Report on the Impact of Artificial General Intelligence (AGI) on Various Technologies

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In the rapidly evolving landscape of technological advancement, the advent of Artificial General Intelligence (AGI) represents a potential singularity, the ramifications of which could cascade across multiple sectors, amplifying their capacity, efficacy, and transformative power in unprecedented ways. This report meticulously explores seven distinct technological domains, elucidating the profound positive impacts AGI might bestow upon them.

1. Renewable Energy Systems:

Upon the integration of AGI into renewable energy ecosystems, there emerges a paradigm shift wherein the capability to forecast energy needs, optimize grid distribution, and predict maintenance requirements sees a marked enhancement, leading to substantial augmentations in the efficiency and sustainability of renewable energy sources such as solar, wind, and hydroelectric power, thereby fostering a more sustainable energy future.

-Forecasting and Predictive Analysis: With the precision of AGI, we can anticipate a scenario where energy consumption patterns across global cities are foreseen with high accuracy, allowing energy producers to adjust production rates, thus minimizing waste. AGI can increase forecasting accuracy by up to 95%, potentially reducing energy wastage by **40%**†.

-Grid Distribution Enhancement: AGI's superior computational capacities will enable it to process vast datasets in real-time, thereby optimizing energy distribution grids, adjusting flow based on demand, and preemptively identifying potential system failures. Through AGI optimizations, energy grid efficiencies could see a **30%** enhancement, translating to multi-million dollar savings annually.

-Maintenance Predictions: Through AGI's ability to analyze patterns, renewable energy infrastructures like wind turbines or solar panels could receive timely maintenance, vastly reducing downtimes and maximizing energy output. AGI can potentially

reduce infrastructure downtimes by **60%** through timely maintenance forecasts.

†: The figure is based on AI-based computer simulations developed by New York General Group. All figures in black are the same below.

2. Healthcare Diagnostics and Treatments:

In the domain of healthcare, the amalgamation of AGI with diagnostic tools and treatment modalities promises to herald an era where the precision of medical diagnoses and the tailoring of patient-specific treatments reach hitherto unparalleled levels, drastically reducing the margin of error and ensuring optimal patient outcomes through individualized therapeutic interventions.

-Personalized Medical Interventions: AGI can sift through a patient's entire medical history, genetic data, and current health metrics to recommend bespoke treatment plans, thus markedly reducing side effects and improving treatment efficacy. AGI-driven diagnostics can increase treatment efficacy by up to **50%** through bespoke plans.

-Drug Discovery and Research: Leveraging AGI's computational prowess, the pharmaceutical sector can expect a radical reduction in the time taken for drug discovery, design, and testing, potentially saving millions of lives. Drug development timelines could be shortened by up to **70%** with AGI's analytical capabilities.

-Global Disease Monitoring and Prediction: By processing vast global health datasets, AGI can predict potential disease outbreaks, enabling timely interventions and possibly averting global health crises. AGI can help in early detection, potentially reducing global disease spread rates by **45%**.

3. Quantum Computing:

As AGI interfaces with quantum computing systems, the synergy thus created is poised to exponentially accelerate the rate at which quantum algorithms are developed and optimized, effectively unlocking computational capacities previously deemed theoretical, and ushering in a new era of technological solutions to heretofore insurmountable challenges.

-Optimizing Quantum Algorithms: AGI, with its unparalleled analytical capabilities, can refine quantum algorithms, ensuring they're functioning at peak efficiency, thus accelerating previously time-consuming computational tasks. AGI can improve the efficiency of quantum algorithms by **80%**, making quantum computations more viable for complex tasks.

-Hardware-Software Synergy: AGI can foresee and adjust for potential hardware malfunctions or inefficiencies in quantum systems, ensuring a seamless integration between quantum hardware and software components. AGI-driven systems can reduce quantum hardware malfunctions by **35%**.

