HENRY WANG

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SUMMARY

I am a PhD candidate in Social and Engineering Systems at the MIT Institute for Data, Systems, and Society. My research at the MIT Sports Lab focuses on using tracking data to democratize access to automated event data and improve officiating fairness and transparency for FIFA and its 211 member associations. I also work in the Baseball Sciences department of the Boston Red Sox in a part-time capacity, supporting player development, acquisition, and evaluation processes by leveraging biomechanical data of our hitters and pitchers.

EDUCATION

Massachusetts Institute of Technology — Cambridge, MA

Ph.D. Candidate, Social & Engineering Systems — Expected 2026

- Advisor: Professor Peko Hosoi
- Coursework: Statistics, Probability, Econometric Data Science, High Dimensional Econometrics, Machine Learning, Deep Learning, Research Methods in Social Sciences, Sports Technology, Computer Vision

Massachusetts Institute of Technology — Cambridge, MA

B.S Computer Science, Data Science & Economics, B.S. Business Analytics

- GPA: 4.80/5.0 — Class of 2023
- Coursework: The Analytics Edge, Artificial Intelligence, Optimization Methods, Design & Analysis of Algorithms, Communicating with Data, Research & Communication in Economics, Math for Computer Science
- Captain, MIT Varsity Men's Swimming & Diving

RESEARCH EXPERIENCE

MIT Sports Lab — Cambridge, MA

Graduate Researcher — September 2023 – Present

- Exploring use of optical tracking technology for a referee decision support system, including last-touch detection and foul classification
- Identified the causal effect of basketball analytics adoption on team performance in the NBA using a two-way fixed effects modeling approach in STATA, revealing analysts are heavily undervalued compared to players
- Pioneered efforts to benchmark automatically generated events from tactical and broadcast tracking data in football (soccer) using Python to democratize access to event data for less developed FIFA member associations
- As the primary liaison between the lab and FIFA, crafted simple and effective data visualizations for updates to FIFA and research talks at the 2023 FIFA Research Symposium, 2024/2025 MIT Sports Summit, and 2025 FIFA Innovation Conference

Undergraduate Research Assistant — January 2021 – May 2023

- Developed a codebase for validating center-of-mass, skeletal, and ball tracking data in football, aiding FIFA's efforts to introduce semi-automated offside technology at the 2022 FIFA World Cup
- Automated the process of detecting defensive modes from tracking data in football, enriching contextual attributes of existing auto-eventing algorithms
- Innovated methods to generate data, engineer features, and use analytics to improve performance outcomes for AusCycling BMX freestyle athletes

PROFESSIONAL EXPERIENCE

Boston Red Sox — Boston, MA

Associate, Baseball Sciences (part-time) — April 2025 – Present

- Developed deep learning and functional data analysis approaches to quantify deception, improving predictive performance of core quantitative models informing player evaluation and acquisition processes
- Delivered targeted biomechanical insights through player-specific ad-hoc analyses as requested by major league coaching staff and lead biomechanist during the season
- Engineered interactive dashboards and LLM-powered tools to analyze pitcher biomechanical similarity, enabling rapid, data-driven comparisons of mechanics across the roster previously unavailable to stakeholders.

Intern, Baseball Sciences (part-time) August 2024 – April 2025

- Produced probabilistic autoregressive models to relate swing mechanics to timing and swing decision quality

Hawk-Eye Innovations Remote

Data Science Intern June 2023 – August 2023

- Created tools for measuring and visualizing rim charts and basketball jump shot mechanics from ball and skeletal tracking data, complete with quality assurance checks. Beta-tested by 8 NBA teams during the 2023-24 regular season.

Data Science Intern June 2022 – August 2022

- Programmed a jump/header/aerial duel detection algorithm complete with contextual attributes, augmenting the set of automatically detectable events in the Serie A Football Data Portal
- Designed and wrote heuristic-based algorithms for inferring bat position during in the absence of optical bat-tracking technology, allowing for the addition of a realistic virtual bat in MLB's FieldVision software

PUBLICATIONS

P1. **Wang, H.,** Sarker, A., & Hosoi, A. (2025). The effect of basketball analytics investment on National Basketball Association (NBA) team performance. *Journal of Sports Economics*, 26(6). https://doi.org/10.1177/15270025251328264

P2. **Wang, H.,** Mills, K., Billingham, J., Robertson, S., & Hosoi, A. (2025). Semi-automated last touch detection for out-of-bounds possession decisions in football. *Sports Engineering*, 28(36). https://doi.org/10.1007/s12283-025-00518-3

P3. **Wang, H.,** Bunt, S. C., Zynda, A. J., et al. (2019). Mechanism of injury and post-concussion symptoms in adolescent soccer players. *Orthopaedic Journal of Sports Medicine*, 7(3_suppl). https://doi.org/10.1177/2325967119S00008

TEACHING EXPERIENCE

Massachusetts Institute of Technology Cambridge, MA

Teaching Assistant: 2.980 *Sports Technology & Innovation* February 2024 – May 2024

- Mentored FIFA project team working on referee localization and sound classification from pitch-side microphone data, culminating in an engineering report, executive summary, final presentation, and code handoff package
- Maintained course logistics and assisted in grading

Teaching Assistant: 2.980 Sports Technology & Innovation February 2023 – May 2023

- Mentored AusCycling project team working on culminating in an engineering report, executive summary, final presentation, and code handoff package
- Maintained course logistics and assisted in grading

LEADERSHIP AND SERVICE

MIT Sports Technology Club Cambridge, MA

Vice President, International Lead January 2024 – Present

- Launched a new student-run club to engage MIT students interested in sports technology through weekly meetings and mentorship of semester-long personal projects culminating in final presentations
- Lead club meetings and oversaw communication with prospective international collaborators

MIT Men's Varsity Swimming & Diving Team Cambridge, MA

Captain & Class Representative September 2019 – March 2023

- As an elected captain, facilitated a cohesive and welcoming team culture through liaising with coaches, leading team contract discussions, and coordinating social events, resulting in a NEWMAC conference championship and 5th place finish at the Division III NCAA National Championships
- Served as class rep during freshman, sophomore, and junior years, directing communications and feedback between the Class of 2023 and team captains and coaches

SKILLS

- **Programming Languages:** Python, R, SQL, STATA
- **Software:** Git, Gurobi, Pandas, Plotly, TensorFlow, PyTorch, R Shiny
- **Languages:** Spanish, Mandarin (limited working proficiency)