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Ekwang and Kwacoco Bible

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Agenda

- ▶ Background and Motivation
- ▶ Technical and Verification
- ▶ Goals
- ▶ Constraints
- ▶ Trade offs
- ▶ Design Sketches





Ekwang and Kwacoco Bible | Background and Technical Specs



Goals

Current

- ▶ Completes 60 wraps of the cocoyam mash in 20 minutes
- ▶ Wraps leaves with a diameter of 2cm






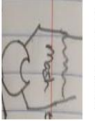




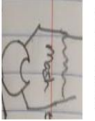

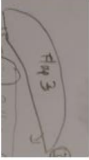

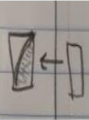






Goal

- ▶ Completes 60 wraps of the cocoyam mash in 10 minutes
- ▶ Makes 2cm diameter wraps consistently

Constraints

- ▶ Device affordability
- ▶ Device portability
- ▶ Safety and ergonomics
- ▶ Material selection

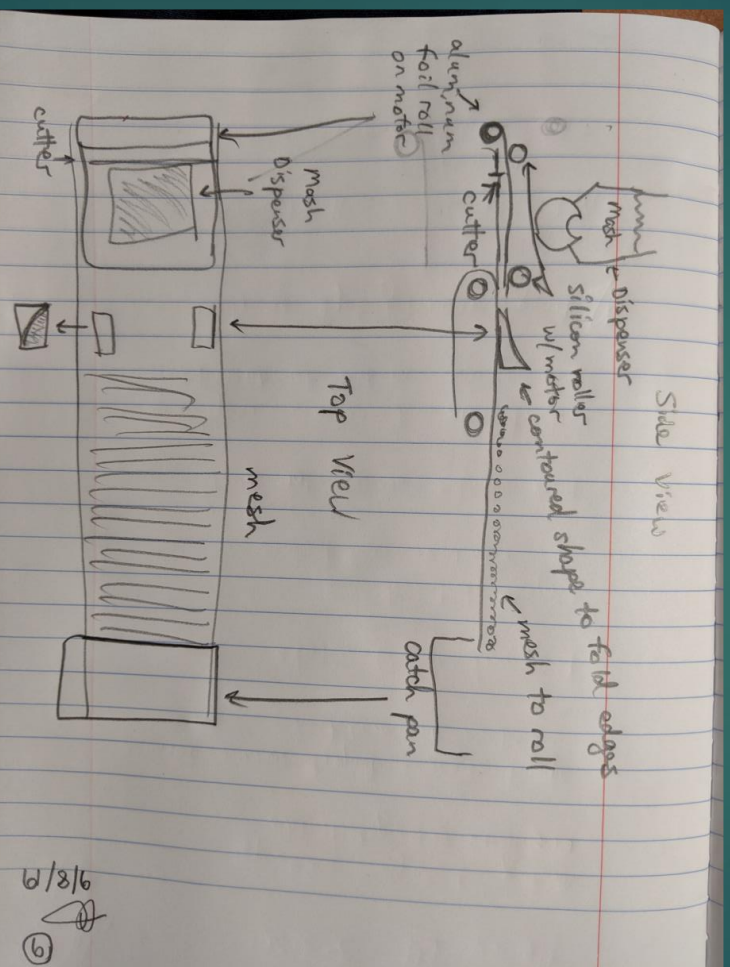
Trade offs

Material wrapped	Greens 	Banana/Plantain 	Aluminum Foil 	Plastic wrap 	
Power	Manual handle  Automatic 	Manual pedal 	110V 	220V 	Battery 
Mash dispensing	Manual 	Automatic 			
Wrapper dispensing					
Folding mechanics	Flaps 	Gravity with hole walls 	Contoured walls 		
Wrapping mechanism	Mesh sheet  Conveyor track 	Roller motor  Roller motor 			
Movement of product					
Collection of finished wraps	Manual removal 	Catch pan 			

