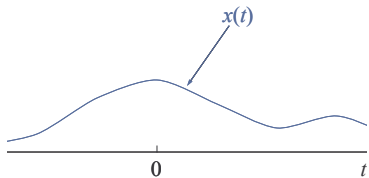
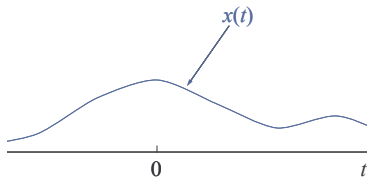


# Sampling and Interpolation (Analog $\leftrightarrow$ Digital)

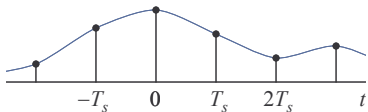
# Sampling and Interpolation (Analog $\leftrightarrow$ Digital)



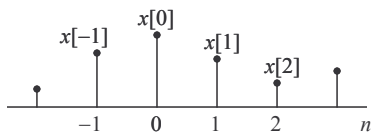
# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



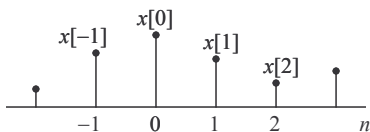
# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



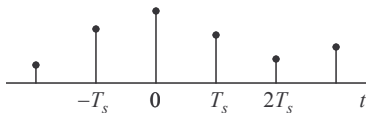
# Sampling and Interpolation (Analog $\Leftrightarrow$ Digital)



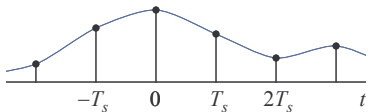
# Sampling and Interpolation (Analog $\Leftrightarrow$ Digital)



# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)

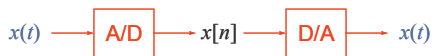
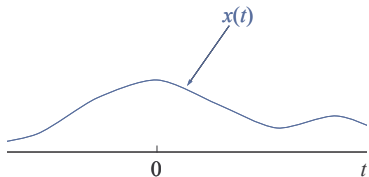


# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)

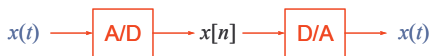
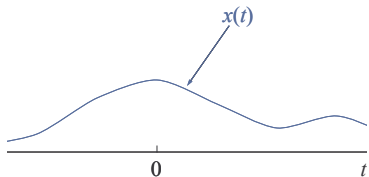




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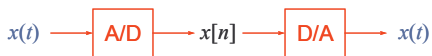
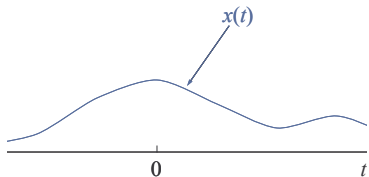


# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



Key questions:

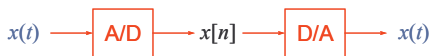
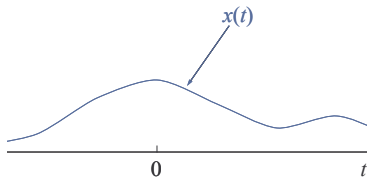
# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



Key questions:

- Is it possible to reconstruct

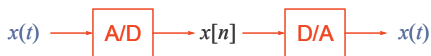
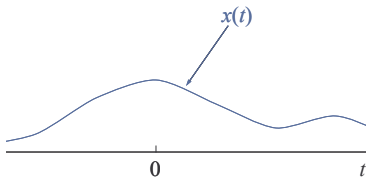
# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



Key questions:

- Is it possible to reconstruct the analog signal  $x(t)$

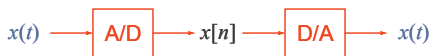
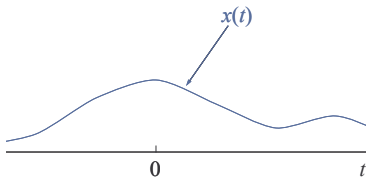
# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



Key questions:

- Is it possible to reconstruct the analog signal  $x(t)$  from its samples  $x[n]$ ?

