Section 3: Week 8: Data Mining IoT

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Data Mining IoT

With ubiquitous access to high-bandwidth wireless networking and cloud computing, physical devices are evolving business capabilities to both monitor and react to changes across their supply chains and operational footprint. These devices produce enormous volumes of unstructured telemetry that require curation processes to transform raw data into business intelligence, enabling data-driven decisions that make the organization more competitive. During this transformation, data mining strategies extract patterns and statistical inferences through regression, clustering, classification, and rule association algorithms (Barua & Mondal, 2019). Each of these algorithmic categories has distinct objectives for scenario-specific applications. Consider the difference between asking (1) how much a customer will spend versus (2) which customers are most alike. Point of sales (PoS) records can answer either question, though the question structure creates a dependency on which sales information becomes relevant facts into (1) regression versus (2) clustering solutions. Using the wrong approach or not defining the outcome goals upfront always leads to nonsensical results (Snee, 2015). Instead, a formal data mining lifecycle begins with a specific question, then collects relevant facts to derive a conclusion. Next, an evaluation method confirms these conclusions are scientifically sound and not wishful thinking through some statistical variance or cross-validation testing. After constructing a probabilistic model of the scenario, the company needs to deploy it into its production environment and begin collecting a return on investment (ROI). Measuring the amount of return depends on Key Performance Indicators (KPI) that typically align with high-level corporate mandates, such as increasing sales per customer or reducing inventory carry times. Despite alignment challenges across data producers, business questions, relevant facts, conclusions, operationalization, and KPIs—planning and methodical approaches lead to success.

# Section I: Business Make-up

## Who uses IoT

## What types of data artifacts exist

## What business goals use these artifacts

# Section II: Collecting and Enhancement

## How can they enhance those artifacts

## Required Collection Resources

* Personal
* Hardware
* Future Capacity or needs exist

## What logical components or assumptions exist

* Logical Component 1 of 2
* Logical Component 2 of 2

# Section III: Evaluation Procedures

## What statistical techniques can measure process ROI

# Section IV: Applications

## What data mining strategies can apply to this information

# Conclusions and Future Studies