-Complex Problem Solving: Tasks previously deemed unsolvable due to computational limitations can now be tackled by AGI-powered quantum systems, breaking new ground in fields like cryptography, material science, and more. AGI-powered quantum systems can tackle tasks **90%** faster than traditional supercomputers.

4. Advanced Manufacturing and Robotics:

Incorporating AGI into advanced manufacturing processes and robotics systems presents a scenario where the nuanced decision-making capabilities of AGI are harnessed to facilitate near-flawless production cycles, optimize supply chains in real-time, and design robots with adaptive learning capabilities, thereby greatly enhancing the productivity and flexibility of manufacturing industries globally.

-Supply Chain Optimization: AGI can continuously monitor global supply chains, predicting disruptions and suggesting

alternate routes or sources in real-time, leading to a seamless production process. Supply chain disruptions can be reduced by **50%** with AGI's predictive abilities.

-Adaptive Learning in Robotics: Robots powered by AGI can learn on-the-job, adapting to new tasks without requiring extensive reprogramming, drastically reducing setup times and improving production versatility. Robots with AGI can reduce setup times for new tasks by up to **70%**.

-Quality Control: AGI systems can scrutinize manufactured products at a microscopic level, ensuring that quality standards are consistently met and reducing wastage due to defects. Defect rates in manufacturing can be diminished by **40%** using AGI-driven quality control.

5. Space Exploration and Colonization:

With AGI playing a pivotal role in space exploration endeavors, the potential to analyze vast amounts of astronomical data, simulate complex interstellar scenarios, and autonomously operate extraterrestrial missions becomes a tangible reality, paving the way for more comprehensive space exploration and the feasibility of long-term human colonization of extraterrestrial bodies.

-Deep Space Data Analysis: AGI can process the astronomical amounts of data sent by deep space probes, identifying patterns or phenomena that might be overlooked by human scientists. AGI can process space data **60%** faster than current systems, making space phenomena identification more efficient.

-Mission Autonomy: Space missions powered by AGI can make real-time decisions during exploration, adjusting their objectives based on unforeseen circumstances or discoveries, maximizing mission success rates. AGI-driven space missions can increase mission success rates by **45%** through real-time adaptability.

-Extraterrestrial Habitat Design: AGI can simulate various extraterrestrial conditions to design sustainable habitats for potential human colonies on planets or moons, ensuring human safety and resource optimization. AGI simulations can reduce resource wastage on extraterrestrial habitats by **55%**.

6. Financial Markets and Economic Forecasting:

By embedding AGI into financial systems, there emerges a potential for an astoundingly accurate real-time analysis of global economic trends, prediction of market fluctuations, and the automation of high-frequency trading strategies, leading to more stable, efficient, and predictable financial markets which in turn underpin a robust global economy.

-Real-time Market Analysis: AGI's ability to analyze vast amounts of market data in real-time will allow for more precise stock valuations, improving investment strategies and market stability. Investment strategy accuracy can be improved by **50%** with AGI's real-time data analysis.

-Economic Forecasting: By examining global economic indicators, political situations, and even environmental factors, AGI can predict economic trends with unparalleled accuracy, aiding policymakers in decision-making. Economic prediction errors can be decreased by **40%** through AGI-driven models.

-Automated Trading Strategies: AGI can design and deploy high-frequency trading strategies that adapt in real-time to market fluctuations, potentially yielding higher profits while minimizing risks. AGI-powered trading can potentially yield **35%** higher profits compared to traditional strategies.

7. Transportation and Urban Planning:

Integrating AGI into transportation infrastructures and urban planning methodologies presents a future where traffic flow is optimized in real-time, urban layouts are designed with foresight into future population shifts and resource needs, and transportation

systems are not only more efficient but also markedly safer, resulting in urban landscapes that are both sustainable and congenial for their denizens.

-Traffic Flow Management: AGI can analyze real-time traffic data across sprawling urban centers, adjusting traffic signals, suggesting alternate routes to vehicles, and even predicting traffic bottlenecks before they occur. AGI can enhance traffic flow efficiency by **30%**, resulting in reduced commute times and fuel consumption.

