Power Plant Energy Predictions.

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**Author’s Note**

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Abstract

Since the Twentieth Century, Electric Power has been the source of advancement of Human Technology. It has been a basic need for the past 100 years. The Power Plants of today are significantly more efficient than ever, like the Combined Cycle Power Plants which take advantage of the heat exhaust generated by their predecessor designs and reuse it to generate even more electricity. The level of efficiency is so high that we can now measure the effects of the environment on the productivity of the plant. Measuring the variance in the output of an electric plant is essential not only for the workers of the facility, but to the investors, the end users, and to the Economy. This paper explores how linear regression can be used to predict the output of a power plant based off of ambient temperature, atmospheric pressure, and other environment variables automatically with a prediction model.

*Keywords*:Artificial Intelligence, electric power, linear regression, profitability

**Background.**

Many successful movie franchises depict AI surpassing humans, leading to dystopian futures. While reality can outpace fiction, it doesn't have to follow the same path. AI is already integrated into our daily lives through virtual assistants like Siri and Alexa, generative tools like ChatGPT and DALL-E, self-driving cars, chatbots handling customer inquiries on your bank’s website, and many other not so visible applications. This rapid adoption has sparked concerns about job security, exemplified by the 2023 actors and writers strike, where industry professionals demanded safeguards against AI's potential job displacement. But does AI use in companies inevitably lead to job loss for profitability's sake? In this article, we'll explore a scenario where company X leverages AI to automate tasks, retain its workforce, boost profitability, and expand its client base.

## Definition of AI

There are a few definitions for AI, as well as different categories of AI, such as Narrow Artificial Intelligence and General Artificial Intelligence. While Narrow AI is an algorithm or model designed to handle a specific task with a limited scope (Kevin et al., 2019), General AI, also known as Artificial General Intelligence (AGI) is an AI system with cognitive capabilities capable of solving problems (Ryan, 2020). In this article, I’ll be focusing on Narrow AI, for which I’ll use this definition: “A technology-enabled system for evaluating real-time service scenarios using data collected from digital and/or physical sources in order to provide personalized recommendations, alternatives, and solutions to customers’ enquiries or problems, even very complex ones .” (Xu et al., 2020).

# The Case Study.

## Company X.

Let's define our case study: Company X. This company offers specialized services by generating insights for clients through data analytics, proprietary software, and a unique methodology developed over decades of research. Company X has not only survived economic crises but has also thrived in difficult economic times, as their clients increasingly rely on its insights during those critical decision-making times. The driving force behind these insights? Company X's employees—whom we'll call Human Consultants—who use their expertise, problem-solving skills, and soft skills to understand client needs, build strong relationships, and identify hidden problems.

Now, suppose Company X invests in an AI department to create an AI model, the "AI Consultant," capable of learning the proprietary methodology, accessing data, and generating insights comparable to those produced by Human Consultants. Initially, the AI Consultant requires major adjustments to meet expectations, so there’s little immediate concern. However, once it can produce insights with the same accuracy as Human Consultants, but in a significant fraction of the time—potentially for all U.S. markets and clients simultaneously—delivered to the clients automatically or on-demand, and for only a tiny fraction of the cost, wouldn’t Company X ask itself the question: will all Human Consultants still be necessary?

At this stage, Human Consultants might seem obsolete, unable to compete with their virtual counterpart. However, there's a crucial factor to consider from the client's perspective: trust. While AI may be reliable, timely, and efficient, it lacks the ability to build trusting relationships. As Ryan (2020) notes, "Trusting relationships are those between trusted parties, whereas AI is a systematic group of techniques that enable machines to fulfill particular computing tasks." The AI Consultant can provide insights but cannot establish the relationships necessary to build client trust.

Client perception may favor human interaction over relying solely on an AI Consultant. For example, customers often prefer human customer service over AI bots when they perceive the task or question to be too complex for the bot (Xu et al., 2020). While AI can generate insights, maintaining relationships and trust still requires a human touch, especially when clients are looking for critical insights. So, if human interaction is still needed, why would companies spend resources in the AI Consultant in the first place? Is it worth it?

## The Analysis.

Let’s put things in perspective. The AI Consultant excels in handling complex and tedious tasks, but Human Consultants have the upper hand in building trust and long-lasting client relationships. Now, consider this: if Human Consultants no longer needed to perform analyses, how could they use that extra time? Their strength lies in cultivating trust, so wouldn't it make sense to focus on expanding the company's client base? When it’s time to deliver analysis to these new clients, the AI Consultant could handle the technical work. The AI Consultant doesn’t need breaks, overtime, or rest—it can work through the night, allowing Human Consultants to maintain work-life balance while still meeting every client deadline, old and new clients alike.

# Conclusion

Company X stands to benefit from both AI and Human Consultants. The AI Consultant can handle the technical work, enabling Human Consultants to focus on building strong client relationships and presenting insights. This approach would allow Company X to expand its client base, retain its workforce, and boost profitability simultaneously.

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