ME 6705 Final Project

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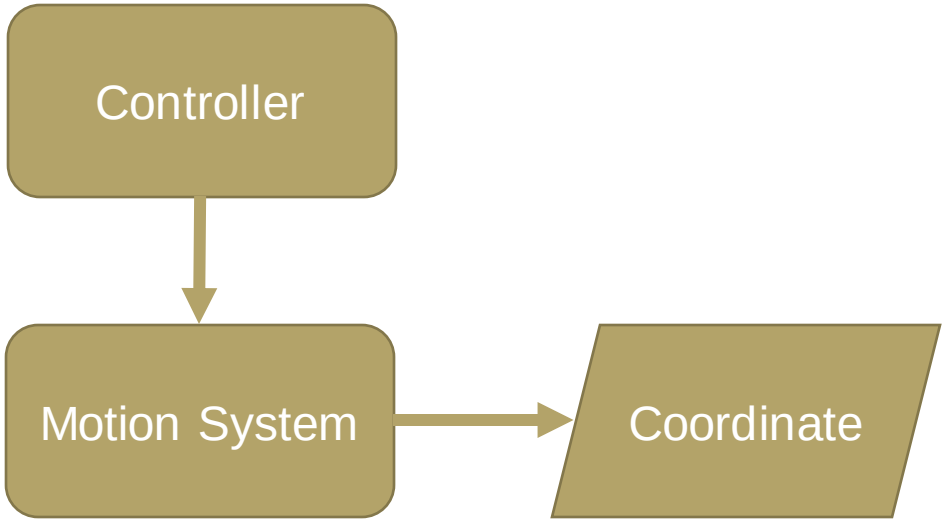
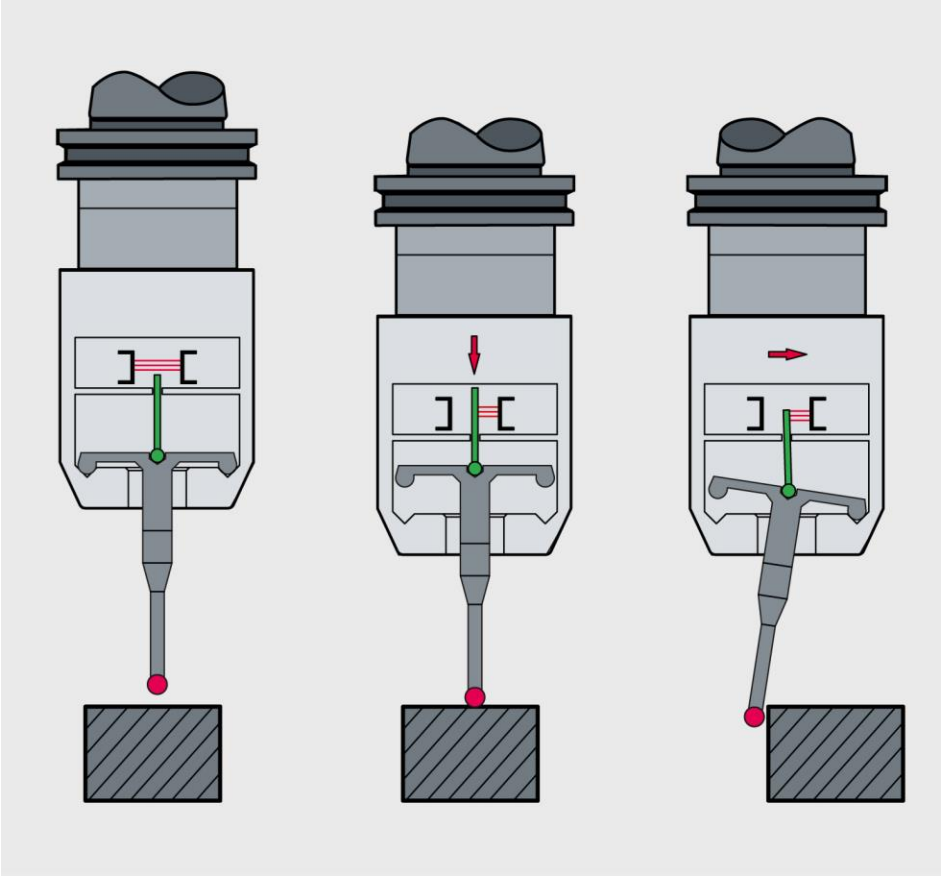
Goal

- A touch probe is a common machine tool used to determine an exact position of stock.
- **Motivation**: Design and actuate a mechanical system to perform a 1D measurement to simulate a touch probe.





