



# WebbWorks Bicycle Frame Fatigue Testing Device

April, 2017

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and Nick Paquet

# Acknowledgements

- Project Sponsor – Phil Webb
- Faculty Sponsor – Dr. Joseph Schroeder
- Bimba Manufacturing – Jon Evans
- Computer Programmer – Joe Melsha

## Sponsor Background

- WebbWorks LLC – Greenville, SC
- Manufactured in Thailand



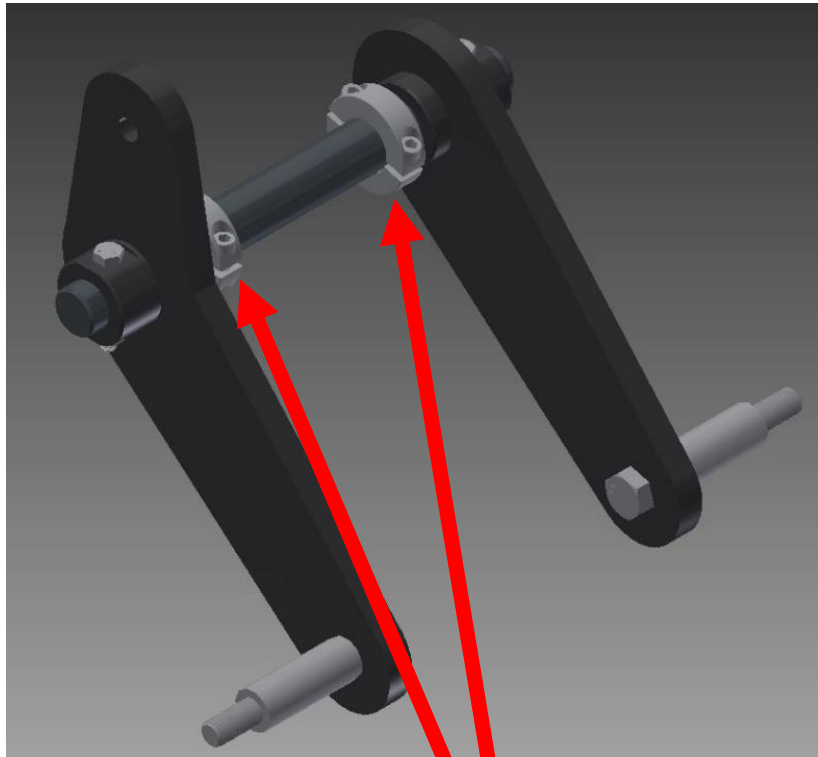
## The Problem

- Carbon fiber bike frames
- Need for a bicycle pedaling fatigue device
- Eliminate cost of outsourcing

## Team Structure & Responsibilities

- Bart Hoxworth – involved in the design of the frame, dynamic analysis of the proposed system, construction of the frame, and compliance to the codes and standards.
- Nick Paquet – involved in the development of the schedule, maintaining the budget, research of current solutions, and review of team submittals.
- Colin Sheehan – involved in the design of the pneumatic system, programming of the control system, team organization, and the primary communicator with our sponsor.

# Fabrication



Sliding adjustable collars



Support shaft



# Fabrication



# Fabrication





## Functions:

- Test
  - Initiate Test
  - Pause Test
- Cycle count
  - ##### Cycles
- Loads
  - Right Load: #####N
  - Left Load: #####N

```
>TEST  
CYCLE COUNT   ↓
```

```
Initiate Test  
Pause Test
```

```
>TEST  
CYCLE COUNT   ↓
```

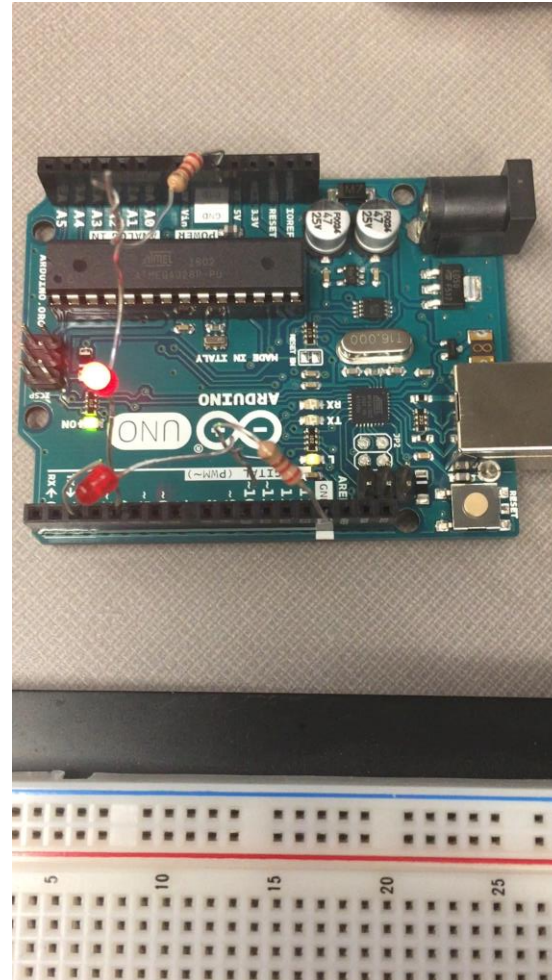
```
Cycles
```

```
>TEST  
CYCLE COUNT   ↓
```

```
Right Load: #####N  
Left Load: #####N
```

# Arduino

Initiate Test



# Operation





# Future Design Suggestions

