

# iitorque

Integrated Intelligent Torque Measurement System

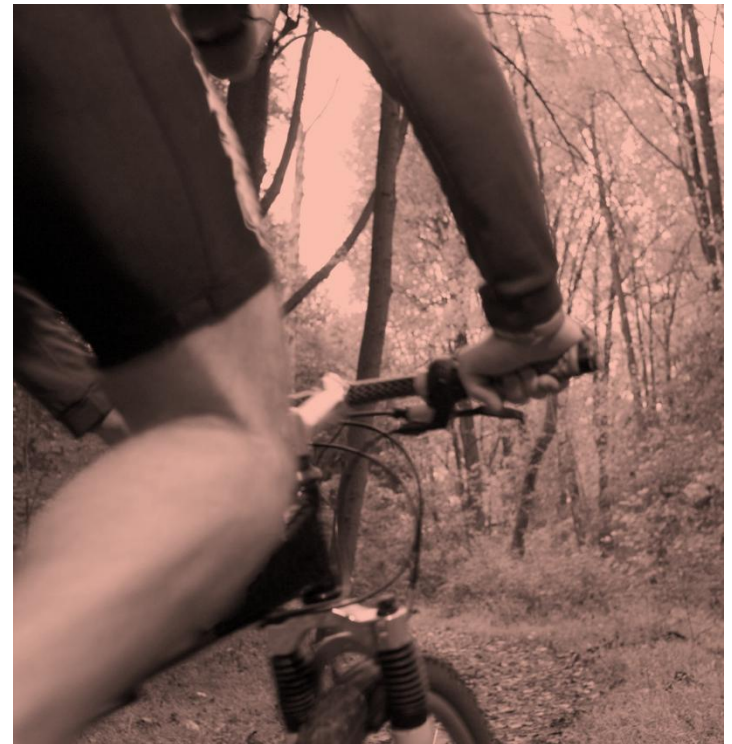
## IPRO 324: Power Measurement for Performance Bicycles

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# Statement of the Problem

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- ▶ Power measurement for cyclists
  - ▶ Accurate
  - ▶ Low cost
- ▶ Project goals
  - ▶ Working prototype
  - ▶ Durable encasement
- ▶ Target market
  - ▶ Performance cyclists
  - ▶ Casual cyclists for general fitness



# Goals of the Project

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- ▶ **Proposed solution**
  - ▶ Torque measurement using strain gauges
  - ▶ Crankset attachment
- ▶ **Impact on end user/target market**
  - ▶ Affordable power measurement
  - ▶ Accurate power measurement for all cyclists
- ▶ **Current solutions**
  - ▶ Pedal systems
  - ▶ Rear hub
  - ▶ Chain vibration



# Organization of the Team

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## Mechanical

- Design and build case
- Dynamic lab test
- Road test

## Electrical/Programming

- Redesign circuit
- Rewrite code
- Establish wireless communication

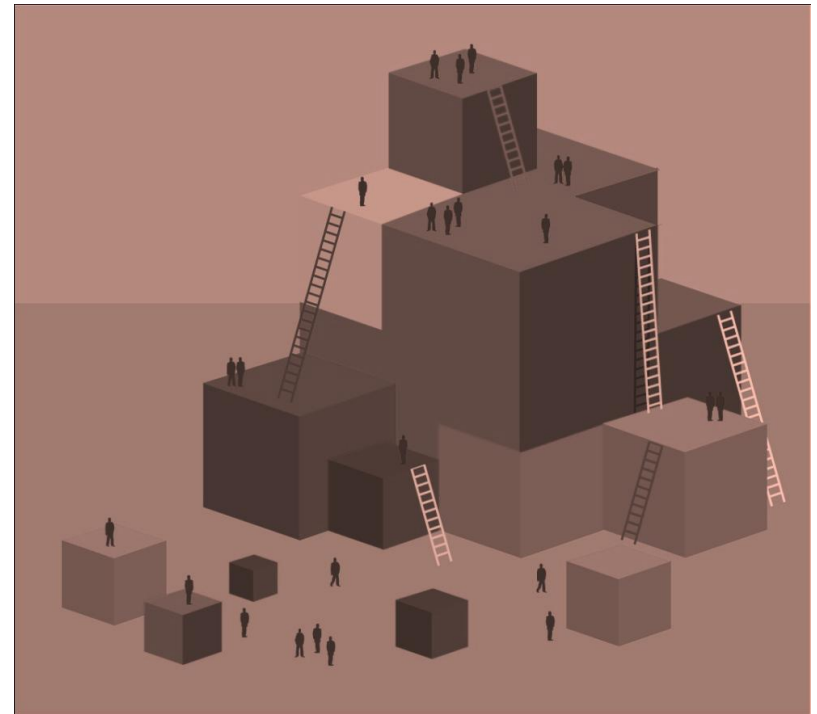
## Research

- Order parts
- Analyze market
- Prepare deliverables and documentation

# Progress Toward Goals

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- ▶ Work accomplished to date
  - ▶ Rewrote code
  - ▶ Designed casing
  - ▶ Established ANT+ wireless communication
  - ▶ Restructured team



# Major Obstacles Encountered

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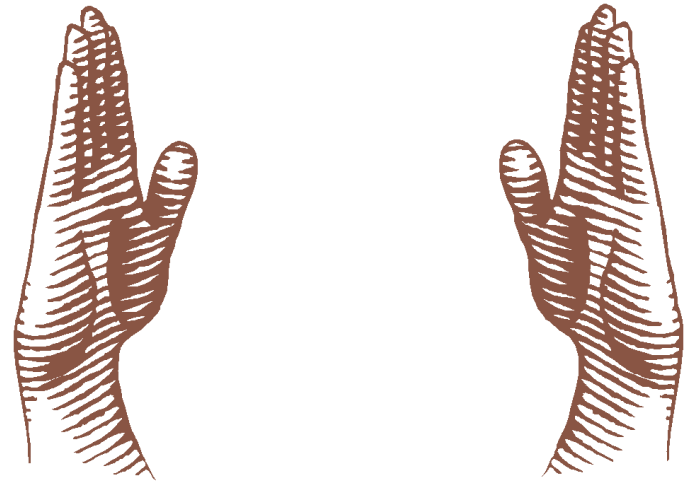
- ▶ **Biggest challenges to date**
  - ▶ Dynamic testing
  - ▶ ANT+ programming
  - ▶ Team building
- ▶ **Ethical dilemmas**
  - ▶ Existing patents
- ▶ **Changes in goals**
  - ▶ Concurrent testing
  - ▶ Circuit redesign



# Anticipated Major Challenges

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- ▶ **Challenges**
  - ▶ Creating fully operable circuit
  - ▶ Ensuring accurate measurement
- ▶ **Alternative paths**
  - ▶ Rely more on manufactured components



# Needs/Questions/Requests

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- ▶ Request
  - ▶ Take our survey
- ▶ Questions?

