

Proposition: ‘Is a new science of chess emerging?’

GPT-4, with Michael L. Thompson

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Proposition: “Is a new science of chess emerging?”

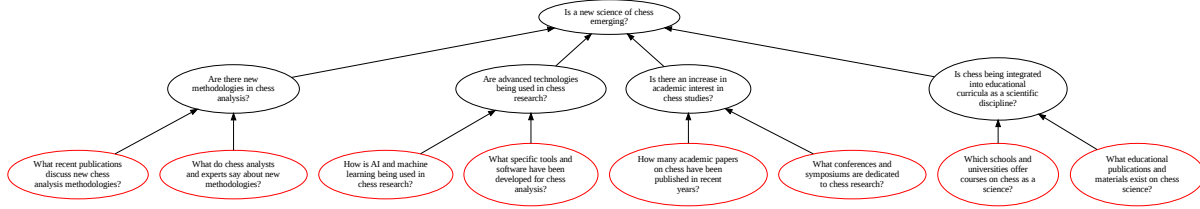


Figure 1: Query plan graph.

Added Instructions

- Analyze this in the context of the current date November 28, 2024.
- Cite specific publications, and name specific people and tools.

Query Plan Outline

- Proposition: A new science of chess is emerging.
 - Sub-proposition: There are new methodologies in chess analysis.
 - * Evidence: Recent publications on new chess analysis methodologies.
 - * Evidence: Interviews with chess analysts and experts about new methodologies.
 - Sub-proposition: Advanced technologies are being used in chess research.
 - * Evidence: Use of AI and machine learning in chess research.
 - * Evidence: Specific tools and software developed for chess analysis.
 - Sub-proposition: There is an increase in academic interest in chess studies.
 - * Evidence: Number of academic papers published on chess in recent years.
 - * Evidence: Conferences and symposiums dedicated to chess research.
 - Sub-proposition: Chess is being integrated into educational curricula as a scientific discipline.
 - * Evidence: Schools and universities offering courses on chess as a science.
 - * Evidence: Educational publications and materials on chess science.

Summary

The emergence of a new science of chess is evident through several key developments and trends:

- Integration of Advanced Technologies:** The use of AI and machine learning in chess has transformed the way the game is analyzed and played. AI systems like AlphaZero have introduced novel strategies and tactics, providing insights that were previously unexplored by human players. This technological integration is a significant factor in the evolution of chess as a scientific discipline.
- Statistical and Data-Driven Approaches:** There is a growing trend towards using statistical methods to analyze player performance and game outcomes. This includes evaluating player streaks, move accuracy, and decision-making patterns over time, which adds a scientific layer to chess analysis.
- Educational Integration:** Chess is increasingly being integrated into educational curricula as a tool for cognitive development and scientific study. Institutions like Webster University and Cornell University are offering programs that explore the educational and scientific aspects of chess, further supporting its recognition as a scientific discipline.
- Academic Interest:** The increase in academic interest in chess studies is reflected in the number of conferences, symposiums, and research initiatives dedicated to the game. This academic focus highlights the potential of chess as a subject of scientific inquiry.

5. **Psychological and Cognitive Studies:** New methodologies in chess analysis also focus on the psychological aspects of the game, such as how stress, fatigue, and cognitive biases affect player performance. This approach aligns with scientific studies in psychology and cognitive science.

Overall, these developments indicate that a new science of chess is indeed emerging, characterized by the integration of technology, data-driven analysis, educational initiatives, and academic research. This trend reflects a broader movement towards understanding chess not just as a game, but as a complex system that can be studied scientifically.

Sub-Propositions

Are there new methodologies in chess analysis?

“What recent publications discuss new chess analysis methodologies?”

Based on the provided context, here are some recent publications and resources discussing new chess analysis methodologies:

1. **Chess Analysis - Reloaded**
 - **Link:** [Chess Analysis - Reloaded](#)
 - **Description:** This book by Daniel Gormally explores different methods of chess analysis and calculation, aiming to rediscover the author’s love for chess analysis.
 - **Price:** 36.95
2. **New Release: Chess Analysis - Reloaded**
 - **Link:** [Forward Chess Blog](#)
 - **Description:** A blog post discussing the release of “Chess Analysis - Reloaded” by Daniel Gormally, highlighting the decline of traditional chess analysis.
 - **Price:** \$19.99
3. **How A New Science of Chess is Emerging**
 - **Link:** [Discover Magazine](#)
 - **Description:** This article discusses a new approach to studying chess, focusing on the tipping points within a game where a single move can decisively influence the outcome.
 - **Date:** October 28, 2024
4. **ChessBase Magazine**
 - **Link:** [ChessBase](#)
 - **Description:** The new version 18 of ChessBase Magazine offers innovative possibilities for chess training and analysis, including playing style analysis and strategic theme searches.
5. **How to Analyze Your Own Chess Games In 2024 - A Step-by-Step Guide**
 - **Link:** [Chess Essentials](#)
 - **Description:** A comprehensive guide that walks readers through the process of analyzing their own chess games.
 - **Date:** July 24, 2024
6. **ChessOK Aquarium 2024**
 - **Link:** [ChessOK](#)
 - **Description:** A revolutionary analysis, database, and chess publishing tool compatible with the world’s strongest chess engines.
 - **Price:** 34.97

These resources provide insights into the latest methodologies and tools available for chess analysis in 2024.