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Requirements

- Measurement capability
- **Wireless connectivity**
- Measurement feedback

Nice-to-haves

- Weight/Dimensions
- Power constraints

Users shall interface with the prototype via a LabView front panel.	T/F	
Interface will permit the activation of measurement routine.	T/F	
Interface should update with the measured distance value.	T/F	
System will provide debug logs to the interface	T/F	
Measurement accuracy	1	mm
Measurement accuracy	0.1	mm
System uncertainty should be quantified and reported	T/F	
Measurement repeatibility	0.01	mm
Measurement repeatibility	0.001	mm
Quantify and report system latency	1	s
System connects to laptop without wired connection	T/F	
Have external light to indicate Myrio power	T/F	
System should alert user when contact is made with probe during measurement.	T/F	
Touch probe weight	1	lb

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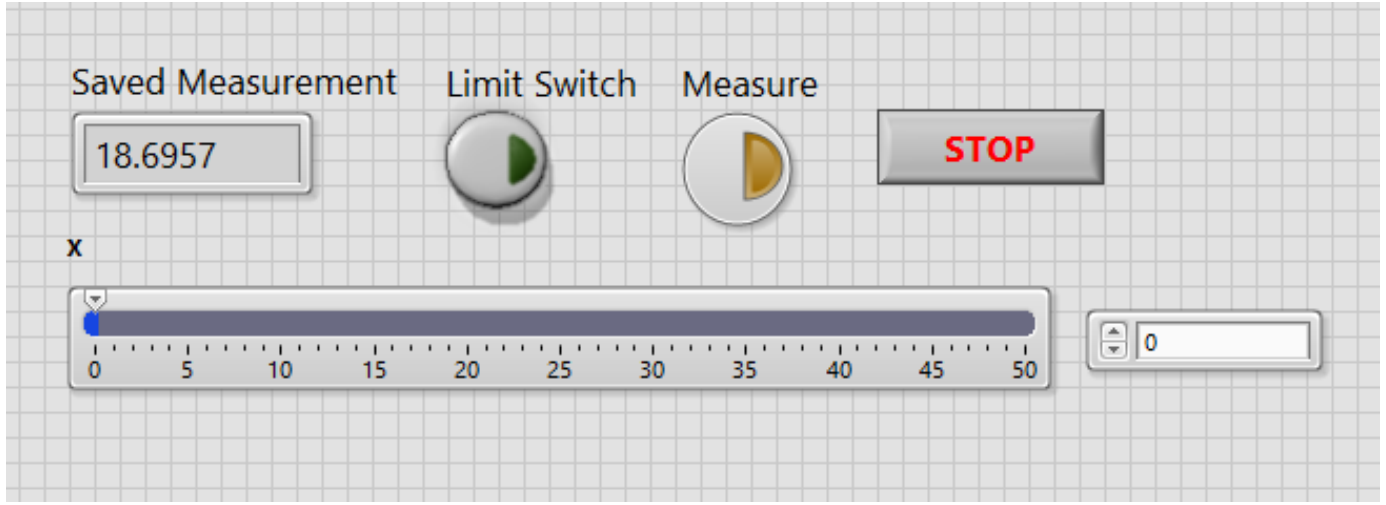
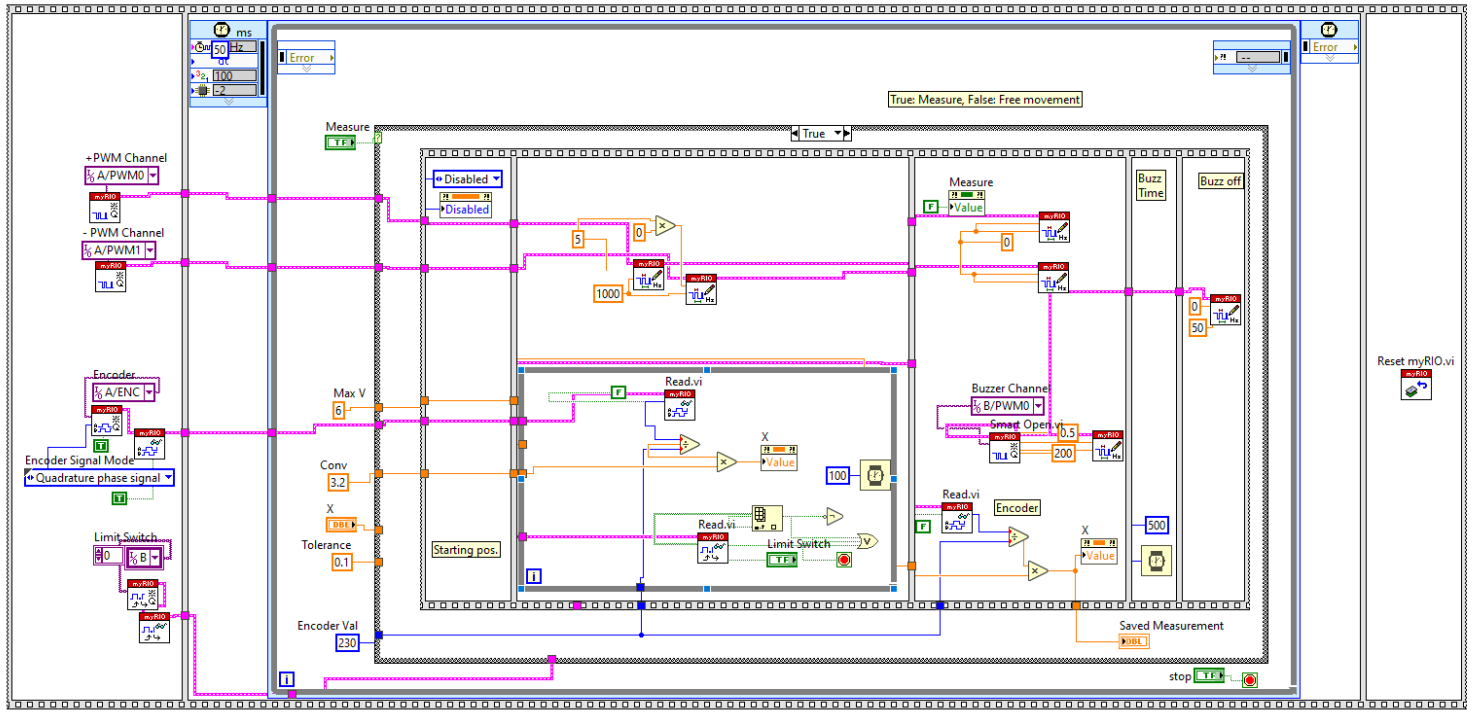
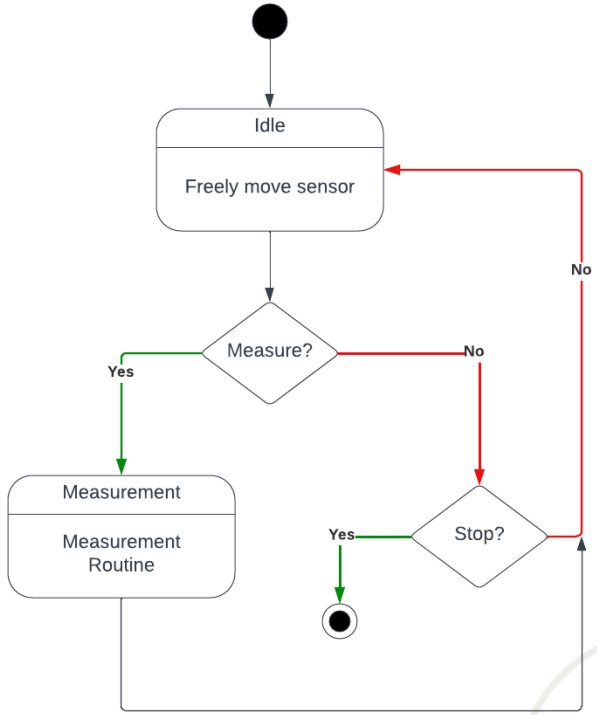
LabView







