In-Process Gaging for Cylindrical Grinding
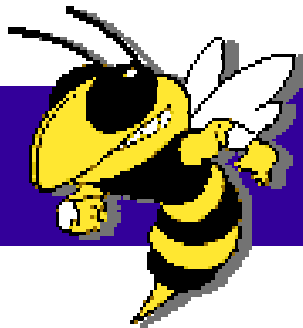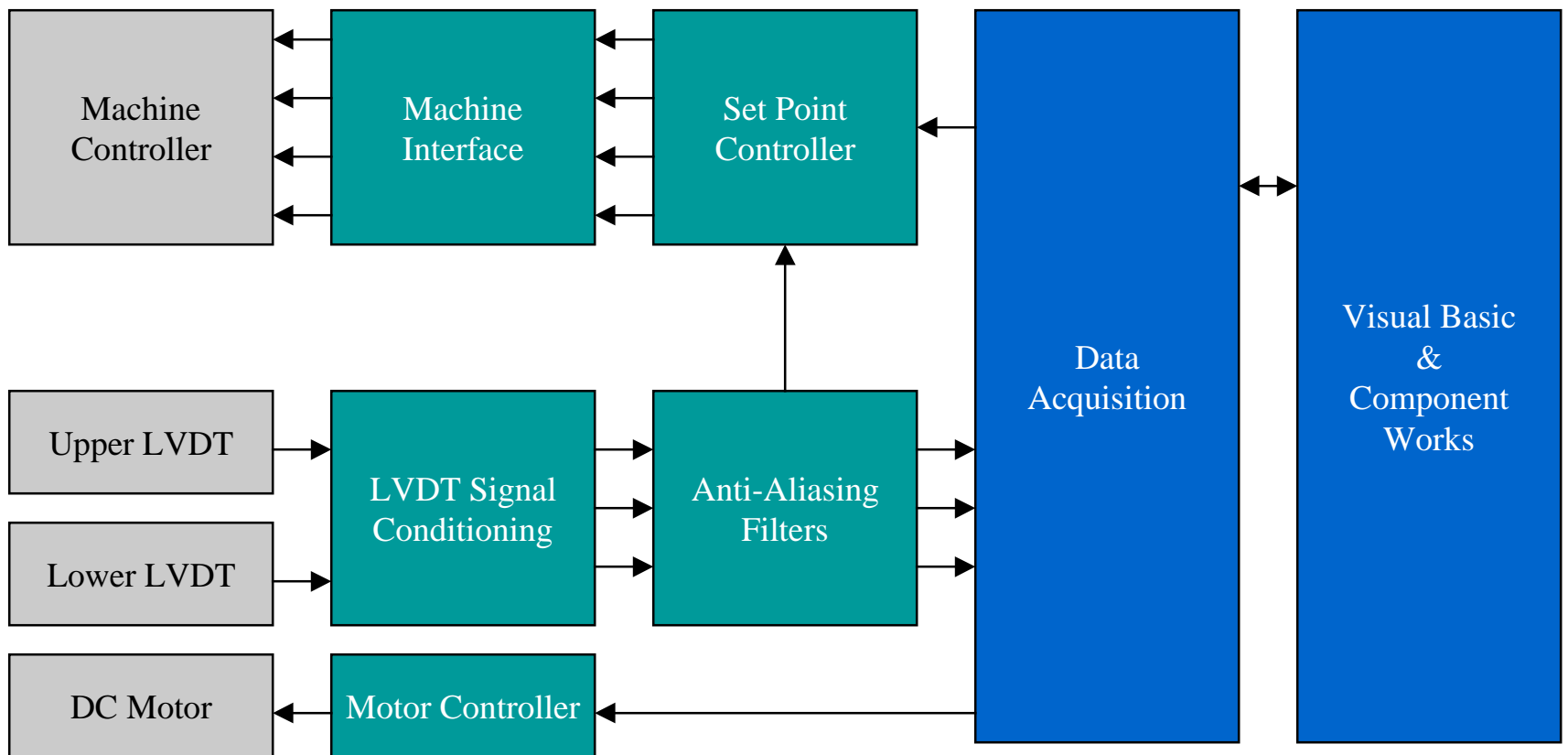
Georgia Institute of Technology