“What do chess analysts and experts say about new methodologies?”

The context provided includes various sources discussing chess events and methodologies in 2024. Here are some insights based on the available information:

1. **GM Ben Finegold’s Interviews:** In a podcast featuring GM Ben Finegold, there are discussions

with various chess personalities. While the specific methodologies discussed are not detailed in the snippet, such interviews often cover new strategies, training techniques, and insights into the evolving nature of chess (source: YouTube).

2. **Magnus Carlsen and David Howell:** These two prominent chess figures discuss the 2024 Candidates Tournament. While the snippet does not specify new methodologies, such discussions typically involve analysis of player performances, strategic innovations, and predictions for future matches (source: Reddit).
3. **ChessBase Interview with ChatGPT:** This source mentions new possibilities for chess training and analysis, including playing style analysis and strategic theme searches. This suggests a focus on leveraging AI and advanced software to enhance chess training and understanding (source: ChessBase).
4. **Statistical Analysis of Nakamura's Games:** A study analyzing Hikaru Nakamura's games over a decade suggests a focus on statistical methodologies to understand player performance and streaks. This indicates a trend towards using data analytics in chess (source: Chess.com).
5. **World Chess Championship Discussions:** Podcasts and discussions around the World Chess Championship often explore new methodologies in terms of preparation, psychological aspects, and game analysis (source: Spotify).
6. **New In Chess Podcast:** This podcast features interviews with leading chess players and personalities, likely discussing new methodologies, strategies, and insights into the game (source: Apple Podcasts).

Overall, the trend in 2024 seems to be towards integrating advanced technologies like AI and data analytics into chess training and analysis, alongside traditional strategic discussions and player performance evaluations.

Conclusion

Recent methodologies in chess analysis have been evolving with the integration of advanced technologies and new strategic approaches. Here are some key developments:

1. **AI and Machine Learning:** The use of AI, particularly neural networks like AlphaZero, has revolutionized chess analysis. These systems learn from millions of games and can provide insights into novel strategies and tactics that were previously unexplored by human players.
2. **Statistical Analysis:** There is a growing trend towards using statistical methods to analyze player performance and game outcomes. This includes evaluating player streaks, move accuracy, and decision-making patterns over time.
3. **Software Tools:** New software tools like ChessBase 18 and ChessOK Aquarium 2024 offer advanced features for analyzing games. These tools provide capabilities such as playing style analysis, strategic theme searches, and integration with powerful chess engines.
4. **Interactive Learning Platforms:** Platforms like Chess.com and Lichess are incorporating interactive learning modules that use AI to provide personalized feedback and training exercises based on a player's strengths and weaknesses.
5. **Psychological and Cognitive Approaches:** Some new methodologies focus on the psychological aspects of chess, analyzing how stress, fatigue, and cognitive biases affect player performance. This includes studying the mental processes involved in decision-making during high-stakes games.
6. **Collaborative Analysis:** The chess community is increasingly using collaborative platforms to analyze games collectively. This includes forums, social media discussions, and live commentary during tournaments, which provide diverse perspectives and insights.

These methodologies reflect a broader trend towards integrating technology and data-driven approaches with traditional chess analysis techniques, offering players and analysts new ways to understand and improve their game.

Are advanced technologies being used in chess research?

“How is AI and machine learning being used in chess research?”

AI and machine learning are being used in chess research in several innovative ways:

1. **Predictive Modelling:** AI is being used to model and predict a chess player's style. This involves analyzing a player's past games to understand their strategic preferences and tendencies. Such models can enhance the creative aspect of chess by suggesting moves that align with a player's style rather than just the best statistical moves (source: [NHSJS](#)).
2. **Understanding Creativity:** Researchers are using AI to understand what makes a chess move brilliant. This involves designing AI models that can evaluate moves not just based on their effectiveness but also on their creativity and how they are perceived by human players (source: [TechXplore](#)).
3. **Adaptive Learning:** AI-powered chess engines are providing adaptive learning experiences. These engines can adjust their difficulty level based on the player's skill, offering a personalized learning experience that helps players improve their game (source: [EdTech Digest](#)).
4. **Strategic Thinking:** AI is transforming chess strategy by analyzing vast amounts of data to identify patterns and strategies that humans might overlook. This helps players develop new strategies and improve their decision-making skills (source: [Medium](#)).
5. **Game Development:** Machine learning is enhancing chess game development by creating AI-powered games that offer more dynamic and challenging experiences. These games can simulate different playing styles and strategies, providing a richer experience for players (source: [SDLCCorp](#)).