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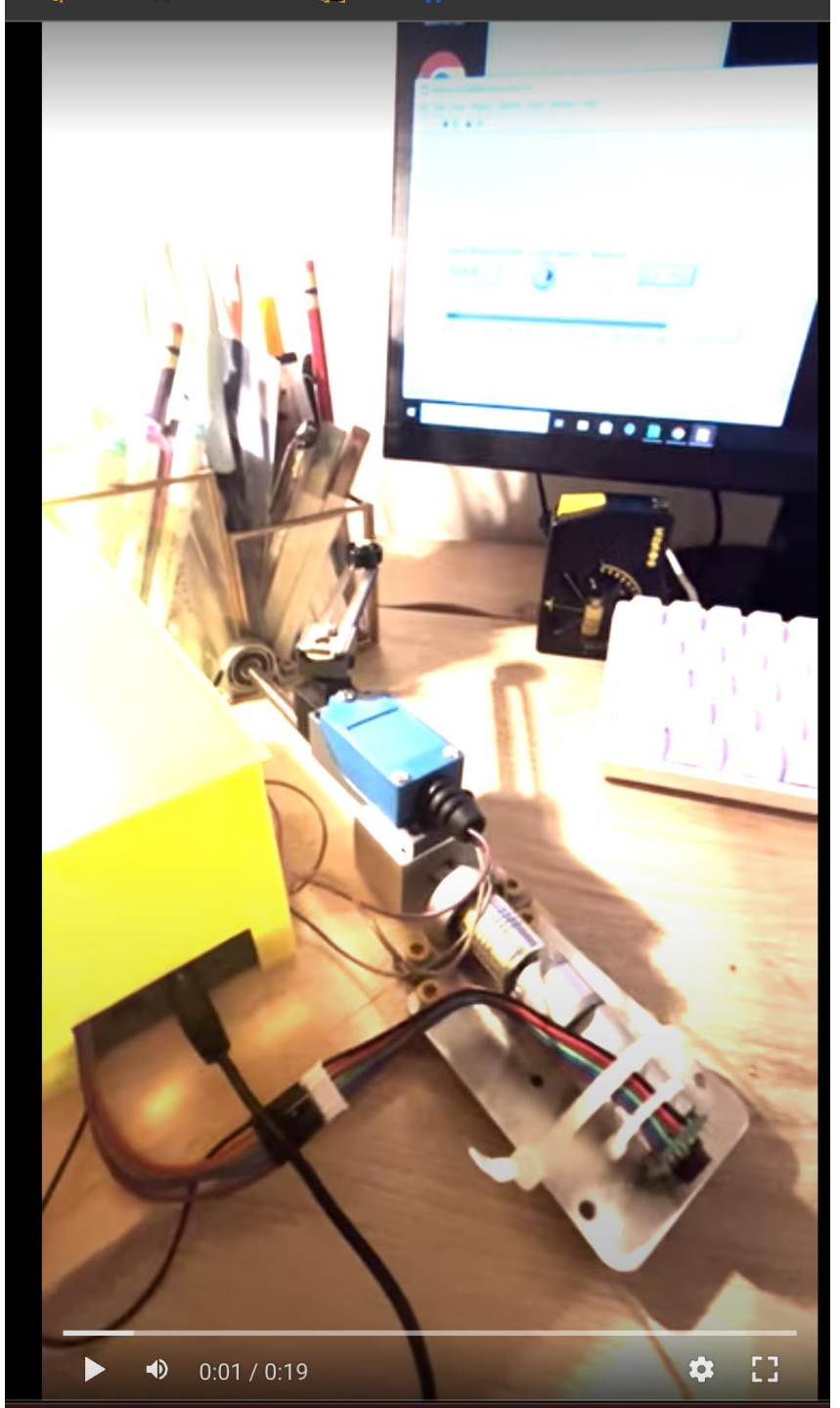
Wireless Demo



