

TapIn MMA

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PROBLEM

With the explosion of interest in Mixed Martial Arts (MMA), fans, analysts, and bettors lack a centralized, intelligent platform that combines fighter data, upcoming events, predictive tools, and visual analytics. Current solutions are either fragmented, lack interactivity, or don't offer predictive insights.

SYSTEM DESIGN

- Frontend: Built with Streamlit for rapid UI development and interactive components (fighter comparisons, charts, maps).
- Backend/Data: Uses Octagon API for fighter stats, Tapology API for event schedules, Odds API for betting odds, and mailjet API for email notifications.
- Mapping: OpenStreetMap API for gym geolocation.
- Visualization: Plotly for bar charts comparing records.
- Storage: No persistent database needed; real-time data fetched via API.



VERIFICATION

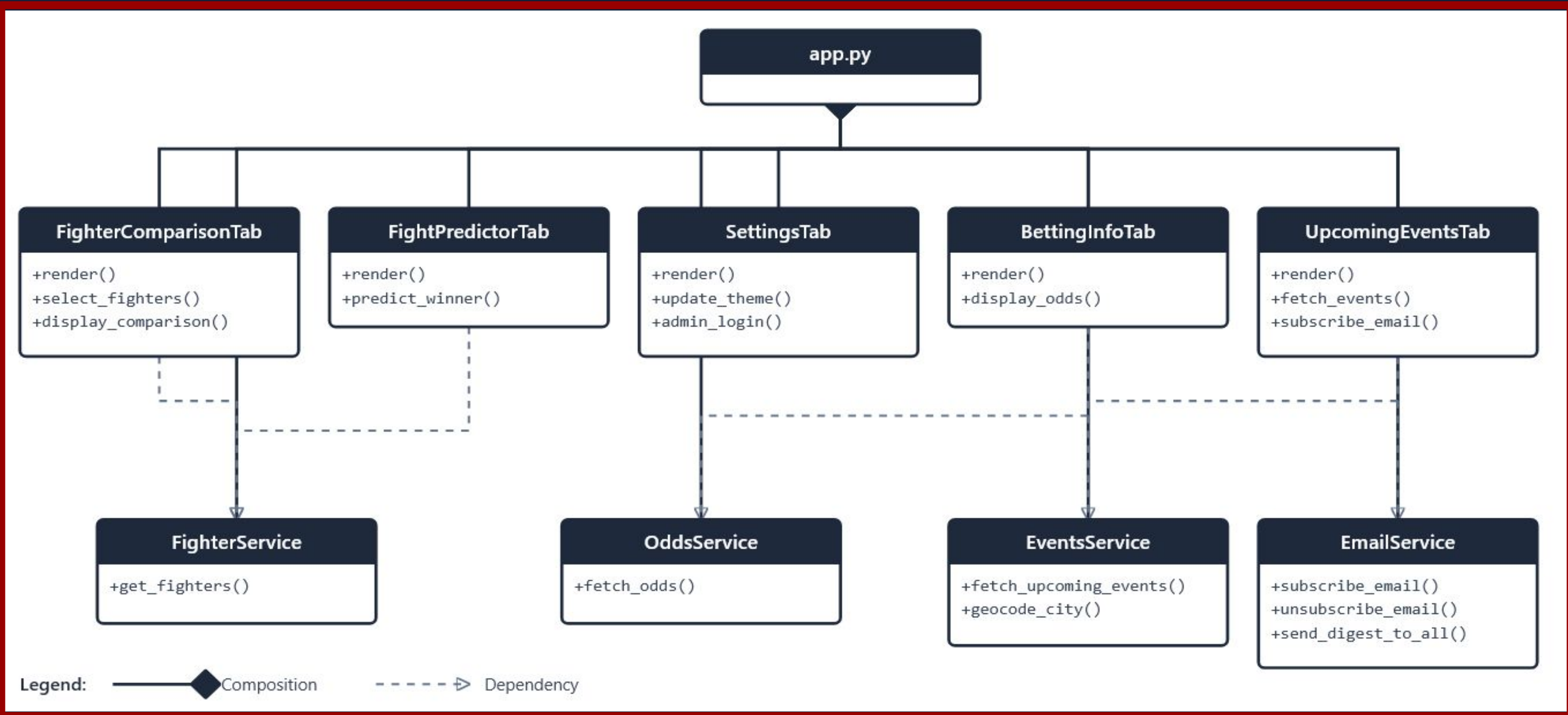
- Validated API data accuracy by cross-referencing fighter statistics with official event sources.
- Tested the betting information module by placing small controlled bets and simulating additional bets to evaluate prediction consistency.
- Evaluated the fighter prediction algorithm using historical fight results, monitoring win/loss outcome accuracy across multiple weight classes.
- Performed usability testing to ensure intuitive navigation and responsiveness across devices.

CURRENT SYSTEMS

Current MMA websites like Tapology or Sherdog provide partial data:

- Event schedules or fighter profiles only.
- No predictive analysis or visualization tools.
- Data spread across different sources.

OBJECT DESIGN



REQUIREMENTS

Functional Requirements

- Compare two fighters using real-time stats
- Display fight history and training gym locations
- Provide upcoming event schedules
- Show personalized fight predictions
- Present betting odds and analytics

Non-Functional Requirements

- Responsive design for mobile & desktop
- Real-time update capability
- Secure API integrations



REFERENCES

- MongoDB. (n.d.). *MongoDB Node.js driver documentation*. <https://www.mongodb.com/docs/drivers/node/current/>
- Octagon API. (n.d.). *Octagon API documentation*. <https://api.octagon-api.com>
- OpenAI. (n.d.). *OpenAI API documentation*. <https://platform.openai.com/docs>
- OpenStreetMap. (n.d.). *Nominatim API documentation*. <https://nominatim.openstreetmap.org>
- Plotly. (n.d.). *Plotly Express documentation*. <https://plotly.com/python/plotly-express/>
- RapidAPI. (n.d.). *Tapology API (Unofficial)*. <https://rapidapi.com>
- Streamlit. (n.d.). *Streamlit documentation*. <https://docs.streamlit.io>
- The Odds API. (n.d.). *Sports betting data API*. <https://the-odds-api.com/>

IMPLEMENTATION

- Built in Python with Streamlit for rapid deployment.
- Integrated Octagon API (fighters) and Tapology API (events).
- Used Plotly for visual comparison charts.
- Implemented OpenStreetMap geocoding for fighter gyms.
- Dynamic color customization via sidebar UI.
- Utilized Github for collaboration.

SUMMARY

TapIn MMA centralizes fighter stats, events, and predictive tools into one platform. It bridges the gap between casual fans and serious analysts, enhancing MMA engagement with real-time insights and intuitive visualizations.

ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by XXXXX (name of the project sponsor: federal, state or local government, or corporate partners, where applicable). We/I thank XXXX for his/her/their assistance and mentorship that I/we received throughout the senior design project.