THE UNIVERSITY OF UTAH

Project Description

Packrafting has emerged as the means of combining backpacking and river rafting. Existing portable

catarafts currently exist but weight in excess of 25 pounds and are very bulky.

Our solution is to design and manufacture a hybrid, ultralight cataraft/backpack



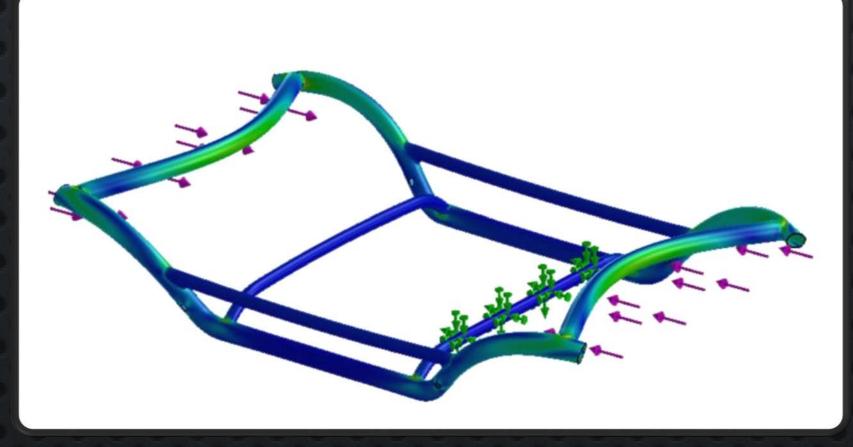
system that can support the weight of a single person and his or her backpacking gear, as well as having the ability to convert into a backpack when not being used as a raft.

<u>Objectives</u>

The main objectives and specifications for the cataraft are as fallows:

- Ultra-lightweight maximum total weight of less than 10 pounds.
- Load Capacity maximum operational load of 300 pounds.
- Multi-functional the ability to interchange between a backpack and a cataraft.
- **Durable** Capable of withstanding light abuse as a backpack as well as whitewater rapids as a raft.

Testing





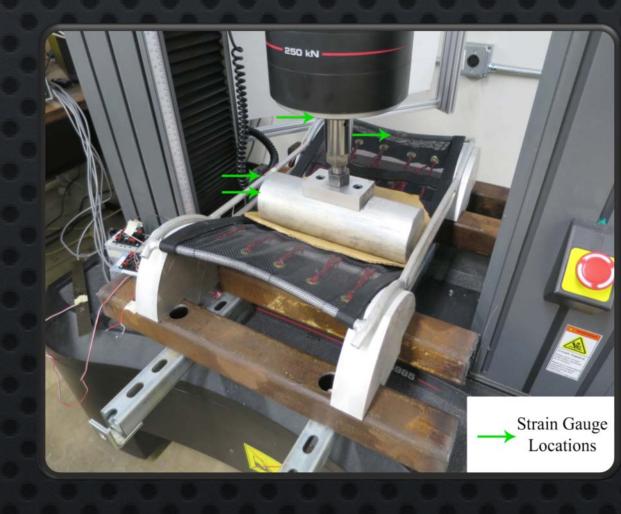
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LTRALIGHT BACKC/

Final Design

Load Testing of the Central frame:









Weight Analysis

<u>Competitor</u> Cataraft currently available Ultralight backpack		= 25 = 2 l
	subtotal	= 27
<u>Ultra-light Backcat</u>		
Inflatable tubes		= 6
Frame and Foot bar		= 2.
Backpack		= 1.
	subtotal	= 9.

-0 5" Frame Strain Gauge -0.75" Frame Strain Gauge Yield Strengt 200 600 Load [lbf]

A static load test was performed on two frames, one made of .75" diameter tubing and the other of .50" diameter, both of Aluminum 6061-T6. A total of four strain gauges were used to measure the strain at locations where the frame was predicted to fail by the FEA simulation or in locations where there was an interest in measuring the load through the member. The results of the static load show that the .75" diameter frame was able to make it to the desired 600 pound load and met our safety factor requirement

> HJORTH Bros.

