

Biohacking, AI and Longevity in Transformative Wellness Strategies

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Abstract --The intersection of longevity research, biohacking, and artificial intelligence represents a novel approach to human wellness in the quickly changing fields of healthcare and human performance. By going beyond conventional medical paradigms, this creative strategy positions technology as a game-changing collaborator in the optimization of human health. We are on the brink of a new age in human performance and longevity by skillfully fusing biohacking principles, artificial intelligence, and cutting-edge wellness techniques. Healthcare in the future will focus on anticipating, preventing, and continuously maximizing human potential to avoid illness at the first place. This overview examines the crucial nexus between these fields, emphasizing a revolutionary approach that goes beyond conventional medical perspectives to provide a wellness-focused, holistic approach to health.

Keywords: Telehealth services, Digital wellness platforms, Artificial intelligence, Biohacking,

I. INTRODUCTION

The relationship between longevity, artificial intelligence (AI), and biohacking is becoming more and more important in the pursuit of improved wellness. In the current times, individuals are now more equipped than ever to take charge of their lifespan and general well-being because to technological breakthroughs and a growing awareness of health and wellness. Enhancing wellbeing in today's society is greatly aided by biohacking, a phrase that refers to a broad range of activities intended to maximize performance and health. Biohacking provides creative ways to enhance mental, emotional, and physical well-being as people take a more active approach to their health.

A proactive approach to health improvement, biohacking encourages people to play with their biology in a variety of ways, from cutting-edge technologies like genetic testing and nootropics to dietary changes and exercise routines. Individualized approaches to health are emphasized by biohacking, which enables people to customize their wellness plans according to their own preferences and data. People can track a number of health indicators, including heart rate, sleep habits, and physical activity levels, by using wearable technology and health-tracking apps. Through the utilization of data, users are able to pinpoint regions in need of development and make well-informed lifestyle decisions.

Through tracking, for example, a person may find that modifying their daily forming habits or cutting back on caffeine improves the quality of their sleep. Users are empowered by these insights to make adjustments that immediately improve their general well-being. The biohacking movement empowers people to take control of their health outcomes by emphasizing personal empowerment and self-experimentation.

It is anticipated that biohacking will gain popularity in 2025 as more people look for individualized ways to improve their mental and physical health. Through the integration of biohacking methods with AI-powered insights, people are empowered with the ability to adjust their health plans in real time depending on feedback and data. This collaboration improves the efficacy of wellness programs in addition to promoting a better awareness of one's body.

In 2025, the significance of wellbeing cannot be emphasized enough. Wellness programs are becoming more popular in a variety of industries as society becomes more aware of the connection between mental, emotional, and physical health and overall quality of life. Businesses are spending money on employee wellness initiatives that use biohacking techniques and AI-powered health evaluations to encourage healthier living.

Nevertheless, it is imperative to acknowledge people now have easy access to healthcare resources because to the growth of telehealth services and digital wellness platforms. These platforms frequently use AI algorithms to provide tailored advice on stress management, exercise, diet, and sleep hygiene which are crucial elements of overall wellness.

II. ARTIFICIAL INTELLIGENCE (AI) CONTRIBUTION TO LONGEVITY

The way we think about longevity and health is being completely transformed by artificial intelligence. AI systems may evaluate health metrics and produce individualized insights by utilizing enormous volumes of data from multiple sources, such as wearable technology, medical records, and lifestyle surveys. Predictive systems, for example, can determine life expectancy by tracking a wide range of variables, including

age, weight, nutrition, degree of physical activity, and genetic traits in real time.

One such example is a prediction system bearing patent application number US20230187041¹ that assesses each person’s health profile by using neural networks that have been trained on large datasets (see Fig. 1). The modules of the invention enable users to make well-informed decisions regarding their health by spotting trends that could either positively or negatively affect life expectancy. The patent further discloses a multi-module prediction system that uses an innovative approach to evaluate life expectancy and other health characteristics. In operation, real-time data monitoring and sophisticated neural network algorithms are combined in the system to deliver individualized health evaluations. By utilizing information from wearable technology, medical records, and user inputs, the system seeks to improve the predicted accuracy of life expectancy and personal health concerns. Further, by providing insights into personal health risks derived from in-depth data analysis, the system tackles important issues in personalized healthcare.