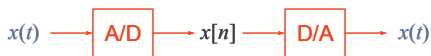
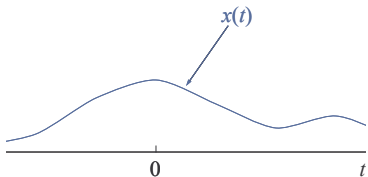
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Key questions:

- Is it possible to reconstruct the analog signal  $x(t)$  from its samples  $x[n]$ ?
- If so,

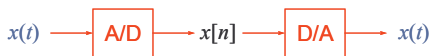
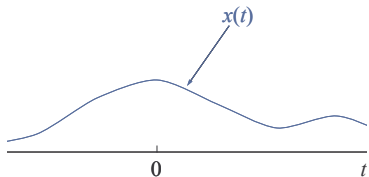
# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



Key questions:

- Is it possible to reconstruct the analog signal  $x(t)$  from its samples  $x[n]$ ?
- If so, what is the **least** sampling rate  $f_s$

# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)

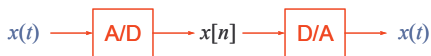
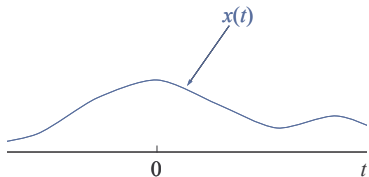


Key questions:

- Is it possible to reconstruct the analog signal  $x(t)$  from its samples  $x[n]$ ?
- If so, what is the **least** sampling rate  $f_s = 1/T_s$



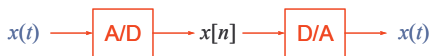
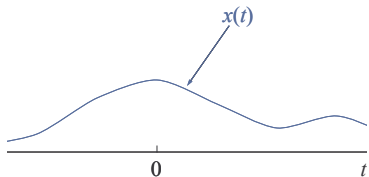
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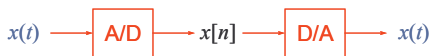
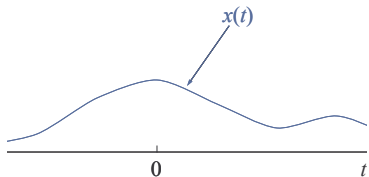
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- How is this reconstruction

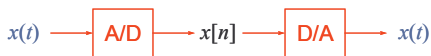
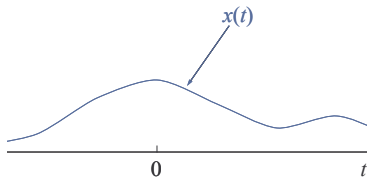
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- How is this reconstruction (interpolation)

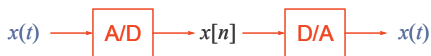
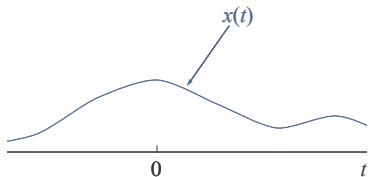
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# Sampling and Interpolation (Analog $\leftrightarrow$ Digital)

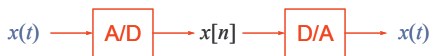
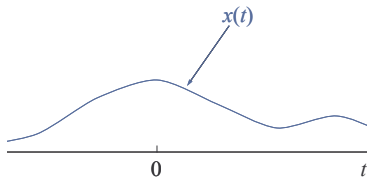


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This lecture

# Sampling and Interpolation (Analog $\rightleftharpoons$ Digital)



Key questions:

- Is it possible to reconstruct the analog signal  $x(t)$  from its samples  $x[n]$ ?
- If so, what is the **least** sampling rate  $f_s = 1/T_s$  required?
- How is this reconstruction (interpolation) accomplished?

This lecture will provide partial answers