

Research Methods in computer science

Spring 2019

Lecture 15

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Agenda

Conference Organization

Experiments and metrics

Reading Papers

HW7

Metric

Why do we want to measure?

What to measure?

Most of the time we measure improvements

Metrics/Experiments?

Accurately Initializing Real Time Clocks to Provide Synchronized Time in Sensor Networks

CTP: An Efficient, Robust, and Reliable Collection Tree Protocol for Wireless Sensor Networks

On the Effectiveness of Energy Metering on Every Node

Surviving Sensor Network Software Faults

Metrics from Classification Research

Classification Accuracy

Logarithmic Loss

Area Under ROC Curve

Confusion Matrix

Classification Report

Precision

Recall

F1-Score

Partly from <https://machinelearningmastery.com/metrics-evaluate-machine-learning-algorithms-python/>

Metrics from Regression Research

Mean Absolute Error

Mean Squared Error

R^2

Partly from <https://machinelearningmastery.com/metrics-evaluate-machine-learning-algorithms-python/>

Metrics from Systems Research

Reliability

Latency

Coverage

Energy

Group Activity

Experiment Design

Metric Selection

Experiments

What experiments are useful?

Critical for the main arguments of the paper

What experiments are not useful?

Pointless experiments that generate pointless numbers, graphs, and tables

Types of Experiments

From the “context” perspective

Controlled

Uncontrolled

There are other perspectives to be covered in future lectures

A new algorithm that translates English text to Spanish.

A new wireless networking technology.

A new algorithm that can identify the person in an image.

HW7 – Intro & Related Work

Write a draft Introduction and Related Work for your paper. It should be about 2 pages in length. Use the template to be used in the conference.