



## Automating Life Insurance Application Underwriting Decision Using Artificial Intelligence Technologies

Xen.AI's Artificial Intelligence based predictive modeling state-of-the-art approach combines feature engineering and deep learning algorithms to enable the insurance companies to automate the life insurance application processing. We built a model that is 12% more effective at predicting the prospects underwriting decision than the existing techniques.

### Industry

Financial Services: Insurance

### Business Needs

Life insurance application processing is quite costly, time consuming and the insurance companies are losing prospects to the competitors.

### Solutions

Xen.AI developed an AI based predictive model that scores and ranks life insurance applications to aid the underwriting processors to minimize the risk of approving high-risk applicants during underwriting process and automate the decision.

### Benefits

Increased the overall application processing of risk groups by 12% and risk groups of 6,7 and 8 by 29% identified by the model. Increased the efficiency of under writing resources.

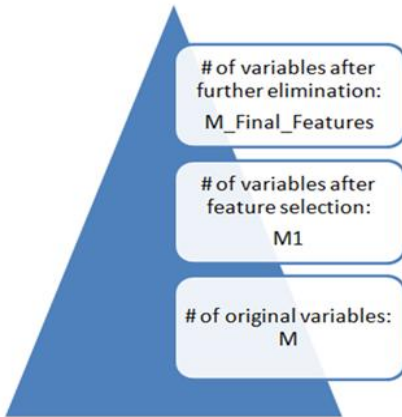
### The Challenge

Life insurance application processing is quite costly, time consuming, and the insurance companies are losing prospects to the competitors. The underwriting decision involves the accurate estimate of prospect's life expectancy based on personnel, occupational, lifestyle, social, geo, and health information supplied during the application. In some cases, the prospect's health related information warrants additional medical tests performed and this causes significant delay in underwriting decision and cost to the provider. Advances in sharing of health-related information, coupled with advanced machine learning (Artificial Intelligence and Deep learning) will help in automating underwriting process by expediting the underwriting decision.

### The Solution

Xen.AI combined the custom feature engineering and Deep Learning algorithms to create an Artificial Intelligence based Predictive Modeling solution. Our Deep Learning solution creates an analytics-based approach that leverages prospect's personnel, medical, lifestyle and behavioral data to automate the life insurance application processing.

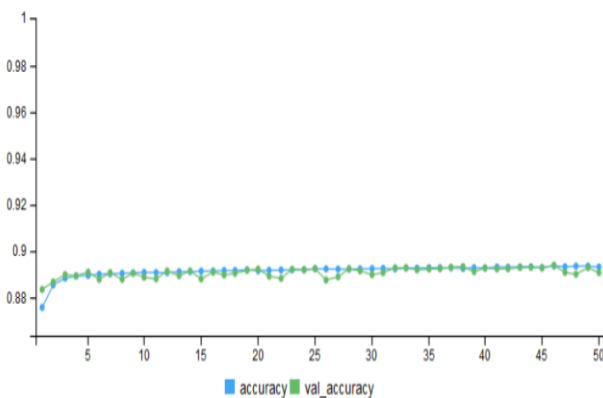
## Data Cleaning and Feature Engineering



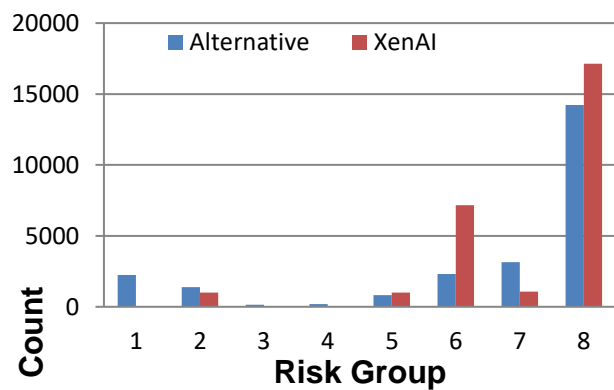
## Model Building Approach



## Cross Validation and Model Performance

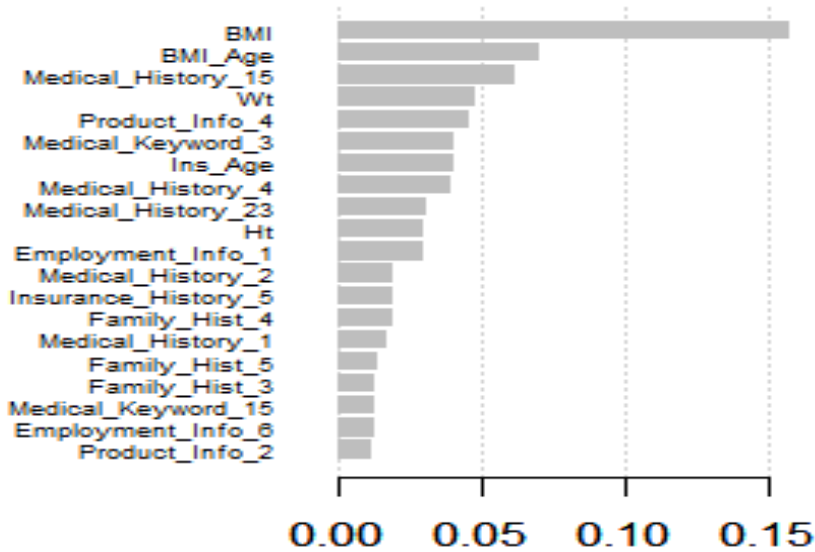


## Classification Performance by Risk Group



Xen.AI approach improves the **overall** prediction by **12%**, and risk group of 6,7 and 8 by **29%**.

## Variable of Importance



## The Results

Significant time and resources are required to approve the applications in life insurance under writing process, so it is important to generate decisions for the underwriting processors to minimize the risk of approving high-risk applicants and to automate the decision process. Xen.AI’s Artificial Intelligence based Predictive Model will help the service provider to understand the predictive power of the data points in the existing assessment and enable them to significantly streamline the process.

## Other Applications of Predictive Modeling Include

Predicting Fraud: Financial Account, Credit Card, Auto, Life, Disability Claim, Healthcare Insurance, Shipping Accounts and claims.

Predicting Churn: Financial Accounts, Telecommunication Customers.

Insurance: Lapse, surrender and churn in policies etc.

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