**Ping Pong King**

Lingwen Kong

Bin Sun

Deepti Agrawal

Dekun Chen

Jonathan Sebast

Baseline 9/15/2021

**INTRODUCTION**

Since the early 2020, table tennis has become the second most popular sports for online betting in the world, with the first as soccer. Millions of sportsbook users place wagers all day everyday and now this leads to brand new potential market, table tennis game prediction and this App Ping-Pong King aims to optimize the betting solutions by data analysis and machine learning.

Success criteria: we measure our model/App performance based on the long-term expected value. In other words, our prediction precision rate for specific wager should be higher than a certain threshold in order to make profits in the long-run.

# **ROLES AND RESPONSIBILITIES**

Project Lead - Lingwen Kong

Project Manager - Jonathan Sebast

Data Analyst - Lingwen Kong

Development Lead - Dekun Chen

Git Version Control - Lingwen Kong

Architect - Jonathan Sebast

Developers - Lingwen Kong, Jonathan Sebast

Infrastructure lead - Dekun Chen, Bin Sun, [Deepti Agrawal](mailto:dagrawa2@stevens.edu)

Test Lead - Deepti Agrawal

Testers - Deepti Agrawal

Documentation - Lingwen Kong

Designer/UI - Dekun Chen

User advocate - Bin Sun

Customer Representative - Bin Sun

# **METHOD**

* Software:

o python, web-based(HTML,JavaScript,CSS) transitioning to an iOS app

* Infrastructure:

o Github CI/CD pipeline for continuous build/integration and deployment

o Docker to package bundle

o Apporto AppSpace VM to host applications.

* Development Process:
  + Below test will be performed and matrix will be created as part of the project
    - Manual testing for UI
    - Functional test
    - Integration test
    - Performance test
    - Testing metrics - responsibility matrix, traceability matrix
    - Testing Data - testing data will be generated after discussing with team
  + We plan to use an agile development method, splitting tasks into various user stories, stand up calls twice a week for status update and meet once per two weeks for sprint review to make sure the project is under expected progress.
* Build Plan:
  + Branches for every sprint of the development.
  + Version control via git
  + Github for code repository and maintain version/branches
  + Github Action for continuous build/integration and deployment
  + Git issues for tracking requirement/enhancement/bugs

# 

# **COMMUNICATION PLAN**

## ***Working team meetings***

In order for teams to succeed, it’s important for everyone to be in the loop on what everyone else (and the team as a whole) is working on, so to encourage participation we decided every team member will lead our weekly recurring meeting as per rota where we will brainstorm, prototyping, internal reviews of each other’s work.

We will meet twice a week for 30 min over zoom for status update and the meeting will be led by every team member per rota. Meeting lead rota will be published on git.

Meeting lead will

* come up with an agenda
* drive the meeting
* come up action items for the next meeting and
* Finally, he will make sure to send meeting minutes.

## ***Status meetings***

In the Ping Pong King group, we have Status meetings where the project manager and/or project leader reports on status to the instructor. These will occur bi-weekly over the duration of the project during scheduled class time with the entire team present so they can all speak to any questions of status to the instructor.

## ***Issues meetings***

In our development group, we will hold issues meetings every week after working team meetings. If we meet some issues or risks, we will try to solve it on issues meeting. If we can't solve the issue within the team, we will schedule a meeting with the manager. All development team members and the manager will attend the meeting.

# **TIMELINE AND MILESTONES**

9/16 - Initial project presentation

9/23 - Initial data contents/format defined; tools and infrastructure selected; website mockup

10/7 - Minimum viable product (the three priority 10 features working)

10/21 - Machine learning algorithms; additional predictions

11/4 - Display of individual statistics; secure login

11/18 - Display of upcoming events; additional predictions

12/2 - Final project presentation

# **RISKS**

* When getting data from the official ping-pong game website, our program might be blocked due to high frequency requests and we will write exceptions to warn the blocking issue. If the issue exists for certain times we will decrease the requests limit manually to make sure the data could be searched.
* Our main website might have suddenly-increased requests and we will set up a threshold to make sure our server could function properly. If the requests-per-second from a single source is higher than a limit, we would block that specific source; if the requests are not from a single source but are higher than the limit, we would redirect part of the requests to another waiting page.

# **ASSUMPTIONS**

State any assumptions you have about this project.

- Website-based prediction algorithm requires front and back ends

- Delivery: the algorithm will give predictions about certain aspects of a certain game

- Predictions are for long-run profit and expected value should be positive according to the temporary odds provided by the sportsbook

- Costs: If this is a real project in the industry, the estimated cost would be $177,000 ($80/hour salary for 5 developers for 11 weeks + $1000 vscode studio enterprise subscription fee)

- Scope of delivery: moneyline(who wins the game), exact number of games, total points, xth game winner. We provide both pre-game prediction and live-prediction.

- Methodology: use data analysis (python - pandas) and machine learning to establish the model/baseline