW THEATRE, WMU, MI

EMPLOYMENT

10/22 - Present	SHOP SUPERVISOR - RIDI , WESTERN MICHIGAN UNIVERSITY: HELP STUDENTS IMPLEMENT SAFE PRACTICES FOR SHOP TOOLS. SERVE AS A CORE MEMBER FOR A NEW PROGRAM. FOCUSING ATTENTION TO BEST IMPLEMENTATIONS FOR FUTURE SUCCESS. TEACH A 3 CREDIT COURSE ON LIGHT AND COLOR FOR INTERIOR DESIGN
1/20-3/20	HEAD ELECTRICIAN , DODGER AND NETWORKS PRODUCTIONS: JERSEY BOYS NATIONAL TOUR ACT AS THE HEAD ELECTRICIAN AND MOVING LIGHT FOCUS BOARD OPERATOR FOR JERSEY BOYS NATIONAL TOUR IN VARIOUS VENUES
10/19 - 12/19	HEAD ELECTRICIAN , MILLS ENTERTAINMENT: ELF ON THE SHELF FIRST NATIONAL TOUR

	ACT AS THE HEAD ELECTRICIAN AND MOVING LIGHT FOCUS BOARD OPERATOR FOR ELF ON THE SHELF FIRST NATIONAL TOUR IN VARIOUS VENUES
10/17 - 10/19	LEAD AV TECH, LIGHTING DIRECTOR: CHASE CREATIVE, PLYMOUTH MI WORK WITH CLIENTS TO DEVELOP EVENTS WITHIN BUDGET CONSTRAINTS. ACT AS THE COMPANY LIGHTING DIRECTOR TO VERIFY LIGHTING NEEDS PER SHOW. TAKE ROLE AS A LEAD FOR LOAD IN AND LOAD OUT OF EVENT NEEDS. BE A DESIGNER AND PROGRAMMER FOR LIGHTING AS ASSIGNED
05/16 - Present	FREELANCE LIGHT TECH, DESIGNER, PROGRAMMER: STAGE LIGHTING AND SOUND, PORTAGE MI OVERHIRE FOR VARIOUS ROCK AND ROLL EVENTS AND TOURS. DUTIES INCLUDE BEING A DIMMER TECH, LIGHTING PROGRAMMER, LIGHTING DESIGNER. LIGHTING OPERATOR, MASTER ELECTRICIAN, QUALITY CONTROL TECH
09/14 - 10/17	TECHNICAL DIRECTOR: GULL LAKE PERFORMING ARTS COMPANY, RICHLAND MI TEACHING 30+ STUDENTS ABOUT TECHNICAL THEATRE CRAFT. MAINTAINING SAFETY STANDARDS IN A THEATRE. BUILDING SCENERY MEANT FOR TRAVEL IN MICHIGAN. MANAGING BUDGETS AND WORKING WITHIN TIGHT CONSTRAINTS.
12/12 - 07/14	RESIDENT LIGHTING DESIGNER: WHAT A DO THEATRE, BATTLE CREEK MI COLLABORATE WITH THE CREATIVE TEAM ON A SEASON WORTH OF SHOWS. MANAGE BUDGETS AND PURCHASES FOR THE THEATRE. PROGRAM LIGHTING AND HANG THE PLOT SERVING AS MY OWN MASTER ELECTRICIAN

EDUCATION

10/17	ENTERTAINMENT RIGGING TRAINING AND WORKSHOP SAFETY RECOVERY WITH BILL SAPSIS, LANSING, MI
09/11 - 05/15	BFA IN THEATRE DESIGN AND PRODUCTION, EMPHASIS IN LIGHTING DESIGN, WESTERN MICHIGAN UNIVERSITY, KALAMAZOO, MI
09/09 - 05/11	EDUCATION TOWARD AUTO DESK SPECIALIST, KALAMAZOO VALLEY COMMUNITY COLLEGE, KALAMAZOO, MI