Design Approach

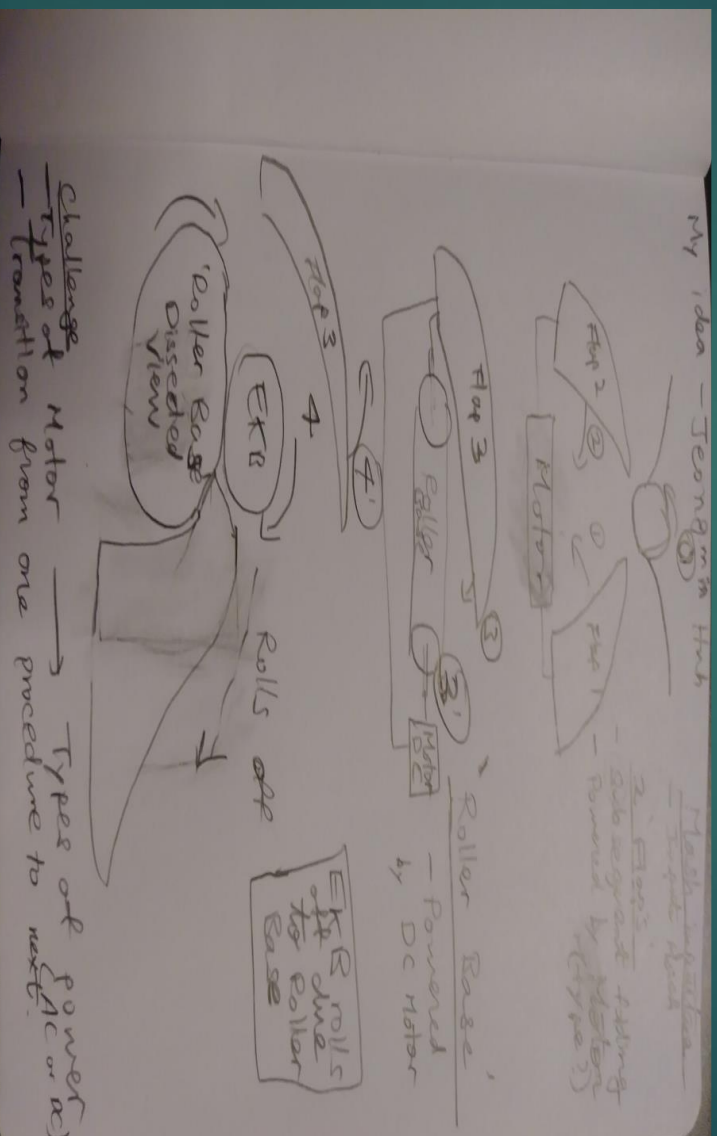
- ▶ Design Ideation Process
 - ▶ Researched similar products/processes available in the market
 - ▶ Allowed each team member a brainstorm-period of several days to come-up with an idea
 - ▶ We met and presented our ideas and heard the critics of each other
 - ▶ We chose the idea that combined most of the team member's approach