Results

Testing for Accuracy and Repeatability

- Accuracy: Varied actual distance and compared measured value
  - Approx. 1mm offset
- Repeatability: Remeasured at same distance
  - Standard deviation of .0787 mm between each measurement

Accuracy

Actual	Measured
10	11.2033
15	15.861
20	21.0021
25	26.4533
30	30.989

Repeatability

Trial	Result
1	33.3913
2	33.1687
3	33.2243
4	33.28
5	33.3357

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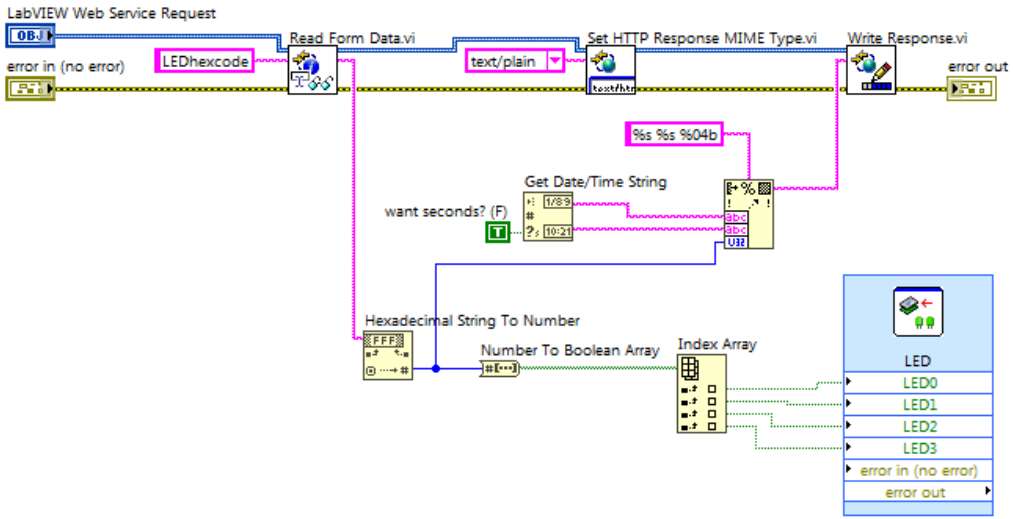
Future Work