SKILLS

ENTERTAINMENT RIGGING
 ENTERTAINMENT LIGHTING NETWORKING AND DIGNOSTICS
 MOVING LIGHT REPAIR AND DIAGNOSTICS
 VIDEO WALL SETUP, DIAGNOSTICS, AND REPAIR
 ESSENTIAL ELECTRICAL KNOWLEDGE
 PROGRAMMING ON MA2, AVOLITE, AND ETC CONSOLES
 CHAUFFER LICENSE HOLDER (STATE OF MICHIGAN)
 CONSTRUCTION OF WOODEN AND STEEL SCENIC STRUCTURES
 MICROSOFT OFFICE SUITE
 LANDSCAPE AND NATURE PHOTOGRAPHER

***AWARDS**

2015	HOGFACTOR: COMPETITION WINNER OF TWO HES SHAPESHIFTER FIXTURES FOR WMLU
2013	BEST DRAMA (ENCORE MICHIGAN): ONE WHO FLEW OVER CUCKOO'S NEST
2013	LIGHTING DESIGN NOMINATION (ENCORE MICHIGAN): NEXT TO NORMAL

REFERENCES

ON REQUEST

Section B. Project Description

Assistive Technology (AT) refers to products or equipment designed to enhance, maintain, or improve the functional capabilities of individuals with disabilities, according to the American Journal of Occupational Therapy (2024). In occupational therapy (OT), our focus is on improving participation in meaningful daily activities—from basic tasks like brushing teeth to complex ones like driving. AT categories include personal and community mobility (e.g., walkers, vehicle modifications), communication aids (e.g., hearing aids, speech-generating devices), adaptive home technologies, robotics, and tools for daily living (e.g., reachers, dressing aids).

AT is widely used by individuals with chronic conditions and disabilities, especially among older adults. Most people use some form of AT, knowingly or not. Research shows that AT can significantly improve quality of life, foster independence, increase occupational performance, and reduce caregiver burden. Despite its importance, access remains a global issue. According to WHO and UNICEF, over 2.5 billion people need AT, yet only 1 in 10 have access (World Health Organization, 2018). This gap is projected to grow, with demand expected to reach 3.5 billion by 2050 due to the aging population (Meyer Larsen et al., 2020). Barriers include limited availability in rural areas, inconsistent policies, insurance exclusions, and insufficient funding.

Insurance programs like Medicare, Medicaid, and private insurance often limit AT coverage to items called DME, Durable Medical Equipment, that are deemed “medically necessary” and for home use only, excluding tools needed in the community (e.g., a reacher used in a store). Even qualifying devices require detailed documentation, such as a Letter of Medical Necessity and a specialty evaluation, both prone to errors that can lead to claim denials. Alternative funding sources (e.g., schools, vocational rehab, the VA) have limited scope or accessibility. These systemic issues leave many to pay out of pocket, which is unaffordable for most. A 2001 University of Michigan study found that 40% of AT users outside clinical settings paid personally, according to the Institute of Medicine (US) Committee on Disability in America (2007).

OTs play a dual role in the AT matching process. We both advocate for our clients needs as well as implement the use of the AT. This includes identifying needs, conducting assessments, submitting documentation, training in device use, and ensuring follow-up. OTs also serve as intermediaries between clients and insurance companies, aligning client goals with policy language to secure access. Client involvement in this process improves success and satisfaction in the matching process.

