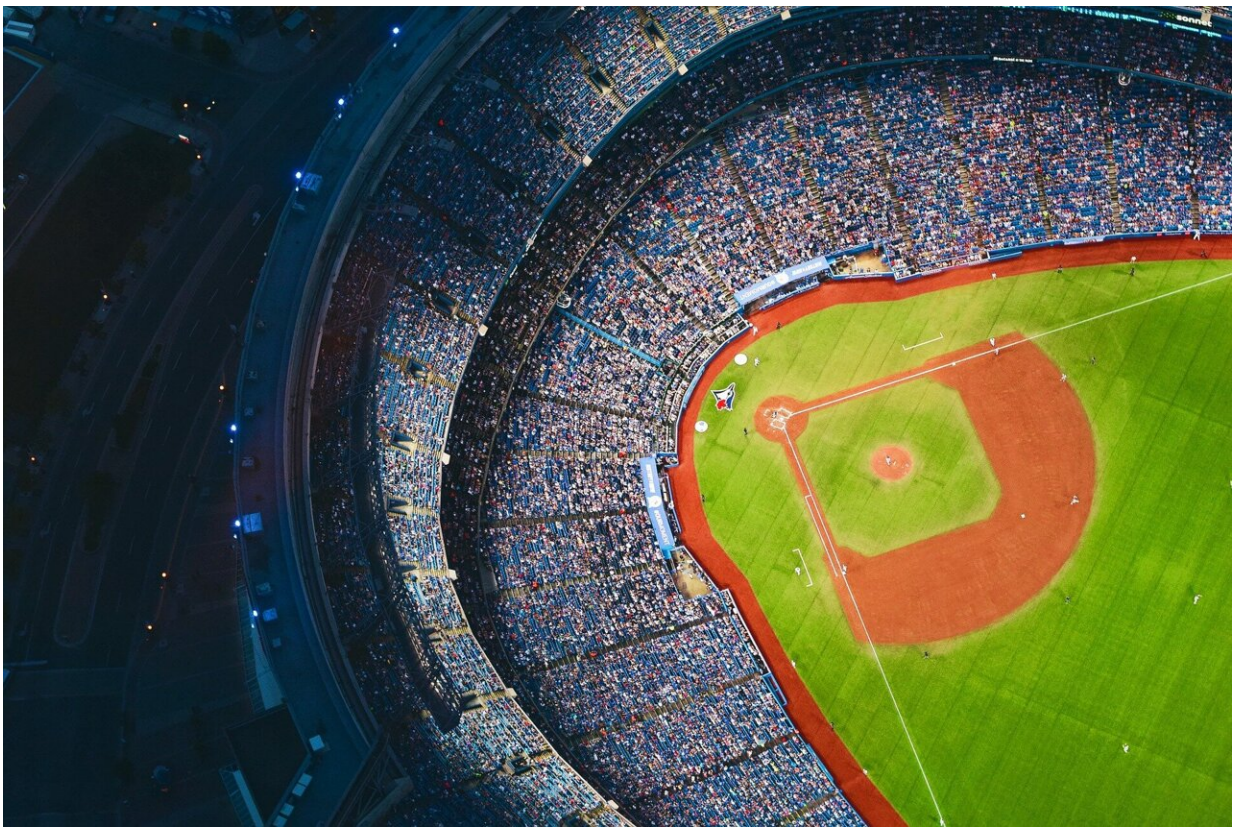


New AI-powered analytical model tracks baseball players' path to the big show

September 21 2023, by Pablo Suarez



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Major League Baseball teams draft roughly 1,500 prospects annually, but less than 20% eventually make the jump to the majors. Building on statistical ideas and methods best known through the 2003 book

"Moneyball," University of Maryland researchers may help them get there faster.

"[Baseball Informatics—From MiLB to MLB Debut](#)," published in the 2023 edition of *Analytics Enabled Decision Making*, is designed to help drafted players in the minor league system identify aspects of their game they must improve to increase their chances of reaching the big leagues, whether they stay for just a week or have the game-changing impact of Gunnar Henderson on the playoffs-bound Baltimore Orioles.

Sharing a passion for baseball, Chung-Hao Lee M.S. '22, MBA '22 and Adam Lee, associate clinical professor of information systems in the Robert H. Smith School of Business, used machine learning (a type of [artificial intelligence](#) in which systems are trained with data and learn similarly to the [human brain](#), without direct programming) to analyze baseball performance stats and non-baseball data of players who were drafted from 2001–10 and create models predicting their likelihood of reaching the majors.

"We will be glad if such machine intelligence results can improve their performance to reach higher career opportunities sooner than later," said Adam Lee (who is not related to Chung-Hao Lee).

Based on their findings, the graduate student and professor determined four significant factors contributing to players' development: batting average, slugging percentage, draft position and overall time spent in the minors. (Defense, base running and sheer athleticism also contribute to a prospect's ascent but were not prioritized by the research models.)

"'Moneyball' taught us that the important factor in deciding whether a player can be called up to the [major league](#) is their on-base percentage," said Chung-Hao Lee, now an artificial intelligence and machine learning project manager at Winstron in Taiwan. "But based on our model, we

found that the batting average is way more important to decide whether the player can be called up."

At a time that teams are shelling out huge signing bonuses—like the Washington Nationals paying their top draft pick, Dylan Crews, \$9 million in July—it's critical that they can track a player's development to maximize his success.

"If you look at it from this lens, these teams will have a better idea of who to call up and when they should be called up," said Chung-Hao Lee. "Knowing those two things will save MLB teams time and money, and players can enhance their training to help them generate more value."

To improve the model's accuracy, future research could be expanded to incorporate new advanced stats including batting average on balls in play, wins above replacement level and weighted runs created.

More information: Chung-Hao Lee et al, Baseball Informatics—From MiLB to MLB Debut, *Analytics Enabled Decision Making* (2023). [DOI: 10.1007/978-981-19-9658-0_5](https://doi.org/10.1007/978-981-19-9658-0_5)

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