Overall, AI and machine learning are not only enhancing the way chess is played but also how it is studied and understood, offering new insights into the game's strategic and creative dimensions.

“What specific tools and software have been developed for chess analysis?”

Based on the provided context, several tools and software have been developed for chess analysis as of 2024. Here are some notable ones:

1. **ChessX:** A popular package for analyzing and learning from previous games. It is often recommended for those interested in chess analysis.
 - Source: [Chess.com Forum](#)
2. **SCID:** A free database software that usually comes bundled with a version of Stockfish, a powerful chess engine.
 - Source: [Reddit](#)
3. **Arena Chess:** A free graphical user interface (GUI) with many advanced features, popular among chess enthusiasts.
 - Source: [Chess.com Forum](#)
4. **Lucas Chess:** Known for its intuitive interface and in-depth analyses, Lucas Chess is a free software that provides move recommendations.
 - Source: [Chess Stack Exchange](#)
5. **Lichess:** A widely regarded chess website that offers various tools for chess analysis and learning.
 - Source: [Lichess.org Blog](#)
6. **ChessOK Aquarium:** A comprehensive analysis, database, and chess publishing tool compatible with strong chess engines.
 - Source: [Chess King](#)
7. **Stockfish:** An open-source chess engine known for its strength and used widely for analysis. It is integrated into many platforms, including Chess.com.
 - Source: [Wikipedia](#)

These tools and software provide a range of functionalities from game analysis, database management, to learning and improving chess skills. They cater to different needs, from beginners to advanced players, and are available in both free and paid versions.

Conclusion

Yes, advanced technologies, particularly AI and machine learning, are being extensively used in chess research. Here are some key areas where these technologies are applied:

1. **Predictive Modelling:** AI is used to model and predict a chess player's style by analyzing their past games. This helps in understanding strategic preferences and tendencies, enhancing the creative aspect of chess by suggesting moves that align with a player's style (source: [NHSJS](#)).
2. **Understanding Creativity:** AI models are designed to evaluate chess moves not just based on effectiveness but also on creativity and human perception (source: [TechXplore](#)).
3. **Adaptive Learning:** AI-powered chess engines provide adaptive learning experiences by adjusting difficulty levels based on the player's skill, offering personalized learning experiences (source: [EdTech Digest](#)).
4. **Strategic Thinking:** AI analyzes vast amounts of data to identify patterns and strategies that might be overlooked by humans, helping players develop new strategies and improve decision-making skills (source: [Medium](#)).
5. **Game Development:** Machine learning enhances chess game development by creating AI-powered games that simulate different playing styles and strategies, providing a richer experience for players (source: [SDLCCorp](#)).

Additionally, several tools and software have been developed for chess analysis, such as ChessX, SCID, Arena Chess, Lucas Chess, Lichess, ChessOK Aquarium, and Stockfish. These tools offer functionalities ranging from game analysis, database management, to learning and improving chess skills, catering to both beginners and advanced players.

Is there an increase in academic interest in chess studies?

“How many academic papers on chess have been published in recent years?”

The search results provided do not directly answer the question of how many academic papers on chess have been published in recent years, specifically for 2024. However, they do provide some context about chess-related research and events in 2024. For example, there are mentions of research awards, educational trends, and specific papers or events related to chess.

To find the exact number of academic papers on chess published in recent years, one would typically need to search academic databases such as Google Scholar, JSTOR, or specific journals related to chess research. These platforms would provide a more comprehensive view of the number of papers published in a given year.

For a more precise answer, I recommend searching on Google Scholar or a similar academic database using keywords like “chess research papers 2024” or “academic papers on chess 2024.” This approach will yield a list of published papers, which can then be counted to determine the total number published in recent years.

“What conferences and symposiums are dedicated to chess research?”

Based on the provided context, here are some conferences and symposiums dedicated to chess research in 2024:

1. **The Saint Louis Chess Conference**
 - **Date:** October 24-26, 2024
 - **Location:** Chase Park Plaza, Saint Louis, MO
 - **Focus:** This conference brings together educators, researchers, and enthusiasts to explore best practices and research in chess education.
 - **Link:** [Saint Louis Chess Conference](#)
2. **#SocialChess Conference**
 - **Date:** September 21, 2024

- **Location:** Budapest
 - **Focus:** This conference gathers FIDE officials and Social Commission members to discuss the impact of chess on social transformation.
 - **Link:** [#SocialChess Conference](#)
3. **Conference: Chess in Education - Methodology and Prospects**
 - **Date:** May 18, 2024
 - **Format:** Online
 - **Focus:** The conference aims to share ideas about integrating chess into the education system and discuss methodologies and future prospects.
 - **Link:** [Chess in Education Conference](#)
 4. **Chess@ISIT 2024**
 - **Date:** July 10, 2024
 - **Location:** Part of ISIT 2024
 - **Focus:** This event will focus on chess and AI, exploring the intersection of these fields.
 - **Link:** [Chess@ISIT 2024](#)

These events highlight the intersection of chess with education, social impact, and technology, providing platforms for researchers and enthusiasts to share insights and advancements in the field.

