



# Baseball Bat Finishing System

By The Sluggineers

Sponsored by Vander Sports



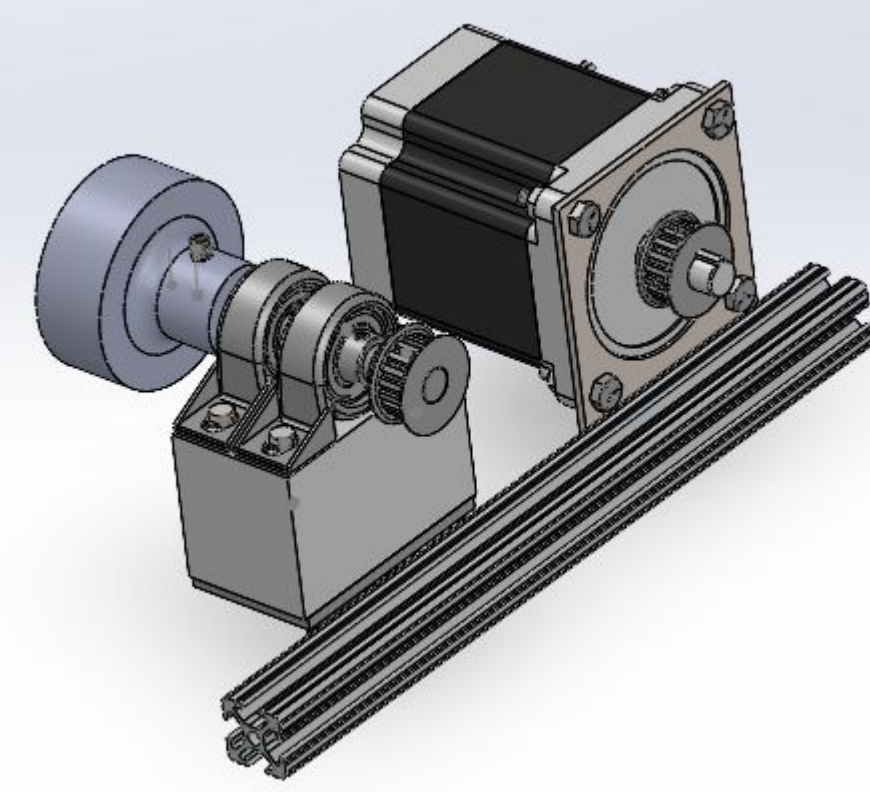
SAN DIEGO STATE UNIVERSITY

## Project Overview

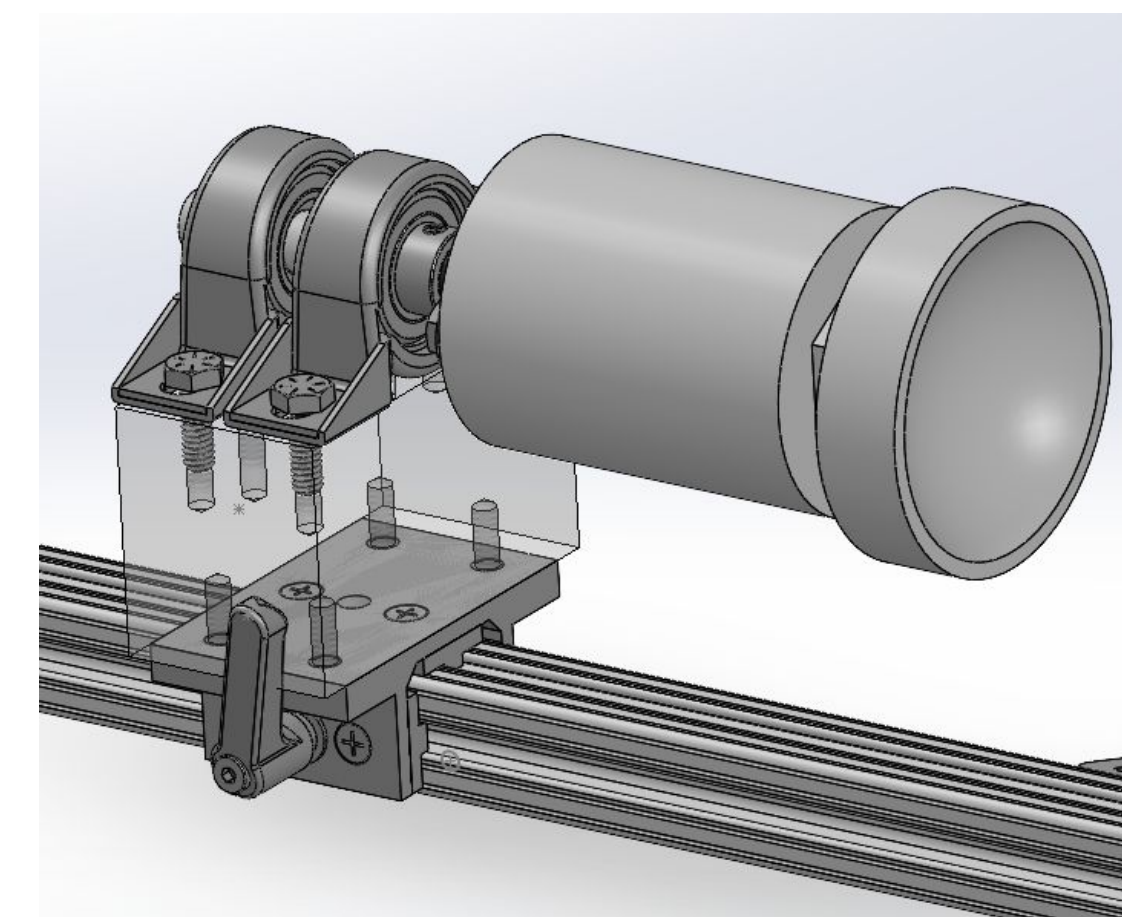
Vander Sports is evaluating the expansion of services with the inclusion of a bone rubbing machine to improve the performance of wooden baseball bats. Bone rubbing a bat along wood grains should compress the wood and make the bat less likely to splinter or flake.

