

<b>PROBLEM</b>  1. Pitney Bowes installs devices on client side. Given certain info, can we predict the devices that may fail in next 7 days?  2. Can we classify the features that are most important in predicting such a failure?  3. If we can predict what is the accuracy of our prediction?	<b>SOLUTION</b>  1.Run ML models to validate the training set and measure accuracy in predicting device failures for known instances.  2. Use the feature selection method to identify the most important factors in predicting device failures.  3. Based on different ML models pick the best performing classification technique.  4. Run the chosen model on the unknown test data set.	<b>UNIQUE VALUE PROPOSITION</b>  1. Using device performance features, we are able to predict in advance the possible cases where the devices may fail and need fixing.  2. We are able to make the prediction with over 80% accuracy. That means out of every 5 devices that may fail next week, we can predict 4 of those instances.	<b>UNFAIR ADVANTAGE</b>  1. Prior knowledge of device deployment and readings for those devices like average time for charging and discharging, charging rate and discharging rate, etc.	<b>CUSTOMER SEGMENTS</b>  Housing Societies Government Institutions Direct Users like families, shops, etc.
<b>EXISTING ALTERNATIVES</b>  We wait for clients to reach out to the installation team when a device fails to run.	<b>KEY METRICS</b>  Accuracy is defined as the ratio of correctly defined subjects to the whole pool of subjects. <b>Accuracy</b> = TP + TN / (TP + FP + FN + TN)  Area Under the Curve (AUC) is the measure of the ability of a classifier to distinguish between classes and is used as a summary of the ROC curve		<b>CHANNELS</b>  Email address Mobile number - call/ text Billboard advertisement	
<b>COST STRUCTURE</b>  Based on the accuracy we need to decide how we are going to plan our action. Do we keep a team for a new installation of meters? Or do we send a team for fixing. In terms of a device failure what is the cost of delay and how does it affect the users. All these queries don't have clear answer from the data but will help put a cost structure to the entire process. A prior knowledge with prediction algorithm will reduce the planning and execution cost.		<b>REVENUE STREAMS</b>  We can sell services to our clients by asking them to enroll for this study and if they would want Pitney Bowes' team to inform them about future in-time fixes for their meters in advance or a notification for a probable down-time and thus helping them keep alternatives ready or seek services in advance from the engineering team.		