David Longanbach
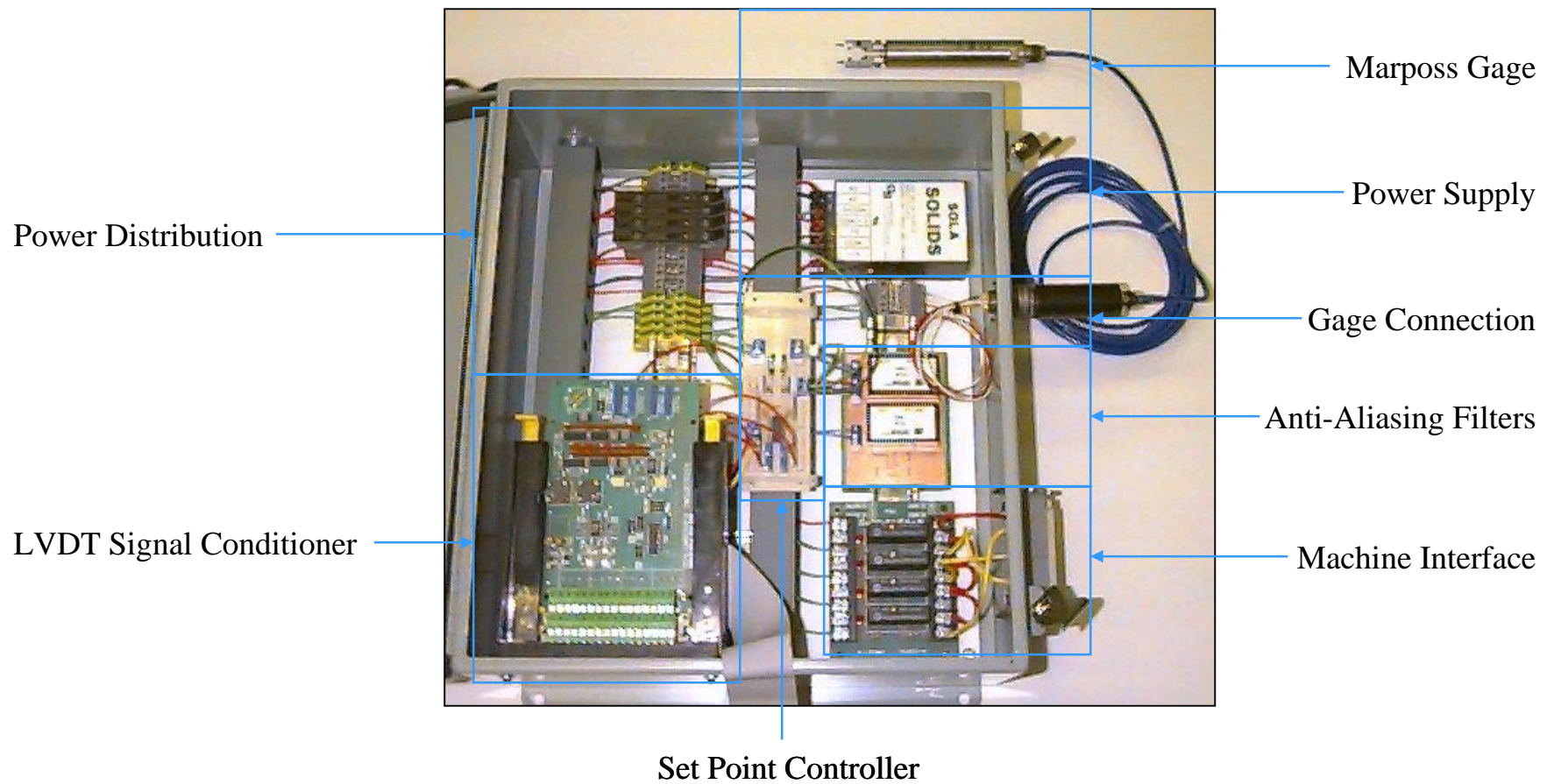
Advisor: Dr. Tom Kurfess

Gage Interface Schematic

Gage Interface Diagram

Marposs Gage

Power Supply

Power Distribution

Gage Connection

Anti-Aliasing Filters

LVDT Signal Conditioner

Machine Interface

Set Point Controller

Objectives

- In-process waviness monitoring
- Hardware implementation
- Software implementation
- Validation on bore grinding machine