Vander Sports requires a benchtop device that can easily load and secure any size baseball bat that they offer. The device will also rotate the bat and the carriage holding the bone shall travel the full barrel length with adjustable pressure. The entire process should be able to be completed by one person in under seven minutes and require minimal tools.

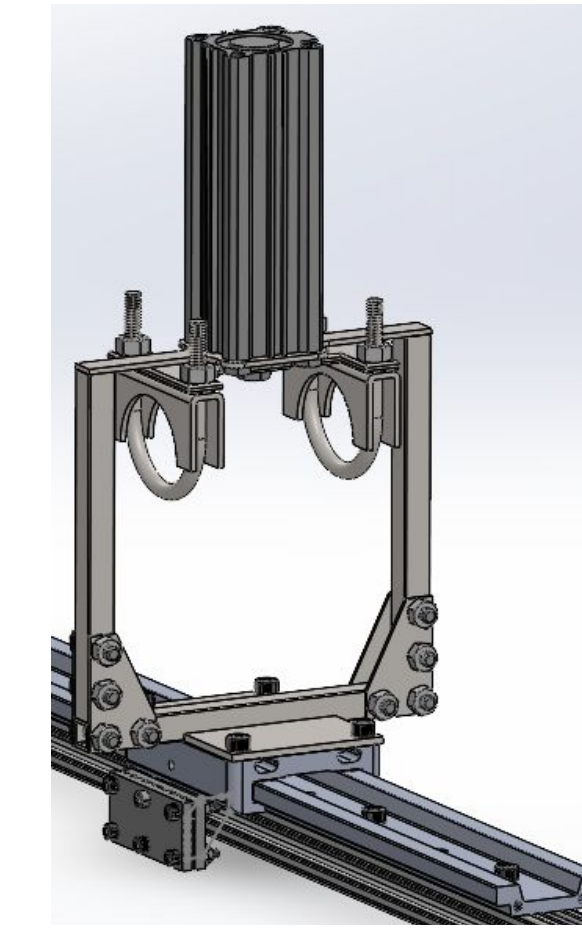
## Major Components



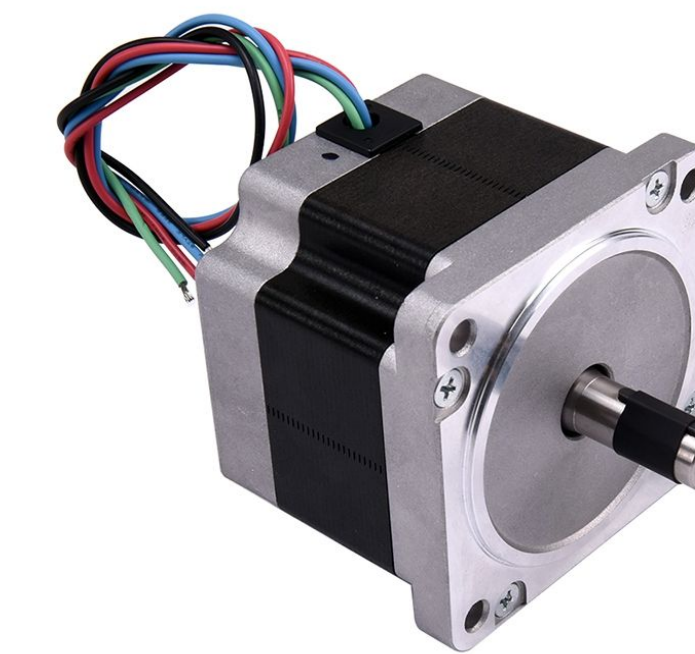
Barrel Mount and Rotation Subsystem



Knob Mount Subsystem



Bone Rubbing Subsystem



2x Nema 34 Steppers

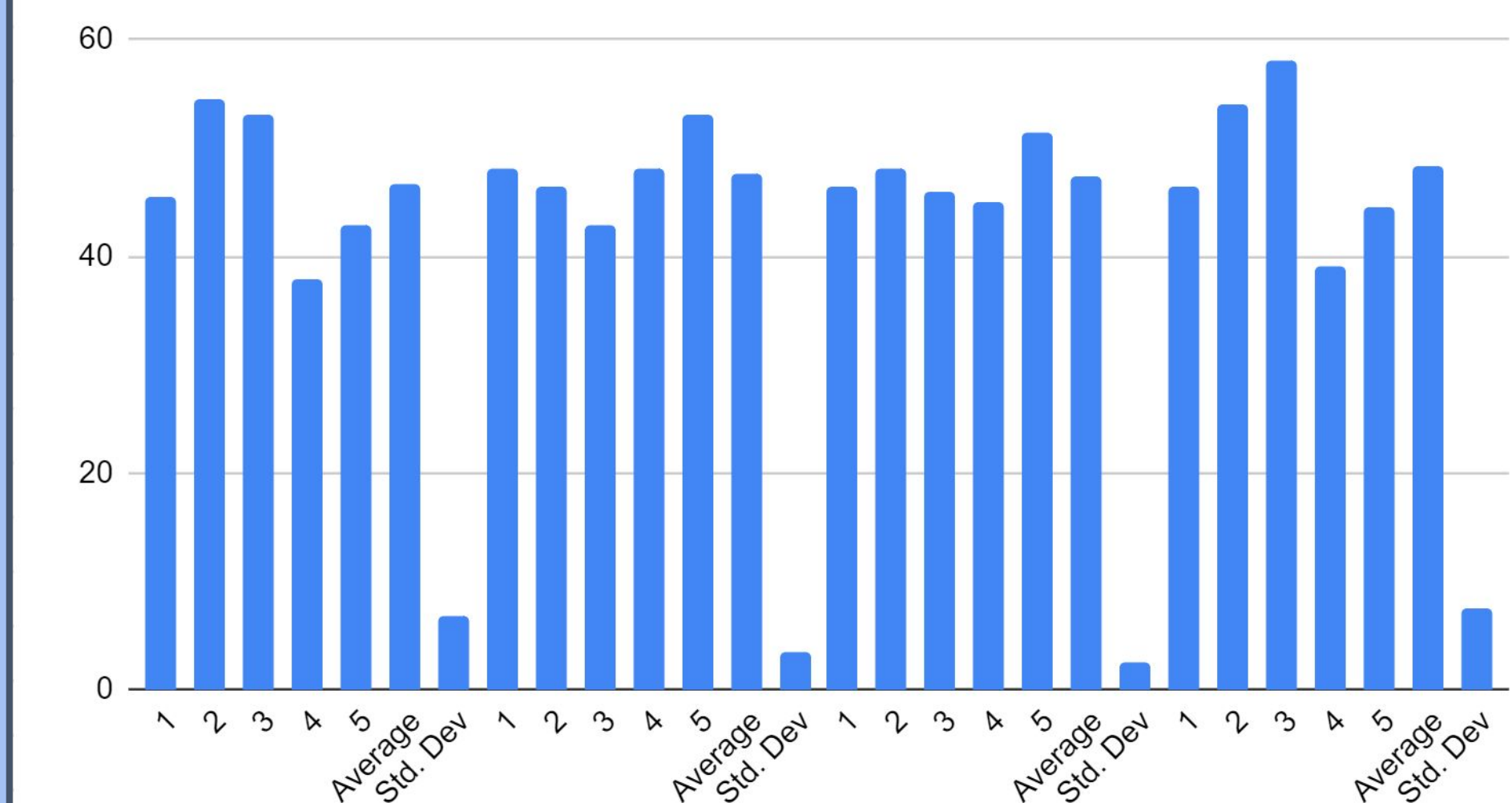
One Arduino Due manages the inputs and outputs of each subsystem