- Redesign system for machine use
- Increase directionality

- Apply Real Time Web Services



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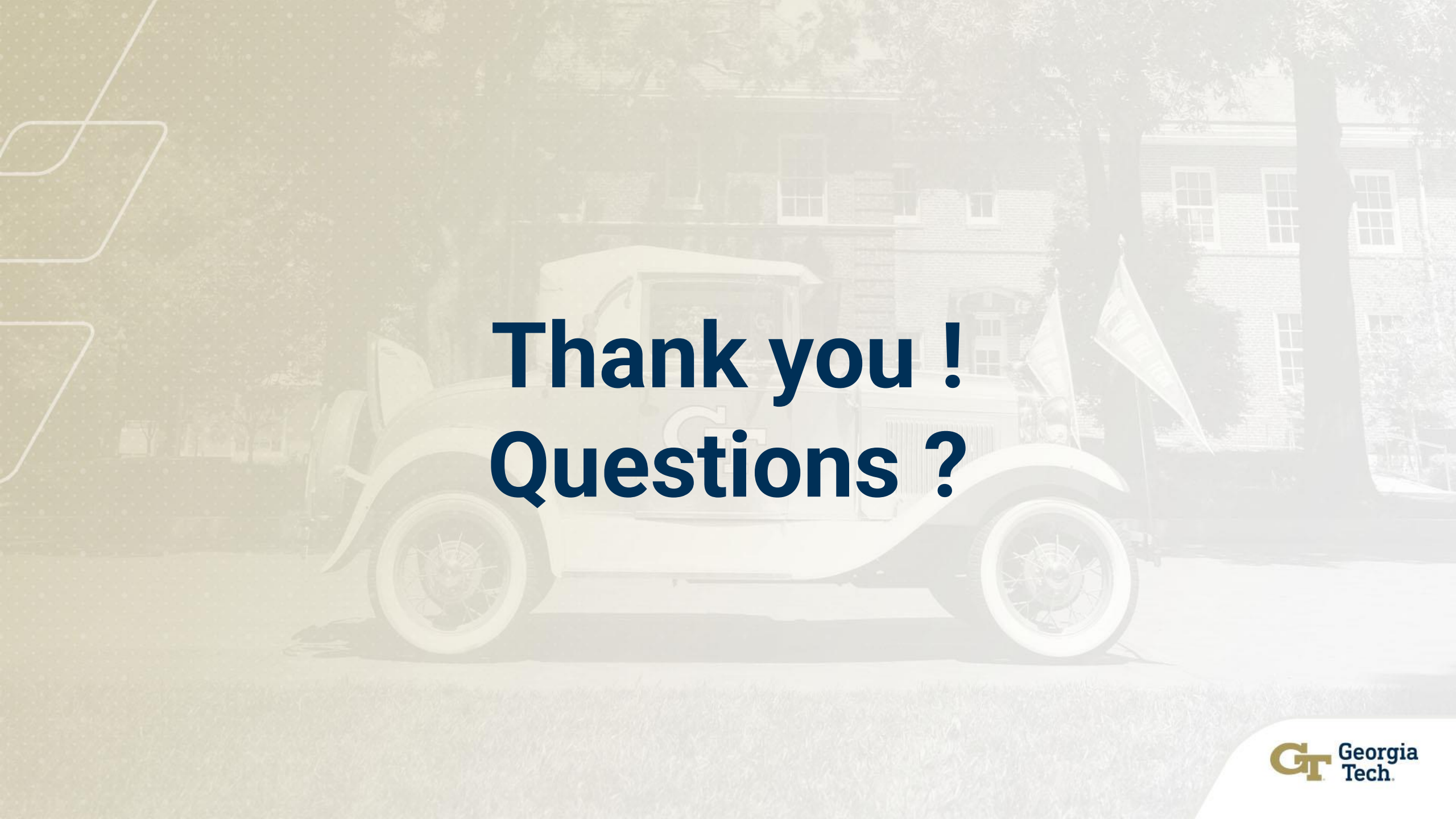

Thank you !
Questions ?

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