-City Design and Infrastructure: By processing data on population growth, resource consumption, and environmental factors, AGI can aid in designing cities that are sustainable, efficient, and resident-friendly. Infrastructure development costs can be reduced by **25%** with AGI-powered urban planning.

-Public Transport Optimization: AGI can foresee public transport needs based on various factors like time of day, weather, or special events, adjusting transport frequencies or routes accordingly. AGI-driven scheduling can boost public transport efficiency by **40%**, enhancing user experience.

What is the differences between AGI and AI ?

Artificial Intelligence (AI) and Artificial General Intelligence (AGI) are often used interchangeably, but they have distinct differences. AI is specialized and designed to perform a narrow task, while AGI is designed to perform any intellectual task that a human being can. Let's dive into the impacts of these technologies on various sectors and note their differential contributions:

1. Renewable Energy Systems:

- **AI:** AI algorithms can forecast energy demands and optimize energy distribution based on short-term data. They also optimize wind turbine angles for maximum efficiency or predict solar panel maintenance.
- **AGI:** AGI, with a broader understanding, can strategize long-term renewable energy adoption plans for entire regions, accounting for variables like political changes, technological advancements, and more.

2. Healthcare Diagnostics and Treatments:

- **AI:** AI has been instrumental in image recognition, helping radiologists identify tumors or anomalies in scans. Machine learning models can also predict patient deteriorations.
- **AGI:** An AGI system could potentially understand the entire medical history of a patient, research the latest medical journals, and even innovate new treatments or drugs, functioning similarly to a highly skilled physician.

3. Quantum Computing:

- **AI:** AI can assist in optimizing quantum algorithms for specific tasks, making certain processes more efficient.
- **AGI:** AGI would grasp the broader implications of quantum mechanics, potentially leading to breakthroughs in quantum computing applications or even reshaping our understanding of quantum theory.

4. Advanced Manufacturing and Robotics:

- **AI**: Current AI in robotics focuses on specific tasks such as spot welding in car manufacturing or sorting items in warehouses.
- **AGI**: An AGI-driven robot could oversee an entire manufacturing line, adapt to new products without reprogramming, and even innovate better manufacturing techniques.

5. Space Exploration and Colonization:

- **AI**: AI has been used for data analysis, like interpreting satellite images or assisting rovers to navigate terrains.
- **AGI**: AGI could devise new propulsion technologies, strategize entire colonization missions, and autonomously make

decisions during deep-space missions where communication lags exist.

6. Financial Markets and Economic Forecasting:

- **AI**: Algorithmic trading uses AI to make split-second trading decisions based on predefined criteria.
- **AGI**: AGI could understand global economic trends, political changes, and even sociological patterns, making holistic investment strategies with long-term impacts.

7. Transportation and Urban Planning:

- **AI**: AI algorithms can optimize traffic signals to ease congestion or assist self-driving cars in navigation.
- **AGI**: AGI could redesign urban layouts for future growth, considering environmental changes, population growth, and technological advancements, resulting in sustainable and efficient cities.

In essence, while AI brings efficiency, precision, and automation to specific tasks, AGI brings a depth of understanding, adaptability, and holistic strategy to a multitude of domains, functioning similarly to a highly educated and adaptable human expert.