## Final Product



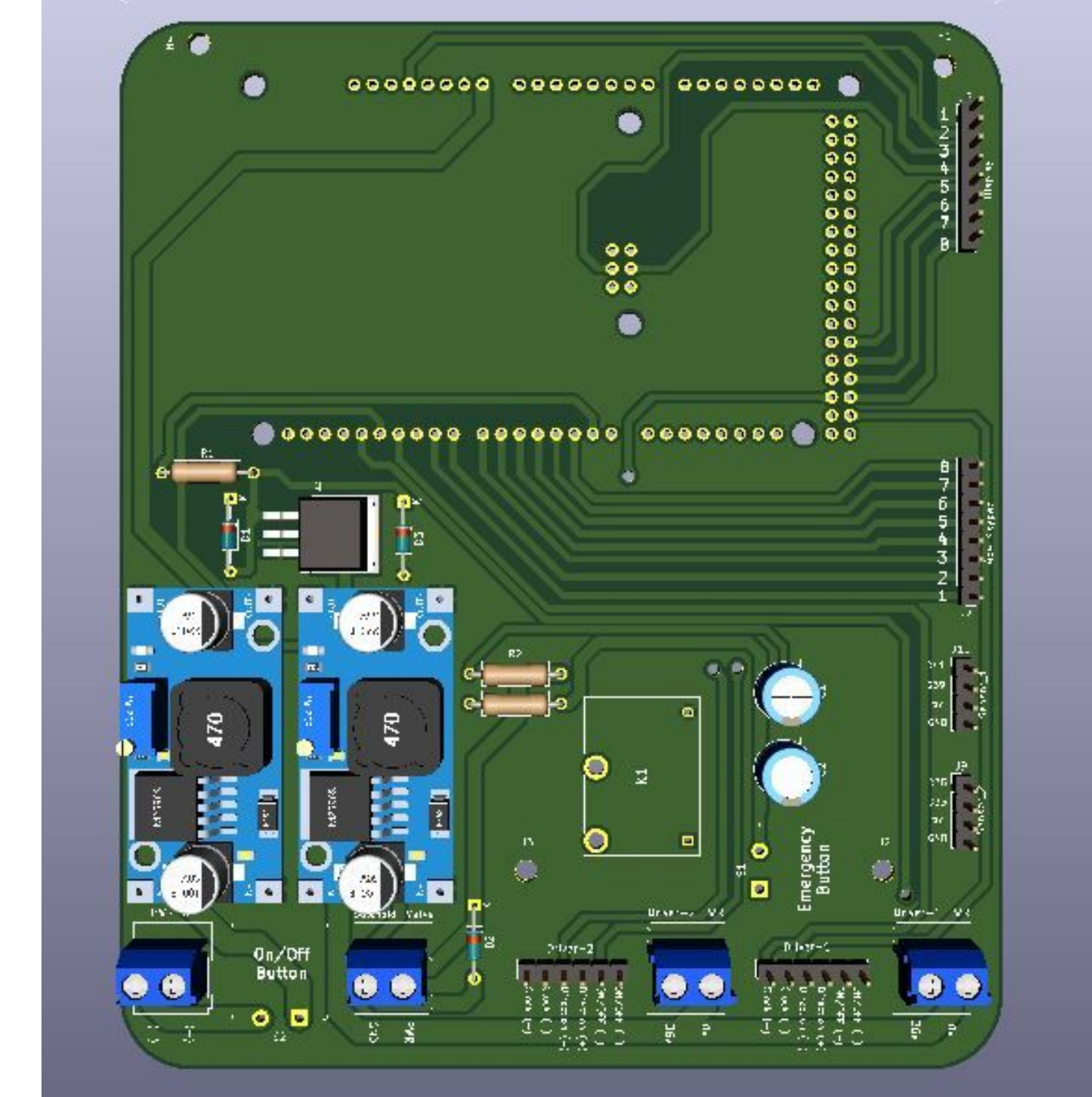
## Testing

Hole depth (.01 in) vs Rubbing method



- Tested hardness using the impact depth of a ball bearing on rubbed and unrubbed wood
- No changes in hardness were found when testing several different rubbing materials such as steel, bone, or delrin plastic