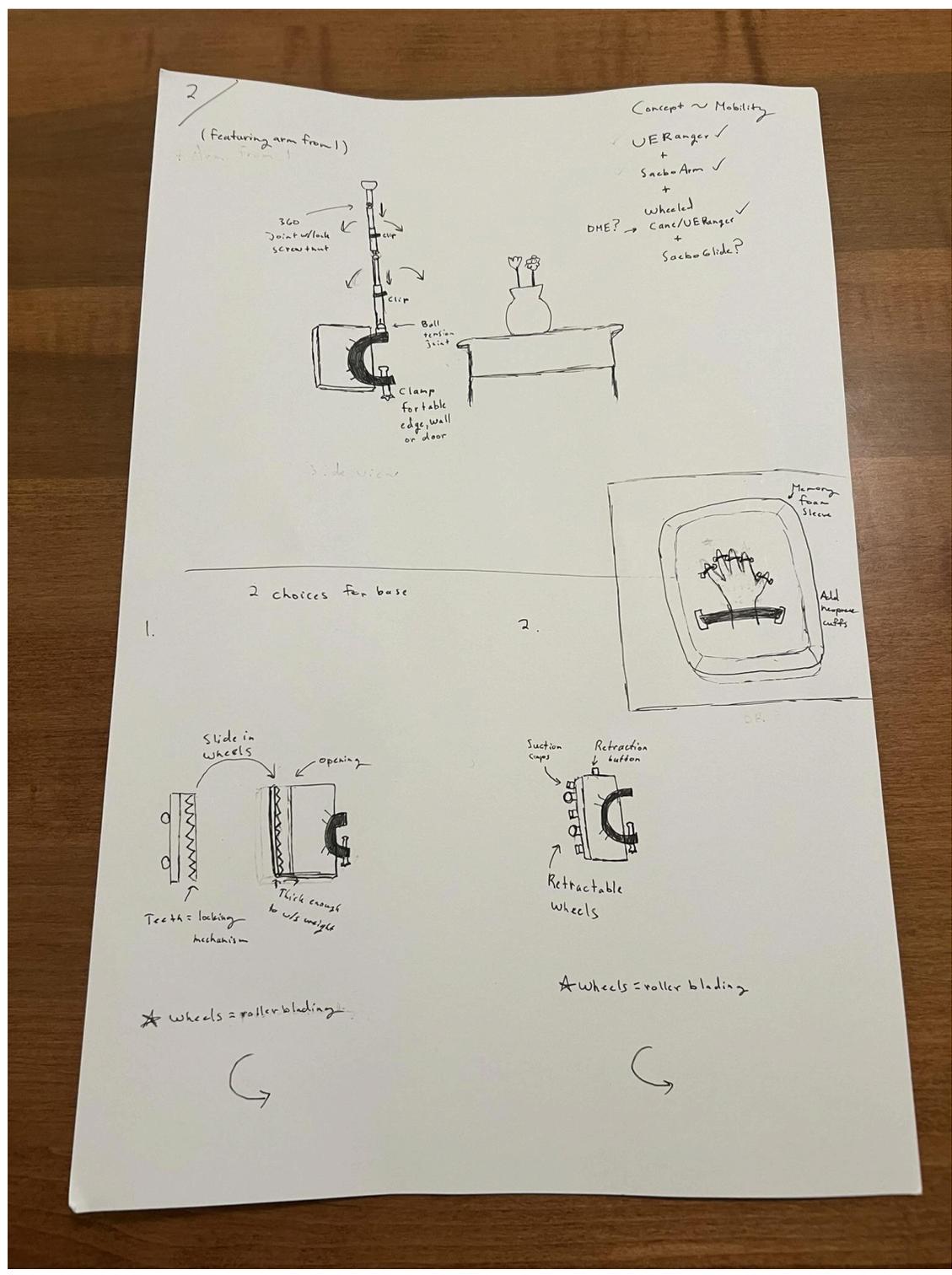
This capstone project seeks to address these challenges by developing affordable, effective AT solutions that serve a wide range of users. My approach is an innovative blend of multiple devices in one, while maintaining high-quality material and usability. I will administer clinical surveys supporting the use of the device to document usability and effectiveness. I am committed to the affordability of this device, placing it in a manageable price range for those who must pay out of pocket. I also hope that with this blend of devices, there will be enough factors for it to get a DME classification, for improved chances of insurance coverage. I am requesting funding for prototyping costs as I experiment with different designs and materials.

Section C. Pictorial Demonstration of Innovation

Original prototype created for my client, serving as inspiration for this project.



New ideas for potential prototypes for the project:



1/ UE Ranger Reacher Sacbo MAS } 3in

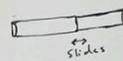
Top attachments:



Sacbo MAS

Flat part facing up
Metal/plastic boning material (slide into straps of sleeve)

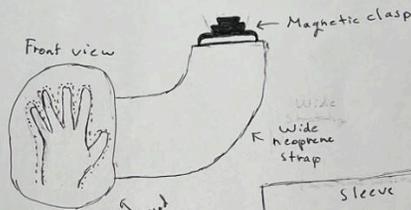
Can be shortened or lengthened
Total length when completely expanded =



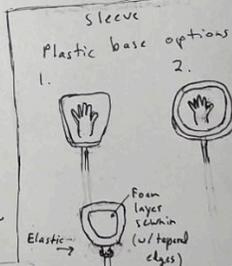
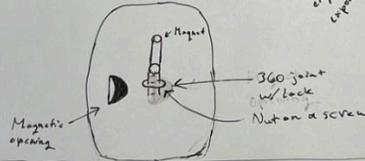
Where/how to attach?