Conclusion

To determine if there is an increase in academic interest in chess studies, we can consider several factors:

1. **Number of Academic Papers:** While the exact number of academic papers on chess published in recent years is not provided, the suggestion to search academic databases like Google Scholar or JSTOR indicates that there is a body of research available. An increase in the number of papers over the years would suggest growing academic interest.
2. **Conferences and Symposiums:** The presence of multiple conferences and symposiums dedicated to chess research in 2024, such as the Saint Louis Chess Conference, [#SocialChess Conference](#), and [Chess@ISIT 2024](#), indicates a structured platform for academic discourse. The variety of topics covered, from education to AI, suggests a broadening interest in chess-related studies.
3. **Research Awards and Educational Trends:** Mentions of research awards and educational trends related to chess further support the notion of increasing academic interest. These elements highlight recognition and integration of chess in academic and educational contexts.

Overall, while specific quantitative data on the number of papers is not available, the qualitative indicators such as the number and diversity of conferences, symposiums, and educational initiatives suggest an increase in academic interest in chess studies.

Is chess being integrated into educational curricula as a scientific discipline?

“Which schools and universities offer courses on chess as a science?”

Based on the provided context, several schools and universities offer courses or programs related to chess, often integrating it with scientific or educational themes:

1. **Webster University:** The Susan Polgar Institute for Chess Excellence (SPICE) at Webster University is known for its strong chess program. They offer an academic degree program in chess, which is one of the few in the world.
 - Source: [Webster University SPICE](#)
2. **Cornell University:** Through its CHESS (Cornell High Energy Synchrotron Source) program, Cornell offers summer research opportunities that integrate chess with scientific research, although it is more focused on photon science and particle accelerator physics.
 - Source: [Cornell University CHESS](#)
3. **Purdue University Northwest:** Offers a CHESS College Core program, which includes seminars and courses, although the specific focus on chess as a science is not detailed.

- Source: [Purdue University Northwest CHESS College Core](#)
4. **Hungarian University of Sports Science:** Hosted a conference titled “Chess and Sports Science,” indicating an academic interest in the intersection of chess and scientific study.
 - Source: [ChessBase Conference](#)

These institutions highlight the integration of chess into academic programs, often with a focus on its educational and scientific aspects. However, specific courses titled “chess as a science” are not explicitly mentioned in the context provided.

“What educational publications and materials exist on chess science?”

Based on the provided context, here are some educational publications and materials related to chess science:

1. **The Chess Revolution:** This book explores how chess has impacted Western culture and how it has been influenced by computers and technology. It provides insights into the cultural and scientific aspects of chess.
 - [Read more](#)
2. **Conference: Chess in Education - Methodology and Prospects:** This conference discusses the integration of chess into the education system, focusing on methodology and future perspectives. It is an online event that brings together educators and chess enthusiasts.
 - [Read more](#)
3. **How A New Science of Chess is Emerging:** An article in Discover Magazine that examines the new scientific approaches to understanding chess, including the study of tipping points within a game.
 - [Read more](#)
4. **Make it Stick: The Science of Successful Learning:** Although not exclusively about chess, this book provides valuable insights into learning and retaining information, which can be applied to chess education.
 - [Read more](#)
5. **Chess and Science:** This resource explores the research area focusing on the effects of chess on intelligence development and learning behaviors, particularly in children.
 - [Read more](#)
6. **Teaching Chess History to Students in Natural Sciences:** A course designed for intermediate to advanced chess enthusiasts and aspiring scientists, aimed at integrating chess history into the education of natural sciences students.
 - [Read more](#)
7. **Compilation Of Chess And Education Research Studies:** A study that highlights the positive impact of chess on test scores and student engagement, particularly in lower grades.
 - [Read more](#)

These resources provide a comprehensive look at the intersection of chess and education, offering insights into how chess can be used as a tool for learning and cognitive development.

Conclusion

Chess is increasingly being integrated into educational curricula, not just as a game, but as a tool for cognitive development and scientific study. Several universities and educational institutions are offering courses and programs that explore the scientific and educational aspects of chess.

