Data Crawling

espn API calls
espn-stats-json.py

espn player salary
data collection with
beautifulSoup lib
espn-salary.py

NBA data through
free-nba API

espn_stats_coll:
athlete, firstname, lastname, postion,
debutyear, yearly average data { GP,
MIN, PTS, FGM, FG%, REB, AST, etc }

nba_salaries_coll:
athlete, firstname, lastname, postion,
team, year, annual salary

nba_players_coll:
player basic information, current team

nba_teams_coll:
teams basic information, players by year

nba_game_stats_coll:
statistics of each game by year, game
detail stats, scores

nba_player_stats_coll:
statistics of each player in each game, all
detailed stats

MongoDB

Server

Restful services with Json format:
/api/teams
/api/teams/<string:teamId>
/api/players/<string:playerId>
/api/players/summary/<string:year>
/api/stats/<string:playerId>
/api/game-stats/<string:gameId>
/api/games/<string:gameId>
/api/games
/api/salaries/<string:year>
/api/topsalaries
/api/player-stats/<string:gameId>

Analysis

nba_team_elo.py

```
def elo_pred(elo1, elo2):
    pred = (1. / (10. ** (-(elo1 - elo2) / 400.) + 1.))
    return pred

def expected_margin(elo_diff):
    return((7.5 + 0.006 * elo_diff))

def elo_update(w_elo, l_elo, margin):
    elo_diff = w_elo - l_elo
    pred = elo_pred(w_elo, l_elo)
    mult = ((margin + 3.) ** 0.8) / expected_margin(elo_diff)
    update = K * mult * (1 - pred)
    print("**", w_elo, l_elo, pred, margin, mult, update)
    return(pred, update)
```