UE Ranger

Sculpting clay or putty?
Soft air dry clay?

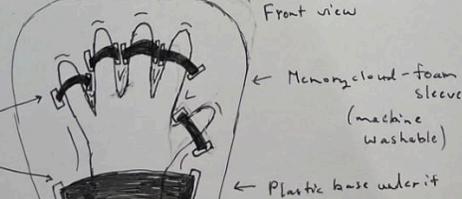


Bottom view

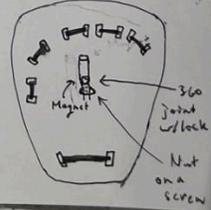


UE Ranger

Neoprene Cuffs



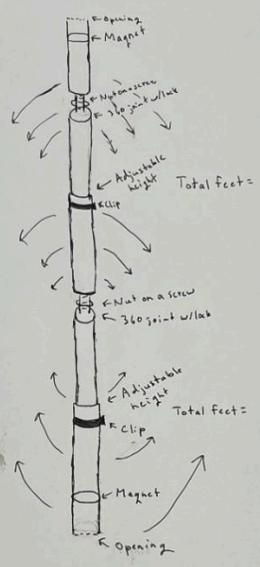
Bottom view



UE Ranger Reacher SacbotMAS } 3in1

Top attachments:
 - 360 joint w/ lock
 - Nut on a screw
 - Adjustable height
 - Clip

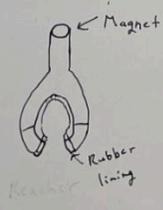
Arm:



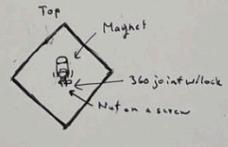
Total feet when completely expanded =

Reacher Claw

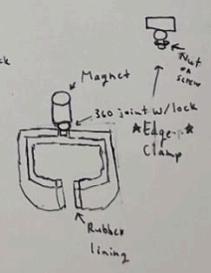
3 Base attachments:



UE Ranger Base



SacbotMAS



Adhesive pad & sticky tac lining edges (anti-scoff)

Section D. Line-Item Budget

Item:	Cost	Use/Justification
Inline skate wheels: https://a.co/d/aWDBHBp \$17	\$17	Use for base
Castor wheels variation: https://a.co/d/fjVzZC0 \$16	\$16	Use for base
Castor wheels variation: https://a.co/d/9HFRVxc \$26	\$26	Use for base
Castro wheels variation: https://a.co/d/9PQirLu \$16	\$16	Use for base
Neoprene roll: https://a.co/d/byrW5t0 \$22	\$44	2 rolls needed. Using for hand/wrist/arm attachment support.
Dycem roll: https://a.co/d/7NODOCD	\$30	Using for supporting placement of extremity.
Fasteners https://a.co/d/ffdJYZw \$10	\$20	2 sets. Using for hand/wrist/arm attachment support.
Fasteners: screws, bolts, turn knobs, handles, threaded inserts, heat pressing machine, etc. https://a.co/d/hafgm9K https://a.co/d/bJ2XcJG	\$80-100	For securing the prototype parts.
3D printer: Sketch PLA filament https://a.co/d/0s8rm6q \$20	\$100	One roll is 2lbs. I will be purchasing 5 rolls to support the creation of my 3D print alpha prototypes.
3D printer: Final print filament	\$300	More durable material for printing the beta prototypes.

