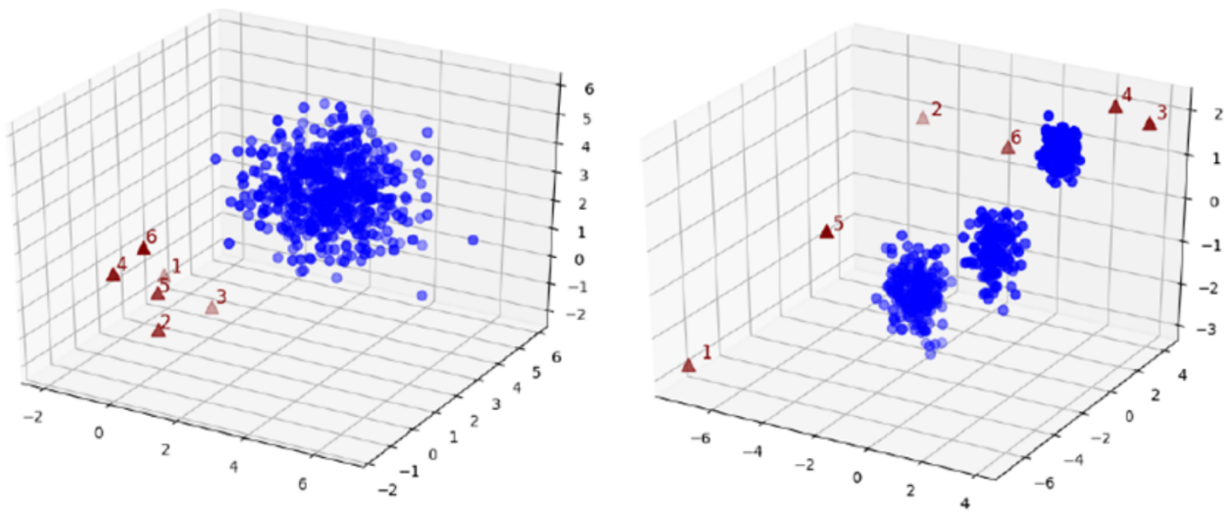


## Purpose

We seek to protect our business and partners programs by leveraging existing data to surface suspicious patterns. Currently, we review order activity manually. As our program offerings have grown, complexity is obscuring fraudulent signatures.

Instead, by analyzing our existing data with emerging algorithms we surface outliers that would previously go undetected. This provides a solution that can scale with program variety and sales growth.

Below is a visual of [rotation-based outlier detection](#):



Fortza by TDigital is a solution that supports the complex computing power necessary to systematically evaluate these patterns from multiple points of view, surfacing outliers we have previously been unaware of.

To compute this, we must provide Fortza our existing relevant data from the point of view of:

- the order,
- the agent,
- the dealer, and
- the program

In addition, Fortza requires a large export of our existing data, to train additional layers of models to detect PerfectVision-specific factors on items that raise suspicion.

To provide these models with relevant information, we combined our business' expert judgment on what makes an order suspicious. The below charts summarize our findings:

Names / Phone	Address	IP / Geolocation	Email Customer
Is the inputted order actually a real person?	Customer address changes by unit, not location	Multiple agents connecting sequentially from same location / ip / device	Excessive hotmail email accounts
Ensure customer is not duplicated across two different programs	Multiple orders exist for order where the address has been changed slightly to accentuate (Ave. Avenue St. Street)	Offshore call center without offshore agreement	Proton email / hide my email
Fictitious names (Tony Stark) - (Can we check off a log?)	Sequencial address (In Digital / Soho)	Domain name on blacklist	Differnet name in email from FirstLast
Generic or famous names (Jane Doe)	Duplicate addresses	Private IP	Patterned email address (LastFirst22)
Two first names (Ricky Bobby)	Physical address doesn't match shipping address (for self-install)	Offshore IP located through reporting?	Patterned / series email progression (LastFirst22..23..24)
Middle initial (in First or Last field)	Digital SOHO, same locations, same customer address	Known bad VPNs	Email address blacklist? (w/ names and associations)
First name only (Commercial - Tony's)		IP Does not match Geolocation	Can we at least verify emails somehow?
		+ Whitelisted location	
		+ Whitelisted IP	
What makes you suspicious of an order? (or less suspicious = +)			
Order Attribute	Sales Pattern	Agent Attribute	Dealer Attribute
Order is self-install	Groups of orders fall in unusually high-commission sales mix	Large quantity from a single login	Previous 'review' or 'flag' status in payment reviews
AI generated order (can we even tell?)	Large quantity from a single IP	Install to account average time (by # of days)	+ Total orders have low churn
Order fields are slightly modified from draft to placed sale (in order to go through?)	New dealer has extreme spike in sales	Average timeframe between install to activation (>14 days?)	Non-pay percentage (of Rep or Dealer)
Data was input faster than average	Outlier of a consistent sales mix	Average timeline from order to disconnection (< 3 days)	High churn percetnage
(Can we track time it takes to make order?)	Multiple orders entering with no proof of sale (excessive amounts)	Very little sales made over the course of a few years (<10 / month)	Call-in percentage is high
Program to program sudden change		Same day orders in locations outside door to door territory	Dealer has bad debt / debt balance
? outlier of time by buyflow per program and product		Agent movement to new dealer	Dealer has strong relationship with sales (typically precedes fraud)
? Short timeframe of the call from the pitch to placing the order		Sales rep on blacklist	Dealer was dormant, but suddenly reactivates
? Repeated orders over the course of multiple years			+ Dealer does events
			+ Dealer just started new program
			+ Door to Door Sales are strong
			+ Consistent Data
			Little contact w/ sales team (dealer or rep?)
			+ past notes from Sales in Activity log
			Dealer under 6 months (newer) with high sales volume
			Multiple dealers associated with single information or Salesforce search
			Multiple reps in Chuzo, but only one active/selling
			Sudden increase in payments in review (stairstepping plateaus of commissions)
			+ Dealer passed random recent quarterly audits
			+ Transparency w/ marketing
			+ White-listed dealer