The prediction system encompasses five interconnected modules, each designed to address specific aspects of comprehensive health assessment (see Fig.1). A monitoring module serves as the primary data acquisition interface, systematically capturing a comprehensive array of health parameters. These parameters are selected from anthropometric measurements (e.g., height, and weight), demographic characteristics (e.g., age, gender), nutritional status, levels of physical activity and environmental contextual factors. The data sources for this module are multifaceted, encompassing electronic medical records, data retrieved from wearable technological devices, self-reported survey instruments and standardized health questionnaires. The second module is the assessment module utilizing a sophisticated neural network trained on extensive, diverse datasets, and the assessment module is configured to perform sophisticated analysis of collected health parameters. The neural network’s architecture is dynamically adaptive, capable of recalibrating its predictive models based on individual data inputs, thereby enhancing personalization and predictive accuracy.

The third module is an evaluation module employing a multi-stage approach to comprehensive data analysis which includes a first stage evaluation, a second stage evaluation and a third stage evaluation. The first stage evaluation performs instantaneous real-time data analysis, the second stage evaluation performs retrospective historical data trend identification and the third stage evaluation performs advanced pattern recognition to elucidate complex relationships between life events and health trajectories. The fourth module is a generation module

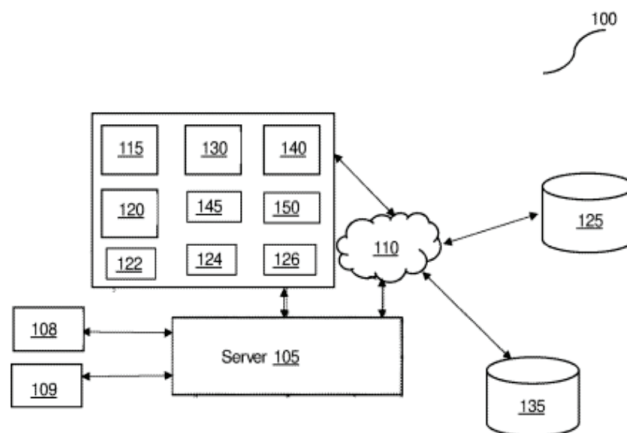


Figure 1. Block diagram illustrating a prediction system to assess life expectancy and multiple health parameter factors (photograph from the patent application).

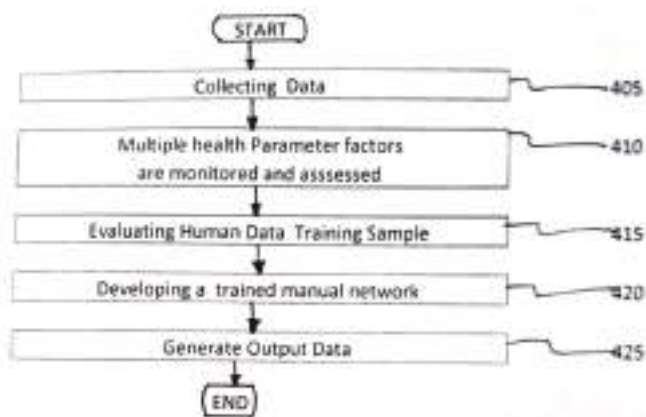


Figure 2. Illustrates a flowchart of a method for assessing life expectancy (photograph from the patent application).

generating refined output data specifically related to individual health assessment factors, with direct correlation to life expectancy prediction metrics.

An artificial intelligence engine module performs two critical functions of structuring individual health datasets into comprehensive user profiles and generating probabilistic disease risk reports with personalized preventative recommendations. The methodology of data collection protocol health parameter acquisition leverages multiple technological platforms, with particular emphasis on wearable devices capable of continuous monitoring of physiological indicators such as heart rate variability and blood pressure. In practice, the neural network’s training methodology (see Fig. 2) incorporates advanced optimization algorithms like Stochastic gradient descent, and adaptive moment estimation optimization. These algorithms enable robust analysis of both historical longitudinal data and contemporaneous real-time health information.