Initial Design Ideas



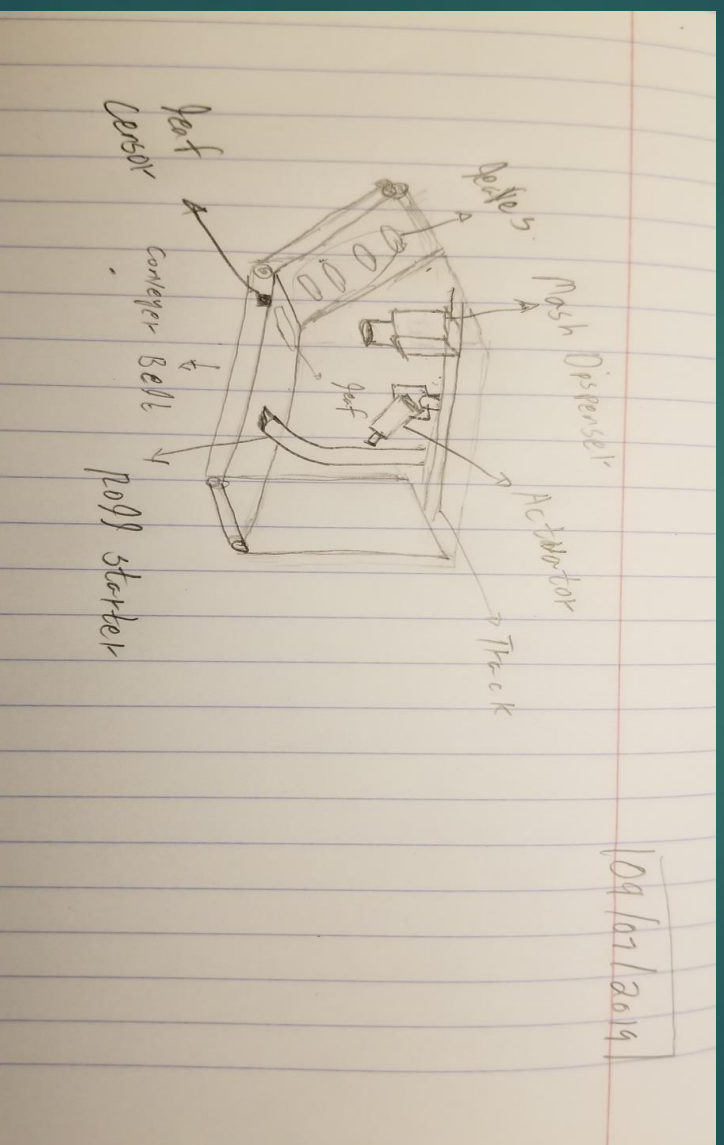
Conveyor Belt Type

Initial Design Ideas



Folding flaps

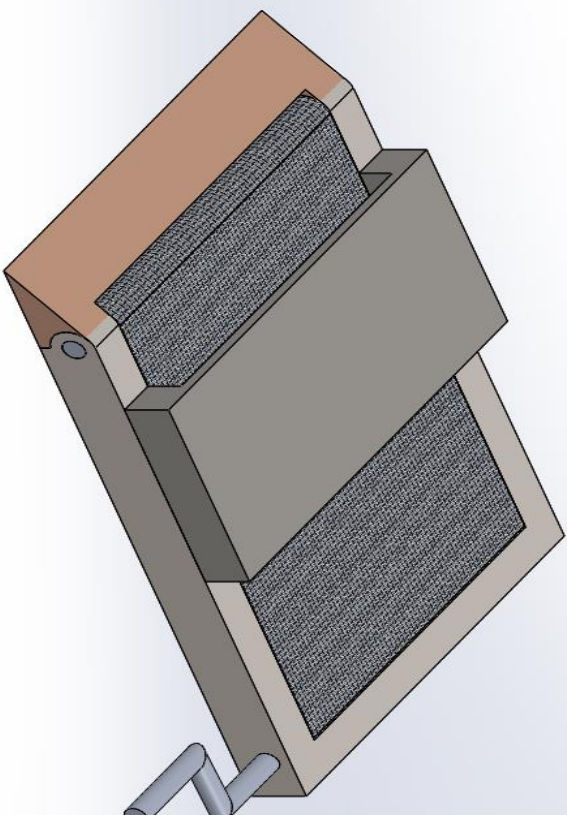
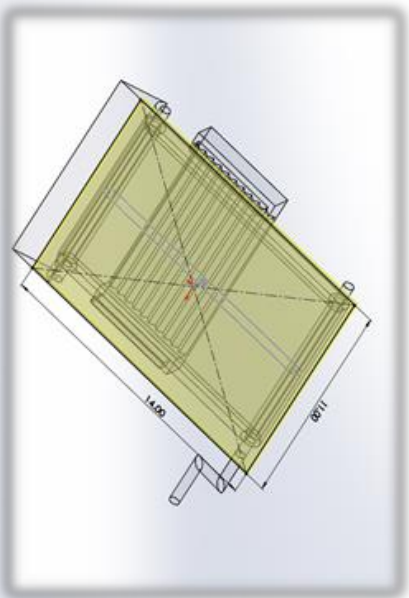
Initial Design ideas