To implement this detection, we must:

- Provide the Fortza API with the necessary information from our existing data, and
- provide a historical dataset to train our custom layers.

Below are the necessary requirements to move forward:

## Requirements List

I need the customer's first, last name, and address in Salesforce, so Fortza can tell us if:

- the customer is a real, live person
- the customer is duplicated across two different agents, programs, dealers, or orders

I need the customer's first and last name in Salesforce, so Fortza can determine if:

- it is a fictitious or celebrity name (Tony Stark)
- the customer's name on the order is a generic or famous name (Jane Doe)
- the customer's name has two first names (Ricky Bobby)
- a middle initial in either their First or Last name,
- the order only has a first name in it. (Tony's)

I need the customer's address in Salesforce, so Fortza can determine if:

- the customer address changes by unit, but not location,
- multiple addresses have been slightly changed to gain submission in our system (Ave. to Avenue or St. to Street)
- orders have sequential addresses input – (Digital / Soho)
- two orders have the same address
- the physical address doesn't match the shipping address (for self-install)
- an order is Digital SOHO with the same locations, same customer address
- Repeated orders over the course of multiple years

I need the placing agent's origin IP address in Salesforce, so Fortza can determine if:

- multiple agents are connecting at the same time from the same location / ip / device
- an agent or dealer is taking an order from an area outside their territory
- an offshore location is doing business without an offshore agreement
- an agent moves to new dealer under a new name or credential
- IP came from a whitelisted location or IP
- an order was placed from a private, offshore, or known bad VPN
- an order's destination IP doesn't match its origin IP
- an agent moves to new dealer

I need the agent and dealer's email in Salesforce so Fortza can determine if:

- the email domain is on a blacklist
- the email domain is newer than 1 year
- if a different agent name is in the email from FirstLast

- their emails follow a consistent pattern or progression (LastFirst22.23..24)

I need the customer's email in Salesforce so Fortza can determine if:

- a different customer's name is in the email from FirstLast
- orders' customer email follows a consistent pattern or progression (LastFirst22.23..24)
- an agent's orders have excessive Hotmail Proton emails /hide my emails

I need which agent placed an order in Salesforce, so Fortza can identify:

- A large quantity of orders from a single login
- Less than 10 sales made per month over the course of a few years
- If a sales rep is blacklisted

I need order payment information in Salesforce, so Fortza can identify:

- Multiple orders entered with no proof of sale (excessive amounts)
- What percentage of their orders are non-pay

I need the order's activation date in Salesforce, so Fortza can identify:

- An atypical average number of days to install-to-account
- Greater than 14 day timeframe between install to activation of orders

I need the disconnection date in Salesforce, so Fortza can identify:

- the typical churn percentage of an agent, dealer, and program
- unusually low (less than 3 day timeline) from order to disconnection
- Less than 3-day timeline from order to disconnection

I need the number of days to install for an order in Salesforce, so Fortza can identify:

- Same day orders in locations outside their door-to-door territory

I need the program, channel, and product sold in Salesforce, so Fortza can identify:

- The baseline sales mix for a program, channel, and product
- The baseline sales mix for a dealer, agent, or location

I need which dealer placed an order in Salesforce, so Fortza can identify:

- What channels, programs, territories they qualify for
- Whether they qualify to do events
- If they just started a new program
- If they have a sudden staircase of commissions

- If they have historically strong D2D sales
- If they have established historical metrics
- If they have higher-than-average sales volume, but are less than 6 months old
- Whether they have a high or low average order churn
- If they have multiple reps in Chuzo, but only one active/selling
- What percentage of their orders are typically non-pay
- What percentage of their orders are called-in
- Which orders were flagged for internal or partner review
- Whether their recent audits were positive or negative in sentiment
- Whether marketing's audits were positive or negative in sentiment
- Whether they hold a bad/high debt balance
- If they were previously dormant, but suddenly reactivated
- If there are notes or previous/regular contact with the sales team
- If multiple dealers are associated with a single Salesforce search
- If they are considered "whitelisted"

## Example Data to Fortza

In addition, we must provide quality data for Fortza to train custom model layers on PerfectVision-specific patterns. Our estimation of "enough" records can only be validated after training has occurred. Assuming quality data, our export needs to include:

- A granular view of how our data is currently structured
- At least a year's worth of data (to spot seasonal trends)
- At least 10,000 high-quality records (but ideally 100,000+ quality records)
- A large sample of orders found to be suspicious vs. genuine