Hardware Implementation

- Sealed enclosure
- Industry standard signal conditioning
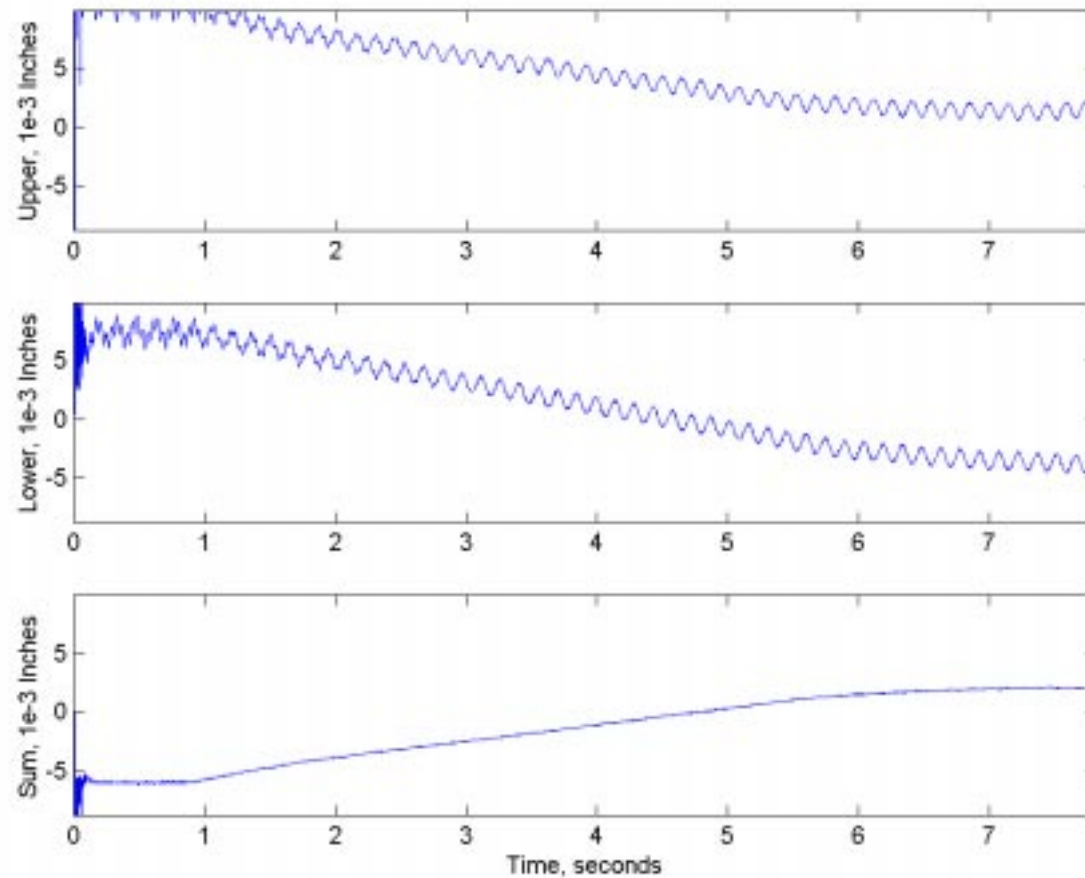- Custom circuits required
- Stand alone operation