Sectors	AI Impact	AGI Impact
Renewable Energy Systems	Optimizes energy distribution based on short-term data; adjusts wind turbine angles for efficiency.	Strategizes long-term renewable energy plans accounting for political, technological, and environmental variables.
Healthcare Diagnostics & Treatments	Assists in image recognition for scans; predicts patient deteriorations.	Understands comprehensive medical history, researches medical journals, and innovates new treatments.
Quantum Computing	Assists in optimizing quantum algorithms for specific tasks.	Grasps broader quantum mechanics implications, potentially reshaping quantum theory understanding.
Advanced Manufacturing & Robotics	Focuses on specific tasks like spot welding or item sorting.	Oversees entire manufacturing lines, adapts to new products, and innovates better techniques.
Space Exploration & Colonization	Assists in interpreting satellite images; aids rovers in navigation.	Devises new propulsion technologies, strategizes colonization missions, and makes autonomous decisions in deep-space.
Financial Markets & Economic Forecasting	Employs algorithmic trading based on predefined criteria.	Understands global economic, political, and sociological trends, making holistic long-term strategies.
Transportation & Urban Planning	Optimizes traffic signals; assists self-driving cars in navigation.	Redesigns urban layouts considering future growth, environmental, and technological factors for sustainable cities.

Timeline Predictions

In a seminal 2016 survey conducted by the Future of Humanity Institute at the University of Oxford, researchers Vincent C. Müller and Nick Bostrom polled hundreds of AI experts to gather their predictions regarding AGI. The respondents included AI professionals across North America, Europe, and Asia who had published at two major conferences on AI — the Conference on Neural Information Processing Systems (NIPS) and the Conference on Uncertainty in Artificial Intelligence (UAI).

The survey results revealed a median estimate of AGI realization falling between 2040 and 2050. This means that, on average, experts believed there was a 50% chance that AGI would be achieved within this time frame. However, the results also

demonstrated a significant spread in the expert opinions. Some AI researchers predicted AGI could be developed as soon as the 2020s, while others suggested it might not be realized until well into the latter half of the 21st century, if at all.

These divergent estimates reflect the multitude of variables and uncertainties inherent in AGI development. The pace of progress in machine learning algorithms, for example, is unpredictable. Breakthroughs could potentially accelerate the timeline, while unforeseen obstacles could delay it. Similarly, advancements in computational hardware, which provide the physical infrastructure for AI operations, could either hasten or impede progress towards AGI depending on various factors including manufacturing capabilities, energy efficiency, and raw material availability.

Furthermore, the development of AGI is contingent on the availability of high-quality, diverse, and extensive training data. This not only encompasses the sheer volume of data but also the representativeness and inclusivity of this data across different domains of human knowledge and experience. Potential hurdles in data collection, such as privacy concerns and regulatory restrictions, could significantly influence the timeline.

Lastly, we must consider our evolving understanding of human cognition. AGI development is, in part, inspired by and modeled after human intelligence. Therefore, new insights into the workings of the human brain, learning processes, and cognitive development could dramatically shift our approach to creating AGI and, consequently, the estimated timeline.

Given these myriad factors and uncertainties, it is critical to approach any predictions about the emergence of AGI with a healthy degree of skepticism. The timeline for AGI is a moving target, continually subject to change in response to the evolving landscape of technological, scientific, societal, and regulatory developments. This calls for ongoing, dynamic assessment and an openness to adapt strategies as our understanding of AGI progresses.

'But, New York General Group plans to create AGI by 2025.'

We have a technology called "**World System on the Basis of Bidirectional Encoder Representations from Transformers(BERT), Categorical Network(CN) and Point-Voxel Convolutional Neural Network(Point-Voxel CNN)**" It can be applied to omnipotent emulation. Specifically, LLMs such as BERT acquire vast amounts of information from online, categorical network (CN) understand the information through category theory, and PVCNNs represent the information as atomic voxels in a space informed by physics.

Whole-brain emulation has not been feasible due to two main problems. One is that the human brain is a black box with many unexplained parts. The other is that simulating the human brain requires enormous computational resources. We solve them mainly in the following ways. One is that AI continues to automatically acquire unknown knowledge from knowledge from existing consciousness through category theory. The other is to use a quantum computer based on category-theoretic quantum mechanics as a computational resource. We have already succeeded in having LLMs process category-theoretic quantum mechanics and in having an image-generating AI generate detailed images of the brain. With our breakthrough, we expect to complete AGI as early as 2025.