

1 GridAI Requirements

1.1.1 Functional Requirements

1.1.1 REQUIREMENTS AND CONSTRAINTS

1.1.a Program must run locally and be deployable.

1.1.1.b Display all necessary power grid data in a interactive grid such as the amount of power each node is using and how each node is connected.

1.1.1.c Capable of running all parts the program from our speech recognition software.

1.1.1.d Utilize machine learning to predict and display future power grid anomalies.

1.1.1.e Highlight specific problem areas to help field technicians such as current power outages.

1.1.1.f Allow for both broad and specific scaling of the displayed grid so that users can look at the power grid at both a micro and macro level.

1.1.2 Aesthetic Requirements

1.1.2.a Display all the grid information on a map clearly and concisely so that the data is easy to read and understand.

1.1.2.b Display all the grid information on different type of map such as terrain maps, overhead maps, and satellite maps.

1.1.3 Security Requirements

1.1.3.a Limits accessibility to only those authorized such as the local government and authorized employees.

1.1.3.b Securely receive data without leaks for displaying data about future anomalies, current issues, and current power levels.

1.2 ENGINEERING STANDARDS

1.2.1 IEEE Data Standards

Our project and included services will use various IEEE data standards. As it is a project centered on data storage and analysis, it is imperative that each piece of data uses the most relevant formatting standard.

- i. int
- ii. string
- iii. float64

1.2.2 HTTP

HTTP requests are integral to data transfer in our project. Our API's utilize HTTP methods such as GET and POST to transfer data between services and from external sources.

1.2.3 [IEEE P2840™ - Standard for Responsible AI Licensing](#)

Our project and included services will use various IEEE data for responsible AI licensing Standardized definitions for referring to components, features and other such elements of AI software, source code and services.

1.2.4 [IEEE P2841™ - Framework and Process for Deep Learning Evaluation](#)

This document defines best practices for developing and implementing deep learning algorithms and defines a framework and criteria for evaluating algorithm reliability and quality of the resulting software systems.

1.2.5 [ISO/IEC 21778:2017 - JSON](#)

When transferring data between services and from external sources, our project heavily relies on data marshalling in JSON. This is an almost universal industry standard and facilitates painless integration with external API's and data sources.

1.2.6 [React Architectural Standards](#)

Only include one React component per file; Favour functionless components; Do not use mixins; No unneeded comments;