**CMS 484 – Computer Science Capstone Proposal**

**Efe Comu – Jack Krantz – August Alexander – Sanghun Park**

**Topic**

* ***What system will you be building?***
* A predicative sports modeling system that predicts sports statistics for specific teams, players, games, etc.ie

**Motivation**

* ***Why are you selecting this?***
* We are selecting this project because we have an interest in predictive modeling and its application in a field we all enjoy: sports.

**Primary Objective**

* ***What purpose will it serve?***
* It will serve as a tool for analysts, franchise staff, and sports bettors to better understand and predict the short-term and long-term implications of NBA data.

***Functional Requirements***

* Users can use our system to look up players or team specific predicted data.
* Advanced Metrics such as box plus/minus and Player efficiency rating (PER)
* Data Visualization tools, such as heat-maps and graphs
* Feedback from users to improve requirements

***Non-functional Requirements***

* The user interface should be intuitive and user-friendly, regardless of the user’s technical expertise
* Operational from personal computer or mobile devices
* System should update its data daily
* The system should be able to handle large volumes of data and user queries with minimal latency.
* Predicted data should be returned almost instantly
* The system should be scalable, both in terms of handling an increasing amount of data over time and accommodating a growing number of users.

**Scope**

Predictive analysis tool to benefit coaches, analysts, franchise staff, and players

1. Data Collection and Processing
2. Predictive Model Development
3. UI and UX Design
4. Visualization and Reporting Tools
5. Feedback Integration

**Technical Skill Requirements**

* Determining and Solving Problem
* Data Collection and Preprocessing
* Model Selection and Training
* User Interface Design

**Technical Skill Set of Employed Software Engineers**

**August:**

* **AWS environment**
* **Python**
* **Pandas**
* **NumPy**
* **Java**

**Efe:**

* **Python pandas predictive modeling tools**
* **Tree classifier**
* **HTML/CSS/JS**
* **Data visualization techniques such as Tableau and Excel**
* **Java**

**Jack:**

* **Simulation & Stochastic modeling​**
* **Python​**
* **React​**
* **NumPy​**
* **Java**

**Sanghun Park:**

* **Python​**
* **Java**
* **C/C++**

**Required Skill Set / Team Member Skill Set Graph**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Team Members** | | | |
| **Skill Sets** | J | A | S | E |
| Database  Management  [AWS] |  | v |  |  |
| Database Collection  And Processing  [SQL/Python] | v | v | v | v |
| Predictive Modeling  (Model Training) |  |  |  | v |
| FrontEnd  Development  [HTML/CSS/JS] | v | v | v | v |
| BackEnd  Development  [Network] | v | v | v | v |
| Mobile App  Development  [Android Studio] |  |  | v |  |
| UI/UX  Design | v | v | v | v |