1. **Webster University:** Through the Susan Polgar Institute for Chess Excellence (SPICE), Webster University offers an academic degree program in chess, which is one of the few in the world. This program highlights the educational and scientific aspects of chess.
 - Source: [Webster University SPICE](#)
2. **Cornell University:** Although not directly offering a course titled “chess as a science,” Cornell’s CHESS (Cornell High Energy Synchrotron Source) program integrates chess with scientific research, particularly in photon science and particle accelerator physics.
 - Source: [Cornell University CHESS](#)

3. **Purdue University Northwest:** Offers a CHESS College Core program, which includes seminars and courses, though the specific focus on chess as a science is not detailed.
 - Source: [Purdue University Northwest CHESS College Core](#)
4. **Hungarian University of Sports Science:** Hosted a conference titled “Chess and Sports Science,” indicating an academic interest in the intersection of chess and scientific study.
 - Source: [ChessBase Conference](#)

In addition to these programs, there are educational publications and materials that explore the scientific aspects of chess. For example, the book “The Chess Revolution” discusses the impact of chess on Western culture and its relationship with technology, while the article “How A New Science of Chess is Emerging” in Discover Magazine examines new scientific approaches to understanding chess.

Overall, while chess is not universally recognized as a scientific discipline in educational curricula, there is a growing trend to integrate it with scientific and educational themes, highlighting its potential as a tool for cognitive development and scientific inquiry.

Search Results

“A new science of chess is emerging 2024”

- [How A New Science of Chess is Emerging - Discover Magazine](#): Barthelemy’s new approach is to study the tipping points within a game, where a single move has a decisive influence on the outcome of the game.
- [How A New Science of Chess is Emerging - X.com](#): How A New Science of Chess is Emerging [https://discovermagazine.com/the ...](https://discovermagazine.com/the...) 7:32 PM Oct 28, 2024. . 1,375. Views. 3. Likes. 3. Bookmarks.
- [FastChess on X: “How A New Science of Chess is Emerging https://t ...: \(Credit: WHYFRAME/Shutterstock\). How A New Science of Chess is Emerging. From discovermagazine.com 7:27 PM Oct 28, 2024. . 10. Views.](#)
- [Subrato Mukherjee on LinkedIn: How A New Science of Chess is ...: Could chess be defined as the fruit fly of Artificial Intelligence? Claude Shannon \(Pioneer of information theory\) considered it an ideal ...](#)
- [How A New Science of Chess is Emerging - DISCOVER Magazine - X](#): How A New Science of Chess is Emerging - DISCOVER Magazine <http://dlvr.it/TFq9DQ> 7:09 PM Oct 28, 2024.
- [Why the 2024 World Chess Championship may be the biggest one yet](#): The 2024 World Chess Championship is set to kick off this week, a showdown between 18-year-old Gukesh Dommaraju of India and reigning ...
- [Revolutionizing Chess with Embodied AI and Amazon Bedrock](#): The project proves how advanced technology can complement an ancient game to provide a traditional experience with an innovative approach. As ...
- [Scientists develop chess-inspired maze as a solution for multiple ...](#): Researchers from the University of Bristol and Cardiff University have created the world’s most difficult maze, Interesting Engineering reported.
- [Chess: A Symphony of Strategy and Science Across the Board](#): But the resurgence of chess interest is also fueled by two major societal themes: the rise of Artificial Intelligence and the focus on Aging.
- [The Nightmarish Frontier of AI in Chess](#): A new forefront of AI is emerging in the chess world. It’s not a meticulous exploration of a 300-move theoretical rook-bishop endgame between Leela and ...

“Recent publications on new chess analysis methodologies 2024”

- [Chess Analysis - Reloaded](#): In this book he attempts to discover his love of analysis and the game of chess by attempting different methods of analysis and calculation.
- [New Release: Chess Analysis - Reloaded - Forward Chess](#): Chess Analysis - Reloaded by Daniel Gormally. Chess Informant. 264 pages. \$19.99. A look at the decline of chess analysis, ...
- [Adult Improvement - New In Chess](#): We start this month’s reviews with some books dedicated to (adult) improvement, starting with Perpetual Chess Improvement by Ben Johnson (New In Chess).

- [How A New Science of Chess is Emerging - Discover Magazine](#): Barthelemy's new approach is to study the tipping points within a game, where a single move has a decisive influence on the outcome of the game.
- [Chess News | ChessBase](#): The new version 18 offers completely new possibilities for chess training and analysis: playing style analysis, search for strategic themes, access to 6 ...
- [How to Analyze Your Own Chess Games In 2024-A Step-by-Step ...](#): In this comprehensive guide, I will walk you through the entire process of analyzing your own chess games, step-by-step.
- [ChessOK Aquarium 2024 \(download\) - 34.97](#): ChessOK Aquarium is a revolutionary analysis, database and chess publishing tool, fully compatible with the world's strongest chess playing engines.
- [Will Gukesh Be The Next FIDE World Champion? Here ... - Chess.com](#): The 2024 FIDE World Chess Championship will showcase the current champion Ding Liren and 18-year-old rising star Gukesh Dommaraju.
- [ChessBase 17 and Opening Encyclopaedia 2024](#): Many new articles enrich the current theory with new or revisited ideas. The Encyclopaedia can help you learn openings quickly and give you a head start on ...
- [New In Chess 2024/5](#): An exclusive interview with the new number four in the world rankings. 24 It's all about Elo Does your rating reflect your playing strength? Missing: analysis methodologies

