



# **SparkPredict<sup>®</sup> Risk User Guide**

**A SparkCognition<sup>™</sup> Education Document**

**v. 1.1 - July 2018**

---

---

This document contains copyrighted and proprietary information of SparkCognition and is protected by United States copyright laws and international treaty provisions. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under such laws or with the prior written permission of SparkCognition Inc.

SparkCognition<sup>™</sup>, the sparkcognition logo, Darwin<sup>™</sup>, DeepArmor<sup>®</sup>, DeepNLP<sup>™</sup>, MindFabric<sup>®</sup>, SparkSecure<sup>®</sup> and SparkPredict<sup>™</sup>, are trademarks of SparkCognition, Inc. and/or its affiliates and may not be used without written permission. All other trademarks are the property of their respective owners.

©SparkCognition, Inc. 2017-2018. All rights reserved.

# SparkPredict Risk User Guide

## Contents

<b>SparkPredict Introduction</b>	<b>2</b>
<b>Dashboard Tab</b>	<b>2</b>
Risk Index page . . . . .	3
<b>Alerts Tab</b>	<b>5</b>
Creating an Alert . . . . .	5
Editing an Alert . . . . .	6
Deleting an Alert . . . . .	7
<b>Settings Tab</b>	<b>7</b>
Creating a New User . . . . .	8
Editing an Existing User . . . . .	8
Deleting a User . . . . .	9
<b>Revision Table</b>	<b>9</b>

## SparkPredict Introduction

SparkPredict® is a live data streaming platform, constantly acquiring data from assets. It can examine never-before-seen behavior using artificial intelligence to provide advanced warning of failures and deeper insights into operations.

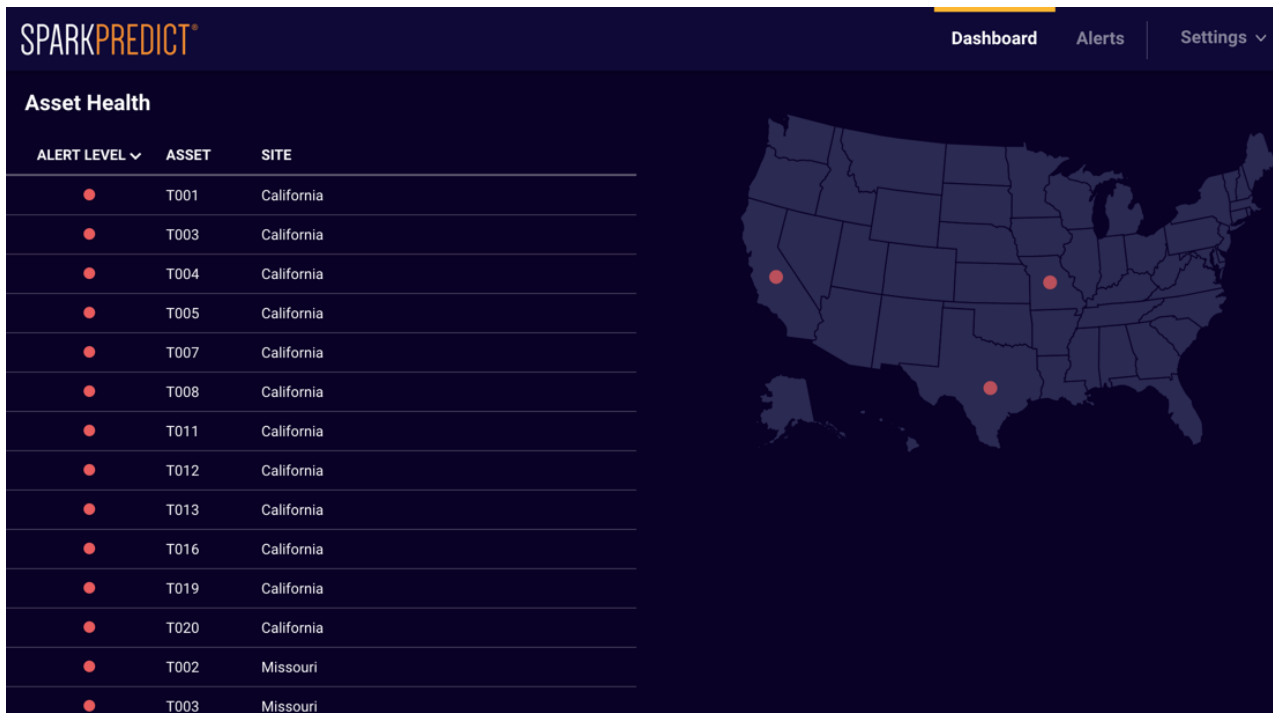
The goal of SparkPredict is to identify critical or anomalous behaviors in each working asset and alert a subject matter expert (SME) to these behaviors. SparkPredict does not rely on traditional rule-based methods. Instead, it uses multivariate analysis to pass data through models developed using deep learning and gain meaningful insights.