Sensor Based

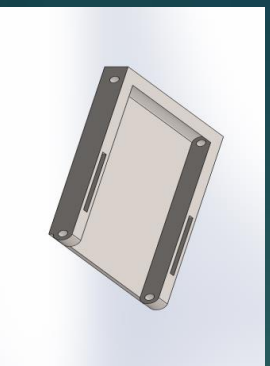
Design Approach

- ▶ Why we chose the design?
 - ▶ Hybrid mode operation (Mechanical and Electrical)
 - ▶ Simple wrapping mechanism
 - ▶ Easy to incorporate add on features as time permits

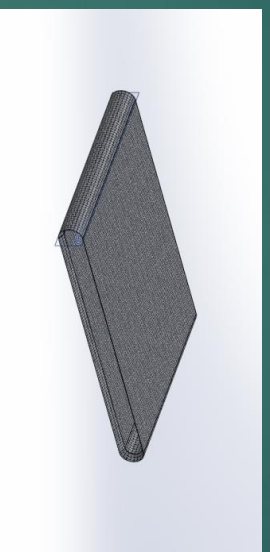


Wrapping Machine

Design Approach



Base



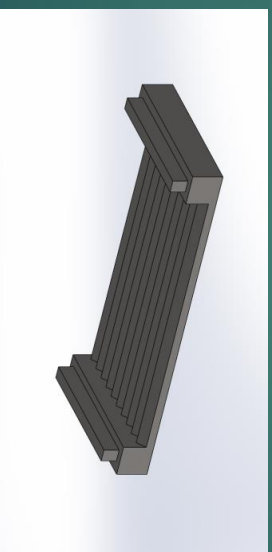
Conveyor Belt



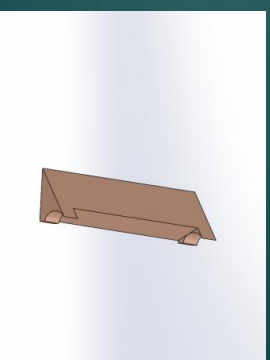
Shaft



Handle



Top



Slope

Design Approach

Mechanical Components:

- ▶ Conveyor belt which displaces the wrap
- ▶ Base which support the conveyor belt
- ▶ Mesh which resists the motion of the wrap thus imposing a rotational motion of the wrap
- ▶ A slope to guide the descent of the wrapped Ekwang
- ▶ A handle for rotating the conveyor belt

Electric components:

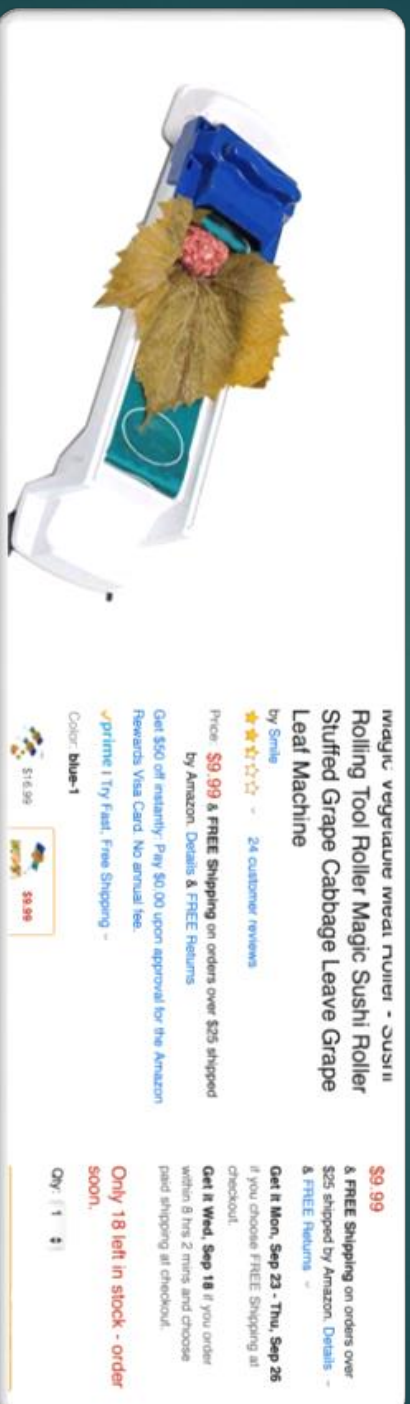
- ✓ 1 DC motors
- ✓ AC – DC converter
- ✓ Step down voltage transformer
- ✓ Circuit protection components (ex. Fuses)
- ✓ Power cord

