

# Categories of Machine Learning Techniques

# After this video you will be able to..

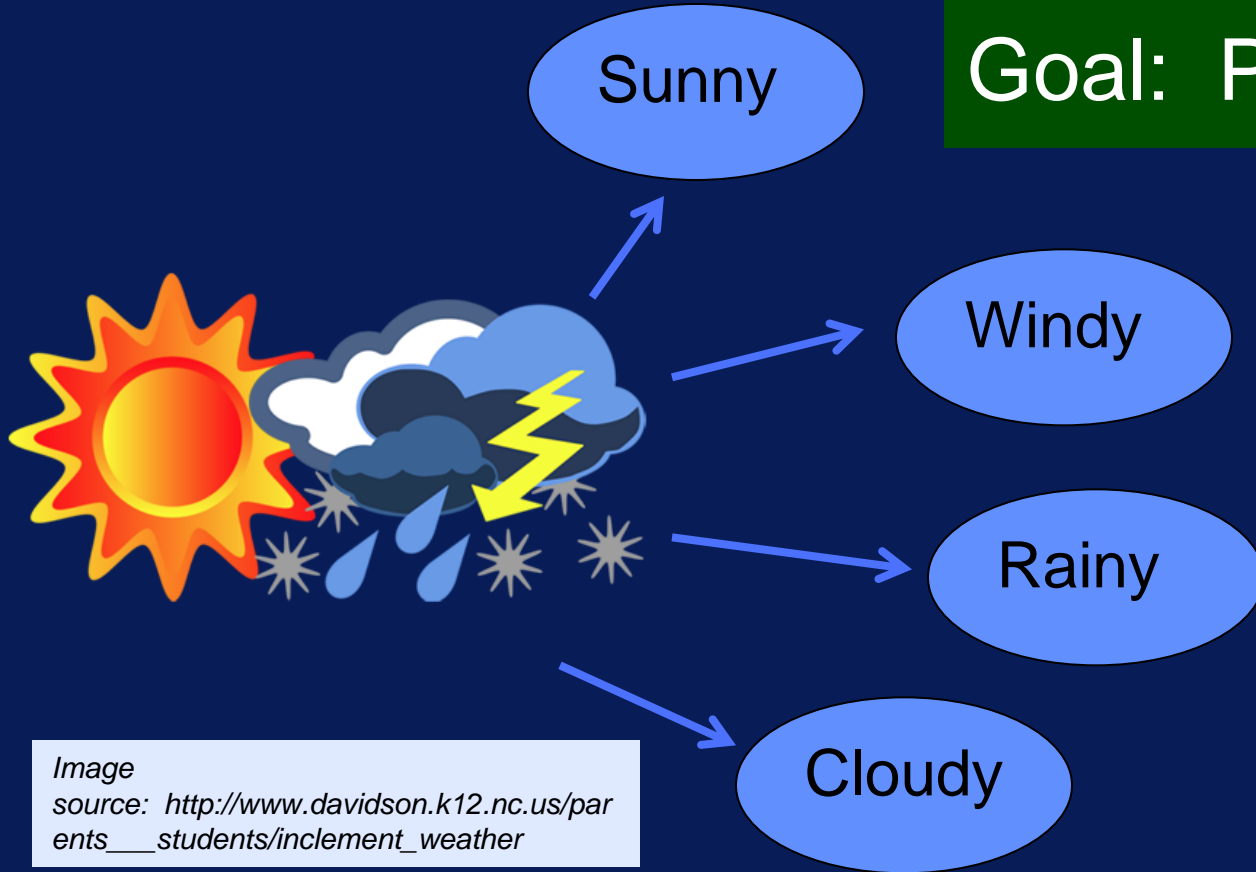
- Describe the main categories of machine learning techniques
- Summarize how supervised learning differs from unsupervised learning

# Categories of Machine Learning Techniques

- **Classification**
- **Regression**
- **Cluster Analysis**
- **Association Analysis**

# Classification

Goal: Predict category



Image

source: [http://www.davidson.k12.nc.us/parents\\_\\_\\_students/inclement\\_weather](http://www.davidson.k12.nc.us/parents___students/inclement_weather)

# Classification Examples

- **Classify tumor as benign or malignant**
- **Predict if it will rain tomorrow**
- **Determine if loan application is high-, medium-, or low-risk**
- **Identify sentiment as positive, negative, or neutral**

# Regression

Goal: Predict numeric value



# Regression Examples

- Estimate demand for a product based on time of year
- Predict score on a test
- Determine likelihood of drug effectiveness for patient
- Predict amount of rain

# Cluster Analysis

Goal: Organize similar items into groups.





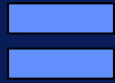
# Cluster Analysis Examples

- Identify areas of similar topography (desert, grass, etc.)
- Categorize different types of tissues from medical images
- Determine different groups of weather patterns
- Discover crime hot spots

*Presenter*

# Association Analysis

Goal: Find rules to capture associations between items.



# Association Analysis Examples

- Recommend items based on purchase/browsing history
- Have sales on related items often purchased together
- Identify web pages accessed together

# Categories of Machine Learning Techniques

Classification

Cluster  
Analysis

Regression

Association  
Analysis

# Supervised vs. Unsupervised

- **Supervised Approaches**
  - Target (what model is predicting) is provided
  - 'Labeled' data
  - Classification & regression are supervised.

# Supervised vs. Unsupervised

- **Unsupervised Approaches**
  - Target is unknown or unavailable
  - 'unlabeled' data
  - Cluster analysis & association analysis are unsupervised.

# Categories of Machine Learning Techniques