Advantages of SparkPredict include:

- Machine learning-based approaches are more effective than traditional rule-based methods in detecting anomalies.
- Early detection of failures help SMEs to proactively schedule maintenance.
- Feature importance for each failure helps SME identify which parts of the asset are going to fail, and then focus their maintenance efforts.

## Dashboard Tab

The SparkPredict dashboard displays upon a successful user login. The dashboard gives a holistic picture of the health of assets being monitored by the application. The dashboard screen has three different columns of information (**Alert Level, Asset, Site**). The default sort order is by descending Alert Level. To sort by a different column, click the top of the column to sort by ascending or descending values.



The screenshot shows the SparkPredict dashboard interface. At the top, there is a navigation bar with the SparkPredict logo and three tabs: Dashboard (active), Alerts, and Settings. Below the navigation bar, the main content area is titled "Asset Health". On the left, there is a table with three columns: ALERT LEVEL (with a dropdown arrow), ASSET, and SITE. The table contains 15 rows of data, all with a red dot in the Alert Level column, indicating a critical alert. On the right side of the dashboard, there is a map of the United States with several red dots indicating the locations of the assets.

ALERT LEVEL ▾	ASSET	SITE
●	T001	California
●	T003	California
●	T004	California
●	T005	California
●	T007	California
●	T008	California
●	T011	California
●	T012	California
●	T013	California
●	T016	California
●	T019	California
●	T020	California
●	T002	Missouri
●	T003	Missouri

- **Alert Level**

Alert level gives you information about the risk alert level. If that value is above the failure threshold, a red alert displays otherwise a green alert displays.

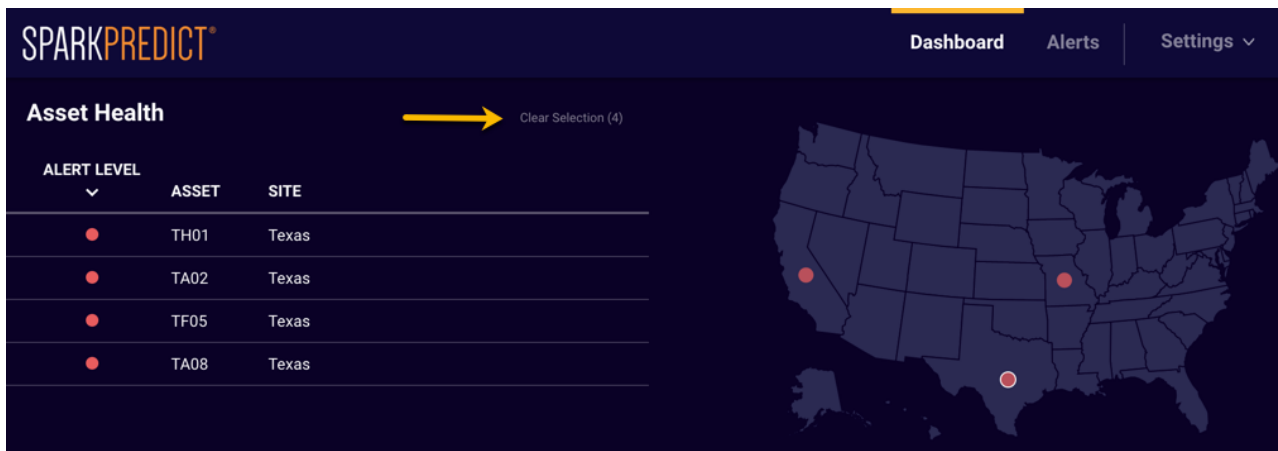
- **Asset**

This column displays a list of all assets being monitored by SparkPredict.

- **Site**

Displays which site a specific asset belongs to. This specific site is also displayed on the clickable map view, enabling managers of a specific site to know what alerts are present at their location.

The Dashboard map shows all the sites where assets are being monitored. The color of the dot represents the risk alert level for the latest data point at that particular location. Click a dot to filter the dashboard to display only the assets at that site. The following figure shows the Texas location selected. To clear the filter, click the **Clear Selection** link.



To see detailed risk information on a particular asset, click the appropriate row to display the risk alert level page which is filtered based on your selection.

## Risk Index page

The Risk Index page shows all the information you need to determine if your asset is in risk of failing. Click on an asset to see the following information:



### 1. Alert Level banner

This banner is color-coded for easy recognition of the alert level: red (above failure threshold) or green (below threshold). Location and asset information as well as navigation to the other assets are shown within the selected asset filter.

### 2. Graph Zoom

Select the amount of time to display on the graph. The default value is 1w (1 week) back from the current date. Other possible values include 1d (1 day), 3d (3 days), 1m (1 month), and 3m (3 months). Click **Clear** to return to the default value.

