

About Us

**Jemin.ai make digital twins** that model and understand the real world in fine detail, because we realize that everything and everyone is unique. Since 1988, our AI experts have been building digital twins of the real world using neural network Artificial Intelligence. This example is based on work we did for a chain of sandwich stores.

Business Analysis

**Some business problems are simple to state** but hard to solve. How many avocado and bacon sandwiches should I make today? By building a digital twin of the product sales, it is possible to understand what drives it. An empty shelf is a lots potential sale. Overstock is tied up capital at best and lost investment in the case of perishable goods.

Data Design

**As with all digital twinning**, the first task is to frame the question so artificial intelligence can answer it. This means identifying how data can be broken down into comparable units and understanding what drives the differences between them. In the sandwich stores in this example, the comparable units are daily sales of each product line. The performance measure is units sold. Driving factors are then proposed, which requires human rather artificial intelligence – day of week, time of year, weather, alternate product availability. A data table is then designed with each row being daily sales of each product line and the columns being the units sold and driving factors.

Data Sourcing

**Data must be combined from various sources.** Some, such as product sales and product mix, will be available in-house, but not necessarily obviously. For sandwich sales, the best measure was the proportion of sandwiches that had sold by 12.30, since once the shelf is empty, the data point is stuck at zero. Other data, such as temperature and precipitation, must be obtained from external sources.

Cleaning & Filling

**Data is rarely clean on arrival.** Some will be missing, but can be interpolated or even estimated as a digital twinning process in its own right. Data will also be subject to errors, noise and known exceptional circumstances. While artificial intelligence techniques can identify many exceptions, charting the data and eyeballing it is often the easiest solution.

Data Mapping

**The last data pre-processing stage is mapping.** Text data such as product type must be converted to categories. In this example, a key insight was to examine the weather over several days. If it was sunny yesterday but rainy today, sales dropped. If it had been raining for days, sales recovered.

Build Twin

**Finally**, the AI is ready to do its work. Our neural network algorithms, which we have perfected over three decades, excel at extracting insights from real-world data, no matter how ugly and ill-conditioned. This kind of application is often iterative. When the data fits well in some places but not others, it points to other driving factors that should be considered.

Delivering Results

**Once the digital twin is built**, it can be interrogated: In this example, it is used to obtain daily forecasts of sales on which budgets and orders can be based. The twin can be exported as a C++ or Excel function for embedding into existing management systems.

Return on Investment

Typical duration  
**5 days**

Daily rate  
**\$2K**

Total  
**\$10K**

Typical result  
**20% waste reduction**

Daily impact  
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Contact

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