Robotic Ankle Exoskeleton

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Design Efforts

- Changes this Semester
 - Spark Plug Bracket
 - Updated Pulley Design
 - Cover added for safety







Purchasing Plan

Current Bill of Materials												
Part	Number in Category	Manufactor/Source	Quantity Per Unit	Cost Per Unit	Quantity Needed	Item Number	Link	How it will be aquired	Part Status			
Footplate	1	Provided by Lerner	1	-	2			Provided				
Torque Sensors	2	Provided by Lerner	1	-	2			Provided				
Tube - Square - Fabric - 0.75 X 0.88 X 66 Inch	3	Rockwestcomposites	1	215	1	25484	<u>Link</u>	Purchased	Waiting For delivery			
M58 X 35 mm Phillip Screws	4	Home Depot	1	\$1.25	1		<u>Link</u>	Puchased	Aquired			
Chain (1ft, 05B, 8mm Pitch)	5	McMaster-Carr	1	\$9.00	2.00	6027k91	<u>Link</u>	Purchased	Aquired			
M47 30mm Bolt	6	Home Depot	1	\$1.25	1.00		<u>Link</u>	Purchased	Aquired			
M47 Hex Nut	7	Home Depot	4	\$1.25	1		<u>Link</u>	Purchased	Aquired			
M4.7 Washer	8	Home Depot	4	\$1.25	1		<u>Link</u>	Purchased	Aquired			
Stainless Steel Ball bearing	9	Mcmaster-Carr	1	\$13.17	2.00	57155k585	<u>Link</u>	Purchased	Aquired			
Stainless Steel Ball bearing 5mm	10	Mcmaster-Carr	1	\$9.20	4	7804k138	<u>Link</u>	Purchased	Aquired			
Stainless Steel Shoulder Screw	11	Mcmaster-Carr	1	\$6.31	2	91273A392	<u>Link</u>	Purchased	Aquired			
Steel Hex Nuts	12	Mcmaster-Carr	100	\$0.05	1	90592A095	Link	Purchased	Aquired			
M2 x .04mm Phillip Screws	13	Mcmaster-Carr	100	\$0.08	6	92000A015	<u>Link</u>	Purchased	Aquired			

Purchasing Plan

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Steel Cable 2mm diameter +									
Clamps	14	Amazon	1	\$12	1		<u>Link</u>	Purchased	Aquired
PLA Material	15	Amazon	1	\$18	1		Link	Purchased	Aquired
M5 x 0.80 mm Thread,									
35mm Long	16	McMaster-Carr	10	\$10.36	1	90116A267	<u>Link</u>	Purchased	Aquired
M4 x 0.70 mm Thread,									
30mm Long	17	McMaster-Carr	50	\$16.24	3	90116A225	<u>Link</u>	Purchased	Aquired
800cc Onyx Filament Spool	18	MarkForged	1	\$190	1	F-MF-0001	<u>Link</u>	Purchased	Aquired
50cc Carbon Fiber CFF Spool	19	MarkForged	1	\$150	1	CF-BA-50	<u>Link</u>	Purchased	Aquired
Sprocket (05B, 8 Teeth)	20	McMaster-Carr	1	\$13.05	2	2302K79	<u>Link</u>	Provided	1/2 currently
Motor	21	Maxon	1	\$715.13	2	323218	<u>Link</u>	Provided	1/2 currently
Gearbox	22	Maxon	1	\$294.65	2.00	370782	<u>Link</u>	Provided	1/2 currently
Arduino Nano 33 BLE Sense Rev2 with headers	23	Arduino	1	\$37.43	1.00	ABX00070	<u>Link</u>	Purchased	Waiting for delivery
Teensy No Ethernet(TEENSY41_NE_PIN									
S)	24	PJRC	1	\$41.68	1.00	TEENSY41_NE_PINS	Link	Purchased	Waiting for delivery
TMotor_Rev0_6_Maxon_20									
24-02-17_Second_REVISION									
_Y4	25	JLCPCB	1	\$9.53	5.00	Y4-5457140A	Link	Purchased	Waiting for delivery
TMotor_Rev0_6_Maxon_20 24-02-17_Second_REVISION									
_Y4	26	JLCPCB	1	\$33.80	5.00	SMT02402171606419-5457140A	<u>Link</u>	Purchased	Waiting for delivery