¹ <https://patents.google.com/patent/US20230187041A1/en?q=17%2f923%2c678>

The present system generates a holistic health assessment by integrating multidimensional input parameters, comprehensively evaluating both positive and negative influences on potential life expectancy. The integrated AI engine systematically retrieves and analyzes parameters indicative of potential disease development, facilitating early detection and implementing proactive intervention strategies.

Implementation of the prediction system demonstrates significant advancements in life expectancy prognostication through personalized health data analysis. The strategic integration of smart wearable technologies substantially enhances real-time monitoring capabilities, enabling timely, and individualized health interventions. This research underscores the critical importance of personalized healthcare solutions in refining life expectancy prediction methodologies. By synthesizing advanced machine learning techniques with comprehensive, multimodal data analysis, the proposed system effectively addresses existing limitations in traditional health assessment approaches. As AI develops further, its capacity to offer personalized suggestions for lifestyle modifications will be essential to fostering longevity.

The convergence of biohacking, AI, and longevity research represents more than a technological advancement and signifies a fundamental reimagining of human health management. Although biohacking and artificial intelligence have advanced, there are still obstacles in the way of reaching ideal longevity. Progress can be hampered by problems like inequities in healthcare access, technology accessibility, and false information regarding health practices. To overcome these obstacles, cooperation across stakeholders from technology developers to healthcare providers is essential for progress. We can enable people from diverse backgrounds to prioritize their wellness journey by creating an open atmosphere that encourages education on longevity practices and guarantees access to cutting-edge technologies.

Longevity in 2025 will be greatly influenced by the incorporation of AI, biohacking, and a wellness-focused mindset as we traverse the complexity of contemporary health. People can actively work toward improved well-being and longer lifespans by utilizing technology's potential and placing

an emphasis on personal empowerment through biohacking techniques. Putting wellness first will continue to be at the center of our group's efforts to create healthier futures as this environment changes. Incorporating technology into everyday routines to encourage individualized health optimization and increase community involvement will lead to psychological well-being to improve wellness.



Advocate Prity Khastgir is a registered patent attorney in India working in cyber laws, global intellectual property laws, international commercial mediator for commercial disputes, facilitating human capacity building for youth globally and active in working group of international telecommunication policies and advising conglomerates across seven continents to combat cyber crime in online space with over 18 years of work experience.

She is an international Speaker speaking on strategic aspects of amalgamating technology, cyber law & business in Industry 4.0 Spectrum Era. Active speaker at tech global conferences & ITU Regulatory Workshops & Initiatives on SDGs & CSIRTs. Seasoned Software and Hardware Patent Strategist with expertise in IP portfolio research which she deploys in writing smart contracts, cross-border tech transactions, writing cross-licensing agreements to provide win-win approach for product clearance, FTO opinion, and obviate patent infringement & invalidity. She represented the Indian delegation at CyberDrill event held at KL, Malaysia in 2019.

Prity has been instrumental in facilitating fostering partnerships with academia and ICTs, government agencies, to stimulate social innovation activities that empower communities to benefit from the digital revolution Industry 4.0. She is recognized as a seasoned software and hardware patent strategist. Her innovative approach extends to writing smart contracts, facilitating cross-border tech transactions, and structuring cross-licensing agreements. This strategic acumen ensures a win-win approach for clients, offering comprehensive solutions for product clearance, freedom-to-operate opinions, and mitigating risks of patent infringement and invalidity.

A notable facet of Prity's career lies in her pivotal role as an active advocate in the ITU working group, where she contributes to shaping global telecommunication policies. Her involvement in ITU Regulatory Workshops and initiatives on SDGs and Computer Security Incident Response Teams reflects her commitment to driving positive change in the digital realm. Prity Khastgir is not only an accomplished legal professional but also an entrepreneur at heart. As the founder of Tech Corp International Strategist, a global intellectual property consultancy firm based in Aerocity, New Delhi, she spearheads initiatives that bridge the gap between technology, law, and business. Of notable mention is Prity's groundbreaking work in the realm of 6G Edge technology, where she stands as an inventor.