

# Using Machine Learning to Optimize Ad Campaign Performance and Budgets

If you've been involved with running large-scale online ad campaigns, then you know how hard it is to keep track of them. Enterprise-scale businesses and online advertising agencies can have as many as thousands of online campaigns running at any one time. Constantly monitoring all the performance data these campaigns produce is a super difficult and time-consuming task, if not an impossible one.

But when dealing with big spends across many campaigns, failing to spot performance or configuration issues can end up in a huge amount of wasted budget.

If you were able to pick up on these sorts of issues quickly, you could make sure your campaigns deliver awesome results with maximum return on investment (ROI).

## **Detecting ad performance anomalies**

Large-scale advertisers generate an enormous amount of data, with potentially millions of data points produced daily. Autonomous software helps monitor ad performance without creating a huge burden on human resources.

An autonomous monitoring tool can quickly pick up on anomalies in expected performance behavior so that you can look into and resolve issues early on in a campaign's life – avoiding budget wastage.

Of course, every advertiser is different – with different goals, audiences, content, and budgets. All these different variables produce different expected patterns of performance, so a “one size fits all” approach won't always work.

## Advanced machine learning for greater precision

For more relevant and accurate anomaly detection, we created a system using multiple machine learning models that learn from your past campaign performance data. They then develop expected models of future performance based specifically on your actual data.

This enables our monitoring tool, Softcrylic's AdOps Anomaly Detection Solution, to provide unprecedented accuracy in identifying campaign performance anomalies.

The machine-learning models will continue to learn and adapt as they receive actual campaign data, so the tool maintains its high level of accuracy even as your campaigns change.

This allows you to quickly identify anomalies with a high level of confidence they indicate actual performance issues. Being able to identify and resolve issues early on across multiple campaigns will result in massive budget savings.

This is a powerful budget optimization tool that will help to achieve better ROI and return-on-ad-spend (ROAS) across all of your campaigns.

## How it works

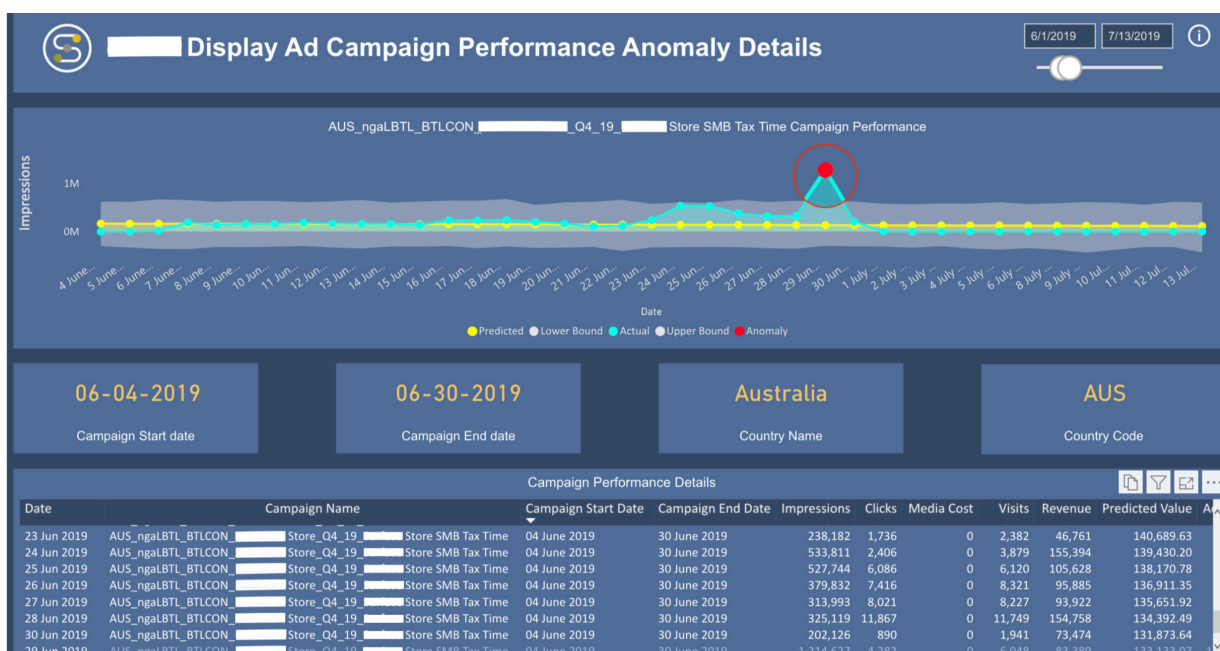
The tool monitors and develops expected trend models for multiple campaign metrics, including impressions, clicks, media cost, click-through rate (CTR), cost-per-click (CPC), cost-per-thousand-impressions (CPM) and ROAS.

For each metric, the model sets an expected daily result value, with acceptable lower and upper threshold values. If the actual result value falls outside of the lower and upper threshold, an anomaly is recorded and you are alerted so you can investigate the root cause.

Including lower and upper threshold values means an anomaly won't be reported if there is only a slight variance between the predicted and actual value, only when it's outside what is considered to be an acceptable range of variance.

In the example below, you can see the predicted impression values over time plotted out in yellow, with the lower and upper threshold values plotted out in light grey.