Purchasing Plan

- 100% parts purchased
- 75% on hand

- Nano Arduino
- Ethernet chip
- 10 Maxon Motors Chips
- Carbon fiber rod
- Future purchases up to Lerner's Discretion

Manufacturing Plan

				Curr	ent Bill of Mat	erials						L	ead Times
	Part	Number in Category Mar	anufactor/Source	Quantity Per Unit	Cost Per Unit	Quantity Purchased	Item Number	Link	How it will be aquired	Part Status	Who will Manufacture	Start Date	Estimated End Date
	LL-Spark Plug Motor Mount Mod1	1 Pro	otoLabs	1	\$500.14	1.00	1471-8919-00	<u>Link</u>	Manufactured	Aquired	ProtoLabs	5-Feb	9-Feb
	Spark Plug Motor Mount Mod1	2 Pro	otoLabs	2	\$422.72	2.00	1125-8486-00	<u>Link</u>	Manufactured	aquired	ProtoLabs	5-Feb	9-Feb
6)	3" Pulley (Moslikely 3D printed)	3 Ler	rners Lab	2						Needs To Be Manufactured	Lerners Lab	Unknown	Unknown
	Carbon Fiber Tubing	4 Roc	ockwestscomposite	1	\$215.00	1	25484	Link		Needs To Be	TBD from Lerner	Unknown	Unknown

- Waiting to manufacture Rod
- Will 3D print Pulley out of Onyx after we print out of PLA first
- 75% Manufactured

Demonstration





Gantt Chart

TASK	ASSIGNED TO	PROGRESS	START	END	DAYS	u T W	T F	s s	мт	wT	F S S	мт	w T	FS	s M	T w	Т
Task 1: Purchase Rod and Get machined	T. Green	50%	1/18/24	1/26/24	9												
Task 2: Just Bottom Pieces (foot plate, pulley, rod, toruqe sensors)	D. Avila, E. De Korte, T. Green	75%	1/29/24	2/6/24	9												
Task 3: Design Efforts: 100%	D. Avila, E. De Korte, T. Green	100%	1/16/24	1/26/24	11						П						
Task 4: Purchasing Plan: 67%	T. Green	100%	1/16/24	1/26/24	11						П						
Task 5: Demonstration: 33%	D. Avila, E. De Korte, T. Green	100%	2/5/24	2/6/24	2												
Task 6: Update Gantt Chart	E. De Korte	100%	2/5/24	2/6/24	2												
Task 7: Task Purchase Metal sheet and send to machine shop	T. Green	0%	2/5/24	2/27/24	23												
Website Check #1																	
Add in LinkedIn accounts, updated Resume's, and individual portfolio's	E. De Korte	100%	2/6/24	2/23/24	18												
Hardware Status 67+% Build																	
Task 1: Bracket and Motor Assembly	D. Avila, E. De Korte, T. Green	75%	2/6/24	2/20/24	15												
Task 2: Design Efforts: 100%	D. Avila, E. De Korte, T. Green	100%	1/16/24	2/6/24	22												
Task 3: Purcahsing Plan: 100%	T. Green	95%	1/16/24	2/27/24	43												
Task 4: Demonstration: 67%	D. Avila, E. De Korte, T. Green	50%	2/26/24	2/27/24	2												
Task 5: Update Gantt Chart	E. De Korte	100%	2/3/24	2/23/24	21												

- Roadblocks
 - Design changed last minute
 - Original hardware does not match new design

Any Questions?