“Interviews with chess analysts about new methodologies 2024”

- [2024 National Open Stories & Chess Advice from GM Ben Finegold ...](#): This week's pod is a special edition featuring 10 different short interviews from the 2024 ... Duration: 1:56:52 Posted: Jun 18, 2024
- [Magnus Carlsen and David Howell discuss the 2024 Candidates](#): Magnus and David break down the performances of the players, how well their predictions went and the upcoming world championship match between Ding and Gukesh.
- [Interview with ChatGPT - You think Ding Liren will remain champion!?](#): The new version 18 offers completely new possibilities for chess training and analysis: playing style analysis, search for strategic themes ...
- [Professor Finds Nakamura's Winning Streaks Statistically Normal ...](#): In the study, he meticulously analyzed Nakamura's streaks based on the American grandmaster's 57,421 games on the platform from 2014 to 2024.
- [2024 World Chess Championship!!! by Chess Knowledge With H1](#): Through engaging discussions, real-life examples, and interactive analysis, this podcast episode aims to empower chess players with the knowledge and ...
- [New In Chess Podcast](#): The New In Chess Podcast features interviews with the world's leading chess players, authors and personalities.
- [Mastering Chess Techniques: Expert Analysis by Hans Niemann](#): Part 3_ Magnus Carlsen vs Alireza Firouzja _ Global Chess League 2024_ ... new girl group ... Duration: 0:34 Posted: Sep 8, 2024
- [Candidates 2024 Predictions - YouTube](#): Welcome to the ultimate discussion on the highly anticipated Candidates Tournament Toronto ... Duration: 14:37 Posted: Apr 4, 2024
- [World Chess Championship 2024: Ding vs. Gukesh - Chessable](#): This match promises another clash of styles, with Ding Liren's strategic mastery going up against Dommaraju Gukesh's raw calculation abilities.
- [In-Depth Review Of The Candidates 2024: An Extensive Analysis](#): After 14 rounds and over three weeks of play, 17-year-old GM Gukesh Dommaraju won the 2024 FIDE Candidates Tournament to qualify as the ...

“AI and machine learning in chess research 2024”

- [5 ways to explore chess during the 2024 World Chess Championship](#): From Google Arts & Culture to GenChess, discover new ways to experience chess with AI and explore the history of this timeless game.
- [Predictive Modelling of a Chess Player's Style using Machine Learning](#): In this paper, I propose the use of AI in chess to enhance the creative aspect of chess rather than promoting memorization of the

best moves.

- [The AI Revolution in Chess and Its Impact on Education](#): One of the key ways AI has transformed chess is by providing adaptive learning experiences. Chess engines can adjust to a player's skill level, ...
- [What makes a chess move brilliant? Researchers use AI to find out](#): Researchers at the University of Toronto have designed a new AI model that understands how humans perceive creativity in chess.
- [AI and Chess: Shaping the Future of Strategic Thinking ... - Medium](#): This article explores the evolving relationship between Artificial Intelligence (AI) and chess, highlighting how AI has transformed chess strategy and player ...
- [Could u possibly train your own chess ai?:](#) Most AI/NNUE algorithms are likely going to need a lot more games to train on than what most players have to have any reasonable expectation to ...
- [Chess@ISIT 2024](#): The first will be a science talk, given by Jonathan Rosenthal, a machine learning expert, about state-of-the-art chess algorithms and engines. The second will ...
- [Building AI-Powered Chess Games: Revolutionizing Strategy with ...](#): This blog will explore how machine learning enhances chess game development, the benefits of AI-powered chess games, and the future of this exciting technology.
- [Which AI algorithm is best for chess? - Data Science Stack Exchange](#): There is again a neural network that takes the current position and outputs a list of candidate moves, with win percentages for each.
- [Study Finds NYT Connections Game Defeats Best AI Models](#): The study looked at AI's response to over 400 'Connections' games and found that both novice and expert players do better than AI at solving the ...