Software Implementation

- Visual Basic and Component Works
- GUI interface
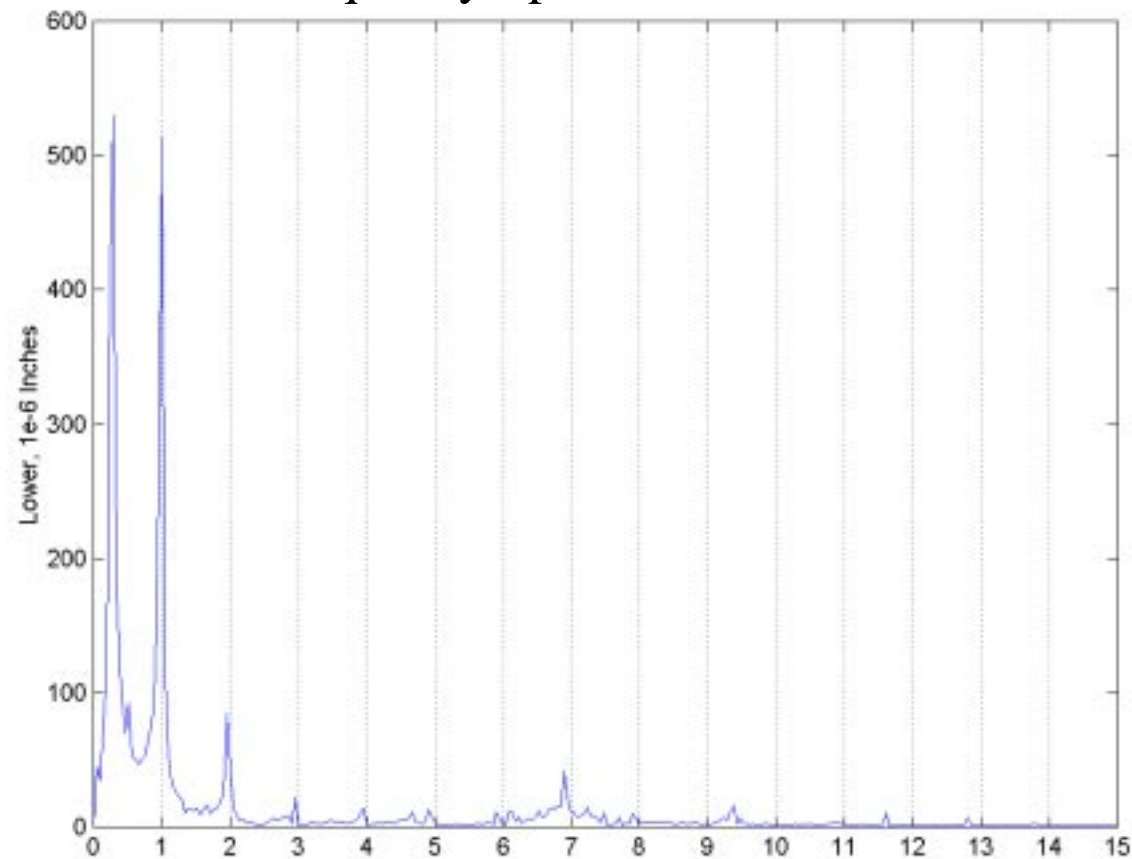- Required for machine setup
- Not required for machine operation