Milestones

- ▶ Finalize Design (based on feedback)
- ▶ Purchase Parts
 - ▶ CAD Drawings
 - ▶ Circuitry Schematic
- ▶ Build Parts
- ▶ Experiment run
- ▶ Website
- ▶ Final Report and Presentation
- ▶ Capstone

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Marketing Analysis



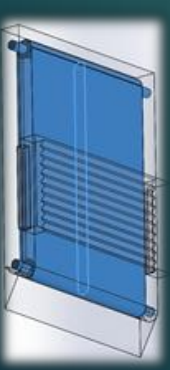
Problems:

- Ideal for limited amount of material
- Hard to wash
- Lack efficiency



Cours?

System automatically wraps the material



- ▶ Advantage:
- ▶ Highly productive
- ▶ Less manpower used

▶ Problems:

- ▶ Not ideal for leaf wrap (computer)
- ▶ Costly
- ▶ Not easy to deploy (a lot of space)



Manual processing
Affordable for family
Less Space

Automatic spring roll injera making machine

FOB Reference Price: [Get Latest Price](#)

\$3,000.00 - \$15,000.00 / Sets | 1 Set/Sets (Min. Order)

Model Number: 6QP-12060

Lead Time:

Quantity(Sets)	1 - 2	3 - 8	9 - 20	>20
Est. Time(days)	30	50	100	Negotiable

Customization: Customized logo (Min. Order: 1 Sets)
Customized packaging (Min. Order: 1 Sets) [More](#) ▾

Payments: **VISA** **Online Bank Payment** **T/T** **Pay Later** **WesternUnion** **IMU**

For product pricing, customization, or other inquiries:

[Contact Supplier](#)

[Leave Messages](#)

CN Langlang
Shengxing Food Machine--
10yrs
Manufacturer, Trading Company

You may like
 Energy efficient Prawn

Number of items	Dimension and rating of items	Name of items	Price per each(USD)
1	Rating: 2.5A/250V Length: 2 Meters (6.56 ft)	Cisco 830/850/870 Series AC Power Cord	10.05
1	Rating: 0.4A/12VDC Diameter:Round1.378"(35.00mm)	Brushless DC motor(STEPPER MOTOR PM BIPOLAR)	8.10
1	Rating: 2A/250VAC height and diameter:0.25"x1.25"	Fuse(Cylinder; Slow Blow)	.45
1	Rating: 85VAC/12VDC Volume:1.12"x1"x0.25"	Power integration AC to DC converter(LNK304PN)	0.76
1	N/A	Voltage regulator(standard Regulator 6-volt 1.5 Amp 3 Pin 3+ Tab TO-220 Tube)	0.43
4	Rating: N/A Volume: 1.3" x1.25"x0.75"	Roller(Nieco 17899 Motor Sprocket)	6.77
1	Rating: N/A Dimensions: 70, 1/5" pitch, 14" pitch	Gearbelt(XL Timing Belt,Number of Teach	4.46
Material to be determined	Material to be determined	Material to be determined	Material to be determined
Total=10			Total=51.33

Questions