Resin https://formlabs.com/materials/	\$800	For resin and their boxes to support the creation of my 3D print alpha prototypes.
Memory Foam The Foam Factory: https://www.foambyemail.com/contact-us.html <\$80 Sample pack from the Foam Factory: https://www.thefoamfactory.com/accessories/foam-samples.html \$15 Amazon Sample Pack: https://a.co/d/fl4p9c1 \$15	\$150	I need to experiment with different foam types before selecting one for the hand/wrist/arm attachment support.
Cane tips: https://a.co/d/i1sYXTE \$7	\$35	Comes in a pack of 2. Will be purchasing 5 packs. Use for base.
Retractable wheeled shoes: https://a.co/d/7GkOTVp \$98	\$98	Studying the retractable wheels feature for the base.
Joints: https://www.mcmaster.com/products/ball-and-socket-mounts/	\$300	For the movement pathways of the device.
Tariff and shipping adjustment	\$615 (30% of the total)	I will be out of state in Colorado from September 22 - December 29. This way Cory can ship any 3D prints I make or materials, etc.
Total Costs: \$2,667		

Section E. Implementation Plan

Stage	Outcome	Contributors
Stage I: MacGyver prototype creation from materials bought via grant proposal. July 2025	Build a MacGyver prototype(s) and select the final one.	Lead Innovators
Stage II: CAD 3D Modeling via Fusion July/August 2025	Create a 3D model of the selected one in Fusion.	Lead Innovators
Stage III: 3D Print the alpha prototype at RIDI August/September 2025	3D print the Fusion model.	Lead Innovators
Stage IV: Pre-survey October/November 2025	Gauge pros and cons of the device (alpha prototype).	Lead Innovators Subjects
3D Print the beta prototype at RIDI November/December 2025	3D print the updated Fusion model.	Lead Innovators
Stage V: Capstone semester starts - Post-survey January 2026	Gauge pros and cons of the device (beta prototype).	Lead Innovators Subjects
Data summarization January 2026	Create charts/graphics, etc.	Lead Innovators
Finalizing physical and functional properties January/February 2026	Update the finalized Fusion model.	Lead Innovators

3D Print the final beta prototype February 2026	Print the finalized Fusion model.	Lead Innovators
Translation of 3D print beta prototype to market-ready product March 2026	Determine translation requirements.	Lead Innovators
Patent and IP finalization March/April 2026	Legal guidelines creation for my product.	Lead Innovators Faculty
Creation of user videos and manuals April 2026	Shared with consumers for proper usage and adherence to use.	Lead Innovators
Complete the final capstone project paper April 2026	Summarization of project details, process, and future plans.	Lead Innovator
Dissemination April 2026	Verbally present the summarization of project details, process, and future plans.	Lead Innovators Faculty Students Community Members

Section F. Evaluation Plan

Stage	Outcome	Outcome Evaluation Plan
Stage I: Pre-survey	Feedback from users and medical professionals on the alpha prototype	Survey created by lead innovator to gather information on ease of use, level of importance to functioning, looks, feel, weight, etc.
Stage II: Post-survey	Feedback from users and medical professionals on the beta prototype.	Survey created by lead innovator to gather information to compare with the pre-survey.

Section G: References

References

- Assistive Technology Devices and Services in Occupational Therapy Practice. (2024). *American Journal of Occupational Therapy*, 78(Supplement 1), 7810410130. doi:
<https://doi.org/10.5014/ajot.2024.78S106>
- Institute of Medicine (US) Committee on Disability in America. (2007). *The Future of Disability in America* (Field, M.J., & Jette, A.M., Eds.). Washington DC: National Academies Press.
Coverage of assistive technologies and personal assistive services. Available from:
<https://www.ncbi.nlm.nih.gov/books/NBK11441/>
- Meyer Larsen, S., Hounsgaard, L., Johansson, K., & Kaae Kristensen, H. (2020). Encounters between older adults and occupational therapists during the assistive technology application process. *Scandinavian Journal of Occupational Therapy*, 27(4), 280–288.
<https://doi.org/10.1080/11038128.2018.1550528>
- World Health Organization (2018, May 18). Assistive Technology.
<https://www.who.int/news-room/fact-sheets/detail/assistive-technology>

If your proposal is accepted, you will be required to provide an interim report (six months after funds are awarded) and final report (one year after funds are awarded). Please submit your proposal to Dr. Holly Grieves, Co-Director, Sammons Center at holly.grieves@wmich.edu.