

# Lecture 6 — Properties of Linear Time Invariant Systems

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- Changing the order of cascaded LTI systems does not change the overall response (commutative)
- You can determine the overall response by first applying the input to the first system, computing its output, and then using that output as the input to the second system; alternatively, you can find the impulse response of the equivalent system,  $h_{eq} = h_1 * h_2$ , and use it to find the overall response,  $y = x * h_{eq}$  (associative)
- Two systems in parallel with a single input can be added together to find the output,  $y = x * (h_1 + h_2)$  (distributive)