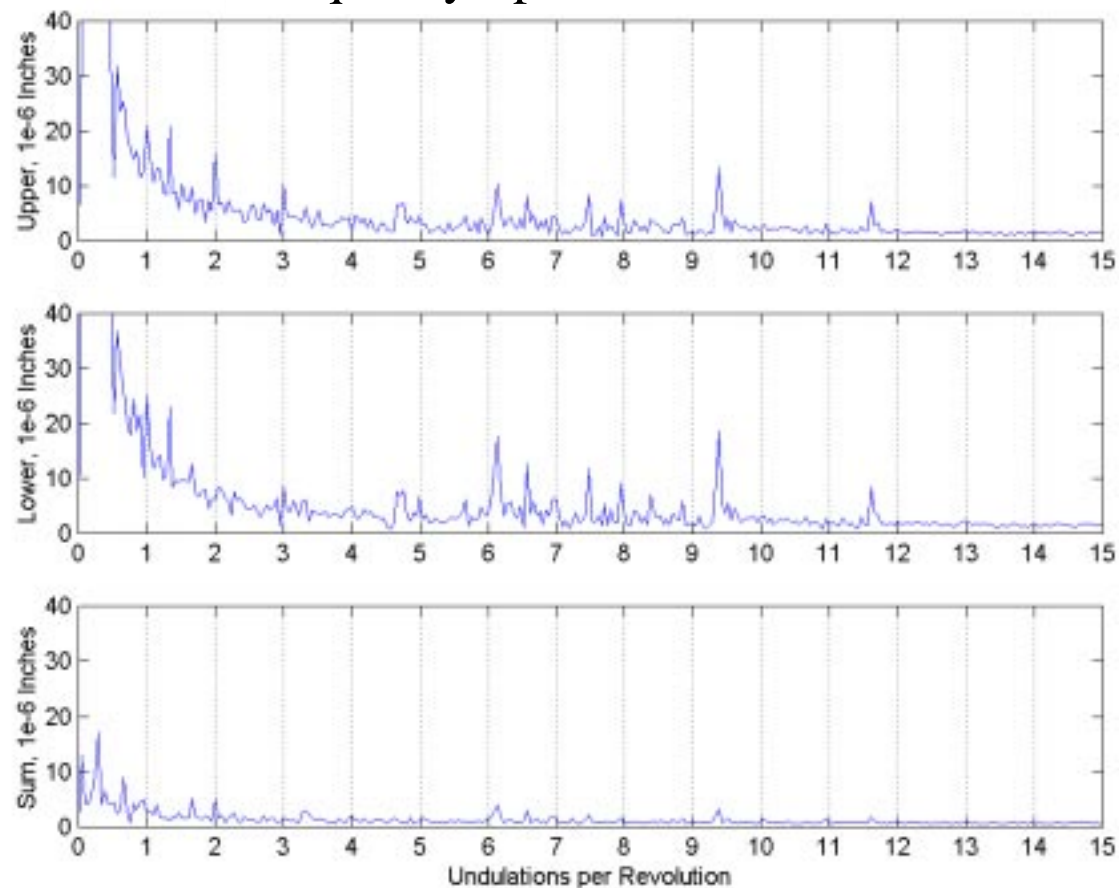# Single Process Validation Results

Beginning of Cycle Analysis
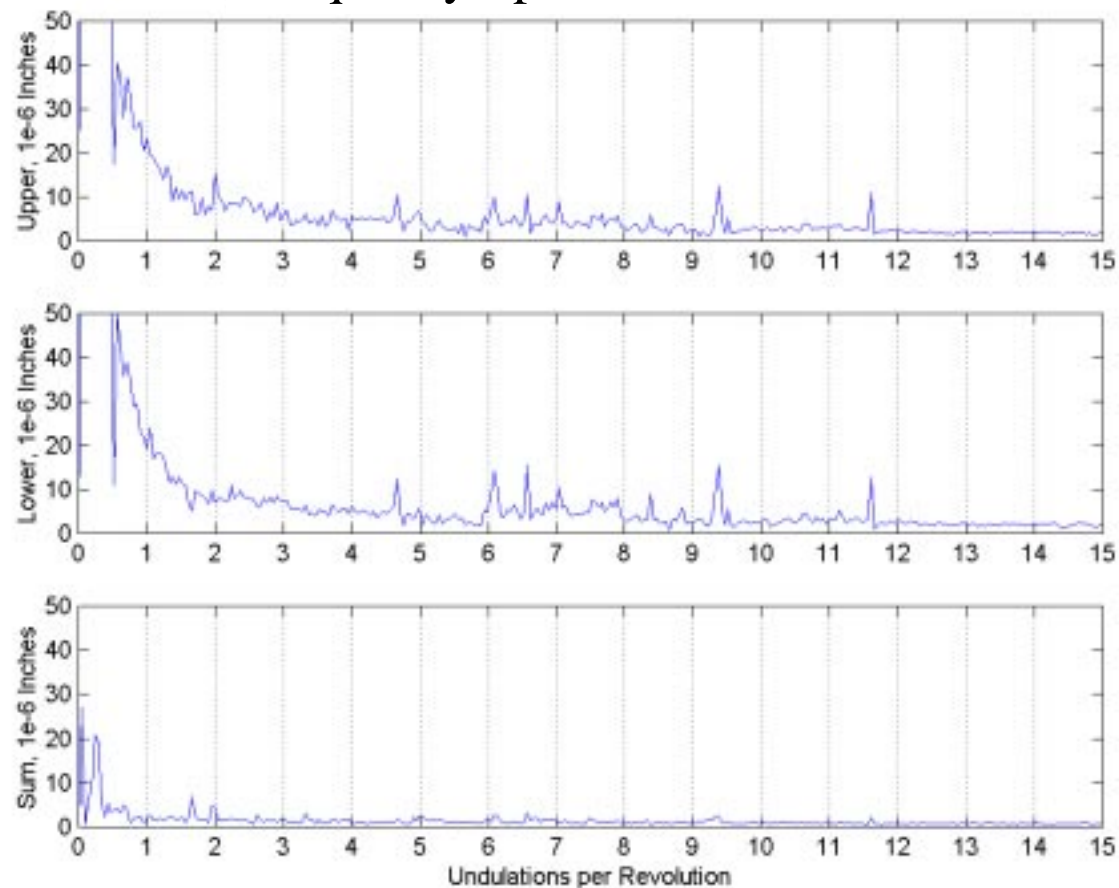
Frequency Spectrum, 1539 RPM

Middle of Cycle Analysis

Frequency Spectrum, 1539 RPM

End of Cycle Analysis

Frequency Spectrum, 1539 RPM

Additional Work

- Improve software and GUI
- Improve set point controller
- More testing on more machines