“Tools and software for chess analysis 2024”

- [Looking for Chess Game Software for Analysis? - Chess Forums](#): Just wrote up a blog post for ChessX, which is a great package if you are interested in analyzing and learning from previous games.
- [Chess Database & Analysis Software](#): Discussions turn up here concerning the software that members use and/or recommend for playing, analyzing, studying and maintaining their databases.
- [Best analysis tool? : r/chess - Reddit](#): You might want to look at free database software such as SCID. These usually come bundled with some relatively current version of Stockfish.
- [Is This the Best Chess Software for Game Analysis and ... - YouTube](#): Is This the Best Chess Software for Game Analysis and Winning Preparation? 25% discount ... Duration: 26:28 Posted: Sep 15, 2024
- [Help me choose best chess analysis program- Need help!](#): I think Arena Chess is the most popular free GUI with many advanced features. I also tried Tarrasch GUI, Lucas Chess GUI.
- [nikhildixit's Blog 5 Free Chess Tools and Websites - Lichess.org](#): 1- Lichess. Lichess is hands down the best chess website out there. 2- OpeningTree. OpeningTree is an indispensable tool for preparing against ...
- [Best chess analysis software - Chess Forums](#): A vote for the free ScidvsPC, where you can plug in your favorite chess engine (eg. Stockfish) and analyze (similar to chessbase).
- [Chess software to analyze games](#): Lucas Chess is a very good free software I used for several years. It has an intuitive interface and gives in-depth analyses and move recommendations.
- [Free Chess Software Downloads](#): Download FREE chess software In addition to our best chess software offerings, here are some free programs for play, study, diagram printing and more.
- [chessok aquarium 2024 - Chess King](#): ChessOK Aquarium is a revolutionary analysis, database and chess publishing tool, fully compatible with the world's strongest chess playing engines.

“Number of academic papers on chess 2024”

- [CHES 2024 Accepted Papers - IACR](#): Accepted Papers: TCHES 2024, issue 1: Gadget-based Masking of Streamlined NTRU Prime Decapsulation in Hardware, Georg Land, Adrian Marotzke, Jan Richter- ...
- [Compilation Of Chess And Education Research Studies](#): This article is a compilation of some of the past research done with chess, and a synopsis of the findings.
- [Announcing the Winners of the 2024 Chessable Research Awards](#): From the 2024 applications, Chess-

able selected three winners in the graduate student category and two winners in the undergraduate student category.

- [Literature Review of Chess Studies](#): The literature review found that after-school chess programs had a positive and statistically significant impact on mathematics outcomes.
- [Chess Market Size, Current Insights and Demographic Trends 2024 ...](#): The Chess Market Report is an impressive PDF 101 pages long document that includes a comprehensive table of contents, a list of figures, tables, ...
- [Educational Chess Trends & Events: 2023-2024](#): In 2024, the EDU Commission plans to continue its work to advance the message of chess as an educational tool, to share new resources for educators, and to help ...
- [Full article: On making one's way through chess](#): This paper explores the relation between thinking and making in the context of chess. Historically, this relation has been examined through an intellectualist ...
- [The 2024 Scholar Chess Player Awards](#): The 2024 Scholar Chess Player Awards You played in at least 25 regular-rated US Chess or FIDE games held from dates January 1, 2023 through December 31, 2023.
- [Chess@ISIT 2024 | ISIT2024](#): We are going to host a 5 hour-long event on chess and AI at ISIT 2024! This will take place on Wednesday July 10, 13:00 - 18:00.
- [The Effects of Chess Instruction on Academic and Non-cognitive ...](#): In this paper, we conduct an RCT to examine the effects of intensive chess lessons among grade five students in a developing country. We follow the curriculum ...

“Conferences and symposiums on chess research 2024”

- [The Saint Louis Chess Conference](#): The St Louis Chess Conference on October 24-26 brings together educators, researchers and enthusiasts to explore best practices and research.
- [2024 CHESS User Meeting - Cornell High Energy Synchrotron Source](#): We are excited to see everyone gather in person for a day filled with updates from around the lab, scientific talks, awards, and a poster session.
- [How chess is transforming lives: 2024 #SocialChess Conference in ...](#): On September 21, 2024, Budapest hosted the #SocialChess conference, a gathering of FIDE officials, Social Commission members, ...
- [Conference: Chess in Education - Methodology and Prospects](#): 3/27/2024 The conference Chess in Education - Methodology and perspectives will take place on May 18, 2024 via online.
- [Saint Louis Chess Conference Program Details](#): Sessions run from Thursday through Saturday, October 24-26, 2024 at the at the Chase Park Plaza in Saint Louis' Central West End.
- [Chess@ISIT 2024 | ISIT2024](#): We are going to host a 5 hour-long event on chess and AI at ISIT 2024! This will take place on Wednesday July 10, 13:00 - 18:00.
- [Chessable-supported Researchers at the Saint Louis Chess ...](#): The conference featured keynote speakers, plenary sessions, and concurrent sessions focused on chess research and education. Keynote speakers ...
- [INTERNATIONAL CONFERENCE CHESS IN EDUCATION ...](#): The purpose of the conference is to share ideas about the challenges of integrating chess in the education system and possible solutions.
- [St Louis chess conference - October 2024 - Crowdfunder](#): A chess conference takes place in St. Louis (MO) from 24th to 26th of October 2024 and the topics of discussion will focus on chess in education.
- [Saint Louis Chess Conference, an Innovative Educational Chess ...](#): The Saint Louis Chess Conference will be held October 24-26, 2024 at the Chase Park Plaza in Saint Louis, Mo., and will feature leading keynote speakers.

