Know Your Customer: How to Eliminate Bots and Predict Customer Lifetime Value

About Assurance IQ
Assurance IQ is a direct-to-consumer platform that transforms the buying experience for individuals seeking personalized health and financial wellness solutions by giving them recommendations for personalized insurance plans tailored to their needs.

How does it work?

Rachel wants to shop a life insurance plan
She has to answer a questionnaire before getting a plan suited to her needs

An agent interacts with Rachel, giving her details about the plan recommended and to answer any question

Problem statement
How can we better focus resources on the experience of the real customers

Goal: Build rule system to block bots without effecting true customers
Challenge: No Labels, Constantly changing bot behavior, trade-offs between various bot detection tools (accuracy, cost, complexity)
Strategy: Develop combinations of rules and analyze effectiveness using profit based analysis with/without rule
Results: Rule to block bots while improving profit

<table>
<thead>
<tr>
<th>Rule</th>
<th>Visitors Blocked (%)</th>
<th>Total Profits (% change)</th>
<th>Profit per Visitor (% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-features rule</td>
<td>1.3%</td>
<td>+0.01%</td>
<td>+1.48%</td>
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Business Impact

~1K likely bots detected

+$10K increased monthly profit

+$1.1M increased annual revenue forecast

Next steps
- Full production implementation and evaluation
- Testing of blocking vs. challenging users
- Continued improvement and deployment of LTV models

A) Detect bots
B) Predict policy activation
C) Predict retention

Goal: Improve accuracy when predicting if a policy will be activated
Strategy: Enrich predictions using more features
Understand business features driving effectuation
Validate model performance against baseline
Results: Production model, improved performance, understanding of feature impact

Shap feature plot

AUC: +12%
Accuracy: +6%

Goal: Improve the current approach used to predict the retention
Strategy: We use a two-stage approach
Classify-then-Regress

Results: We were able to achieve strong out of sample performance predicting the number of months during which a policy will be retained given it was submitted

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