

# Universdad Nacional Autónoma de México

# Facultad de Ciencias

### Temario y Bibliografía final

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## **Temario**

- 1. Introducción
- 2. Descomposición de señales
  - 2.1 Transformada de Fourier (FT)
  - 2.2 Transformada de Ondículas (WT)
- 3. Redes Neuronales para análisis de series de tiempo
  - 3.1 Entrenamiento de una Red Neuronal
    - 3.1 Algoritmos de Optimización
  - 3.2 Redes Neuronales Auto-regresivas
  - 3.3 Redes Neuronales LSTM
    - 3.1 Entrenamiento de una red LSTM
  - 3.4 Redes Neuronales GRU
    - 3.1 Entrenamiento de una red GRU
- 4. Construcción del modelo
  - 4.1 Descomposición de datos por DWT
  - 4.2 Modelo NARNN
  - 4.3 Modelo LSTMnn
  - 4.4 Modelo GRUnn

#### 5. Proceso de entrenamiento

- 5.1 Entrenamiento por reforzamiento del profesor
  - 5.1 NARNN
  - 5.2 DWT-NARNN
  - 5.3 LSTMnn
  - 5.4 DWT-LSTMnn
  - 5.5 GRUnn
  - 5.6 DWT-GRUnn
- 5.2 Entrenamiento Auto-predictivo
  - 5.1 NARNN
  - 5.2 DWT-NARNN
  - 5.3 LSTMnn
  - 5.4 DWT-LSTMnn
  - 5.5 GRUnn
  - 5.6 DWT-GRUnn

#### 6. Evaluación de desempeño

- 6.1 Predicción Estandar
- 6.2 Predicción Auto-regresiva
- 6.3 Predicción Auto-predictiva con Corrección

#### 7. Conclusiones

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