### 3. Date Start and End

For a more granular range of dates, manually set the start and end date by clicking the appropriate field and selecting a date from the calendar popup.

### 4. Graph Legends and Failure Threshold changes

The graph legends show the risk value for the data point selected in the graph, along with the failure threshold value. View different points by scrolling over the graph. To change the Failure Threshold value, click **Change** and enter the new value. Then, click the green checkmark to confirm the change.



## 5. Feature Importance

The feature importances are listed by priority by default. Click on a feature importance to see its graph. The same graph functionality exists on this display. Zoom in or set a custom date range. Click **Back** to return to the Risk Index graph. The feature importance by priority is dynamically generated based on the selected data point in the Risk Index graph. Feature importance can be shown in an alphabetical listing if desired.

## 6. Manual Graph Zoom slider

At the bottom of all graph views, there is a manual zoom slider. Click and drag the ends of the graph to zoom into a area of the graph that you want to explore in more detail. Once you have established a smaller time range, click within it and slide it backward and forward within the graph date range. To explore a date range outside of the current display, change the time range by either selecting a different Zoom value or manually setting the start and end dates.

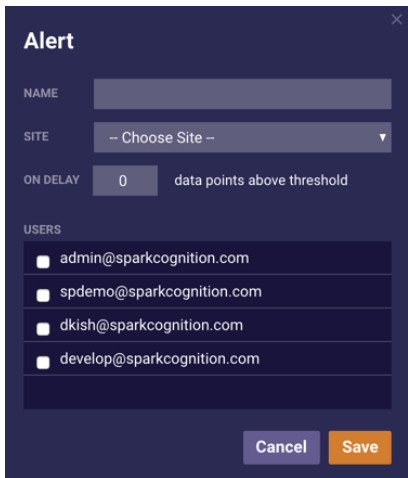
## Alerts Tab

The Alerts tab displays all alerts that have been defined. You can also create a new alert when a threshold is breached.

## Creating an Alert

Perform the following to create a new alert:

1. Click the **Alerts** tab to open the Alerts page.
2. Click the **Create a New Alert** box that displays the following **Alert** dialog:



The 'Alert' dialog box contains the following fields and options:

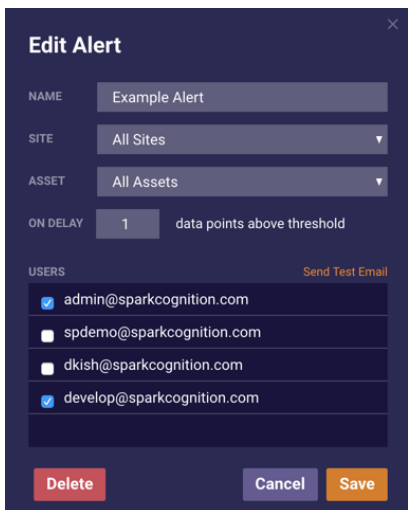
- NAME:** A text input field.
- SITE:** A dropdown menu with the option '-- Choose Site --'.
- ON DELAY:** A numeric input field set to '0' with the label 'data points above threshold'.
- USERS:** A list of email addresses with checkboxes:
  - admin@sparkcognition.com
  - spdemo@sparkcognition.com
  - dkish@sparkcognition.com
  - develop@sparkcognition.com
- Buttons:** 'Cancel' and 'Save'.

- Enter a name for the alert.
- From the drop-down list, choose a site to alert on, you can also select **All Sites**.
- Select an on delay amount. This is the number of data points that need to be above the threshold before sending the alert. The amount must be greater than zero.
- Select the user(s) you want to send an email to when the alert is triggered. If the user is not listed, you need to add the user to the SparkPredict system. See the [Creating a New User](#) section below for instructions.
- Click **Save** to create the alert or **Cancel** to return to the Alerts tab without creating an alert.

## Editing an Alert

Perform the following to edit an existing alert:

- Click the **Alerts** tab to open the Alerts page.
- Click an existing alert, which displays the following **Edit Alert** dialog:



The 'Edit Alert' dialog box contains the following fields and options:

- NAME:** A text input field containing 'Example Alert'.
- SITE:** A dropdown menu with the option 'All Sites'.
- ASSET:** A dropdown menu with the option 'All Assets'.
- ON DELAY:** A numeric input field set to '1' with the label 'data points above threshold'.
- USERS:** A list of email addresses with checkboxes and a 'Send Test Email' link:
  - admin@sparkcognition.com
  - spdemo@sparkcognition.com
  - dkish@sparkcognition.com
  - develop@sparkcognition.com
- Buttons:** 'Delete', 'Cancel', and 'Save'.