“Schools offering courses on chess as a science 2024”

- [Chess at Colleges and Universities - Chessable Blog](#): Some universities offer scholarships for chess. Faculty members teach chess-themed courses. Money for chess-themed research is available to ...
- [Summer 2024 Undergraduate Students at CHESS](#): Ten students from the CHESS summer programs – SERCCS, PREM, and SUNRiSE – are jumping into their rigorous summer undergraduate research

experience.

- [Conference: Chess in Education - Methodology and Prospects](#): The purpose of the conference is to share ideas about the challenges of integrating chess in the education system and possible solutions.
- [Degree Program: CHESS College Core - Purdue University Northwest](#): The CHESS College Core requires 24 credits of coursework. Students must complete 12 credits (4 semesters) of CHESS Seminar courses, and 12 credits (4 ...
- [Illustration for Science 2024 - CHESS](#): Learn the essentials of design theory, drawing by hand and drawing digitally during this course. This course will introduce the theory and method of how to ...
- [Susan Polgar Institute for Chess Excellence | Webster University](#): At Susan Polgar Institute for Chess Excellence (SPICE), we believe college chess is the critical component that merges these necessary components with skill.
- [Summer Research Students Explore Cutting-Edge Science | CHESS](#): At CHESS & CLASSE, undergraduate students are an integral part of cutting-edge research in photon science, particle accelerator physics, and astrophysics.
- [Chess at Colleges and Universities](#): Some universities offer scholarships for chess. Faculty members teach chess-themed courses. Money for chess-themed research is available to ...
- [Science illustration course 2024 - CHESS](#): The primary objective of this course was to equip participants with a set of skills and insights needed for effective concept development, ...
- [In Budapest: "Chess and Sports Science" conference - ChessBase](#): A conference entitled Chess and Sports Science will take place on 9 September at the Hungarian University of Sports Science. Show results with:Schools

“Educational publications on chess science 2024”

- [The Chess Revolution: How Chess Impacted Culture And Was ...](#): My book The Chess Revolution tells the story of how chess impacted our Western culture, and how it was impacted itself by the computer and ...
- [Conference: Chess in Education - Methodology and Prospects](#): 3/27/2024 The conference Chess in Education - Methodology and perspectives will take place on May 18, 2024 via online.
- [How A New Science of Chess is Emerging - Discover Magazine](#): Barthelemy’s new approach is to study the tipping points within a game, where a single move has a decisive influence on the outcome of the game.
- [INTERNATIONAL CONFERENCE CHESS IN EDUCATION ...](#): The purpose of the conference is to share ideas about the challenges of integrating chess in the education system and possible solutions.
- [Book Recap #35- Make it Stick: The Science of Successful Learning](#): Make it Stick: The Science of Successful Learning is an extremely insightful encapsulation of best practices for learning and retaining information.
- [Full article: On making one’s way through chess](#): This paper explores the relation between thinking and making in the context of chess. Historically, this relation has been examined through an intellectualist ...
- [Chess and science](#): A widely known research area is the effect of chess on the development of intelligence and on learning behaviours in children.
- [Teaching Chess History to Students in Natural Sciences: How to Do ...](#): A course for intermediate to advanced chess enthusiasts and aspiring scientists was designed and taught in a condensed form to a group of K-12 students.
- [HEXT Workshop Empowers Students in Synchrotron Techniques](#): The HEXT workshop equips students to actively participate in the CHESS user community through a blend of educational lectures, interactive demonstrations, and ...
- [Compilation Of Chess And Education Research Studies](#): This longitudinal study in Alabama concluded that chess improved test scores and excitement about coming to school, more so in the lower grades.

How Was This Done?

Generated by [Michael L. Thompson](#) with OpenAI’s GPT-4 (gpt-4o).

- **Python-based Jupyter Lab Notebook:** The contents of this document were generated through coded prompting of **OpenAI's GPT-4** using the Python package **`instructor`** by Jason Liu.
 - Input: the text string “Is a new science of chess emerging?”.
 - Output: this report as an R Markdown text file.
- **GPT-4 Plan Generation:** GPT-4 autonomously generated the query plan (using code based off of an **`instructor`** example).
- **GPT-4 Plan Execution:** GPT-4 then autonomously executed the plan, which involved the following:
 - writing search queries and initiating calls to **Serper (Google Search API)** for searching,
 - generating responses to the questions in the plan using the searches as context, and
 - creating all text in the Outline, Summary, and Sub-Propositions sections.
- **Python Report Generation:** The Python code then consolidated GPT-4 responses into an R Markdown text file.
- **Manual Rendering:** Manually, this section was written, the Query Plan Outline was re-formatted, and, via **RStudio**, the PDF document was rendered. A few miscellaneous manual formatting corrections were also done. No other content was manually generated or edited.