## PCB Design

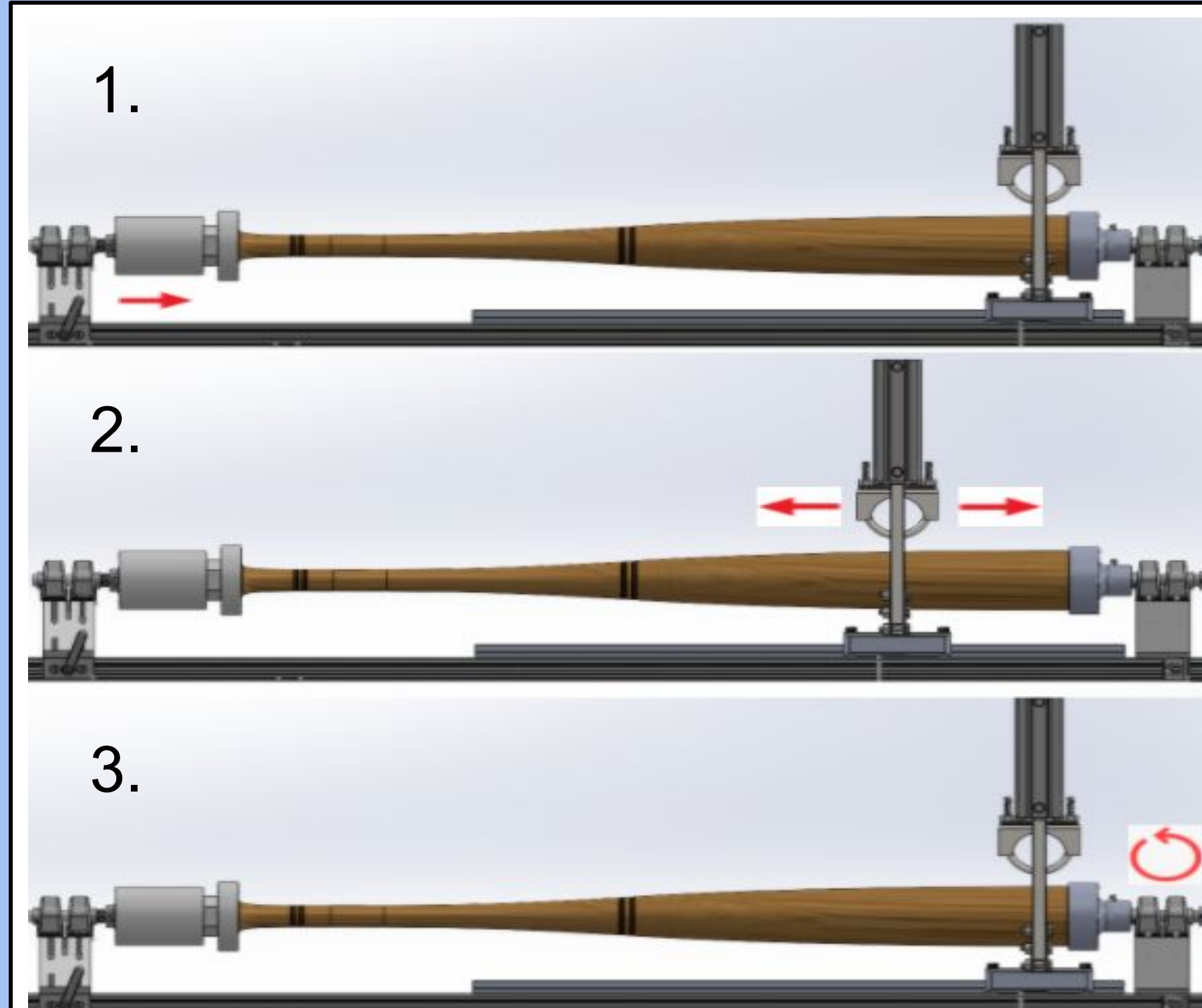


## Team Members



By row: Abdulwahab Altawheed, Vincent Chang, Audrey Paris Chuakay, Anthony Gugg, Scot Haury; Steven Matti, Devin Morningstar, Loran Najjar, Pat Petel, Brandon Pola

## Mode of Operation



1. Bat mounted and locked in place
2. Bone rubbing subsystem rubs bat from barrel end to end
3. Rotation subsystem rotates bat
4. Steps 2 and 3 repeat until entire bat has been rubbed

## Acknowledgements

Team Sluggineers thanks Professors Shaffar, Dorr, and Arnold as well as Mr. Victor Escobedo and Mr. John Reep from D&K Engineering for providing us with guidance. Furthermore, we appreciate the guidance and support provided by Vander Sports as well as former Padres Player, Kurt Bevacqua.