- Make any edits to the name, site, asset, or on delay settings.
- Optionally, send a test email by selecting the users to receive it and then click the **Send Test Email** link.

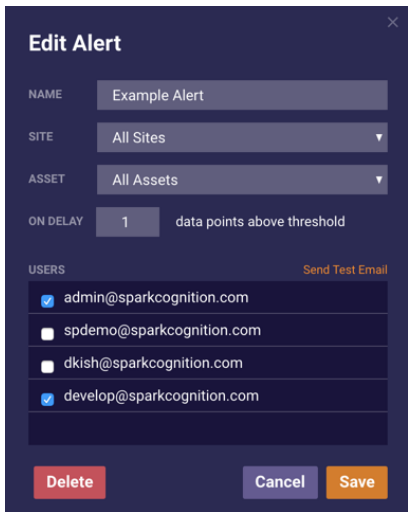


- (c) To add a user to the alert that is not listed, be sure that the user has been added to the SparkPredict system first.
- (d) Click **Save** to save the alert or **Cancel** to return to the Alerts tab without editing the alert.

## Deleting an Alert

Perform the following to delete an existing alert:

1. Click the **Alerts** tab to open the Alerts page.
2. Click an existing alert, which displays the following **Edit Alert** dialog:



3. Verify that this is the alert that you want to delete.
4. Click **Delete**. You will be asked to confirm the deletion. Click **Delete** to delete the alert from the system.

## Settings Tab

The Settings tab allows you to access the following interfaces to perform user management and model training:

- **My Account**

The My Account tab displays all account-related information for the user that is currently logged in to SparkPredict. The information includes:

- **First Name**
- **Last Name**
- **Email**

You can edit any information in this section by entering the new value(s) and clicking **Save Changes**.

The My Account tab also allows you to change your current password. To change your password, enter your new password and re-enter it in the **Verify Password** field. Then, click **Change Password**.

- **Users**

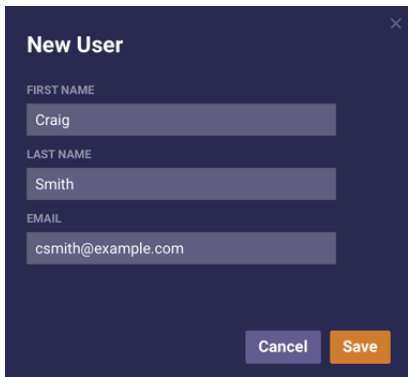
The Users tab lets you view existing users and create new users in SparkPredict.

To edit an existing user, click the user card to display the **Edit User** dialog. Make the changes to the user information and click **Save**. You can also delete the user from SparkPredict by clicking **Delete**.

## Creating a New User

Perform the following to create a new user:

1. Click the **Settings** tab followed by the **Users** tab.
2. Click **Create a New User**.

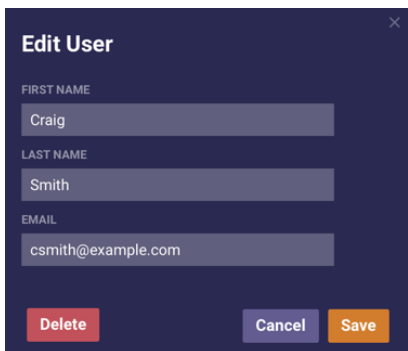


3. Enter the first name, last name, and email address of the new user.
4. Click **Save** to finish. A user card is created and can be viewed on the **Users** tab.

## Editing an Existing User

Perform the following to edit the information for an existing user:

1. Click the **Settings** tab followed by the **Users** tab.
2. Click the user card you are interested in. The **Edit User** dialog displays.

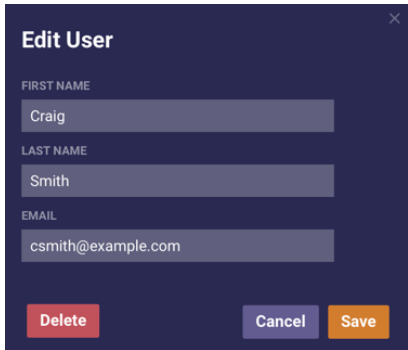


3. Edit the first name, last name, and email address of the user. Click **Save** to accept the edits.

## Deleting a User

Perform the following to delete a user:

1. Click the **Settings** tab followed by the **Users** tab.
2. Click the user card of the user you want to delete from SparkPredict. The **Edit User** dialog displays.



3. Verify that this is the user you want to delete. Then, click **Delete**.

## Revision Table

Version	Date	Notes
v 1.0	15-Jan-2018	Initial Release
v 1.1	13-Jul-2018	Added: <ul style="list-style-type: none"> <li>• Ability to change thresholds</li> <li>• Dynamic feature importances at each plotted point</li> <li>• Time windows and date ranges to easily navigate feature plots</li> </ul>