On 6/30/19, the actual numbers for impression metric is well above the predicted number, so an anomaly is reported.



Performance anomaly dashboard showing anomaly in impression data

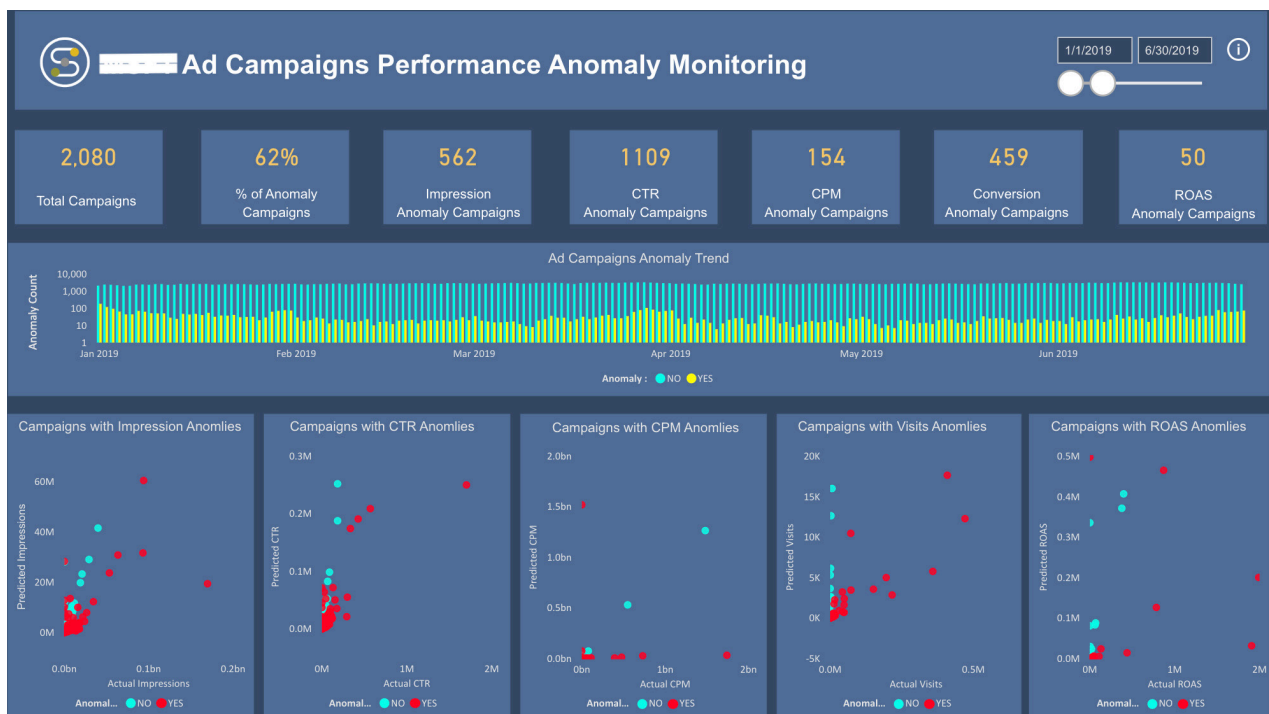
## Data anomaly detection

As well as detecting anomalies in performance, the tool also identifies reporting or data capture errors.

For example, data from a campaign on the Google Display Network may be showing zero impressions but thousands of clicks. It's not possible for an ad to have clicks without impressions – a user has to first view an ad before they can click on it.

In this case, a data anomaly is recorded, rather than a performance anomaly. This indicates there is an issue with the reporting and/or data capture of the advertising platform itself. This lets you know that there is a reporting error rather than a campaign configuration issue, potentially saving you time from looking into issues with campaign settings that don't exist.

These data anomalies are filtered from the data loaded into the machine learning models, giving the tool's performance predictions greater accuracy (as there is no incorrect data included which could throw off its predictions).



*Data anomaly monitoring dashboard for all campaign performance metrics*

## Using anomaly detection for greater campaign ROI and ROAS

Softcrylic's AdOps Anomaly Detection Solution gives you a big edge in optimizing your campaigns' budgets and performance. Being quickly alerted to potential issues means you can resolve them before they can result in campaign overspend or under-performance. This means you can deliver more successful campaigns with greater ROI and ROAS.

The tool will give you peace-of-mind that anomalies will be detected quickly, without needing to manually trawl through mountains of data. This will let you focus more productive areas such as campaign strategy development or client relationships.

Contact us to find out how **Softcrylic** can help lower your stress levels while raising your ROI!



## Sundar Sritharan

Sundar heads the Development and Testing Engineering practice at Softcrylic with his 17 years of experience. He consults, architects and delivers digital transformation solutions using Agile and Lean development methodologies for clients across the globe.

## About Softcrylic, LLC.

Softcrylic helps organizations navigate and execute the path of Digital Transformation through IT solutions and services in a variety of technical disciplines including Software Development, Test Engineering, Data and Analytics. Since 2000, Softcrylic has worked with both start-ups and Fortune 500 organizations to help make their company goals a reality.

## Get in Touch with us

Email: [info@softcrylic.com](mailto:info@softcrylic.com)

Phone: +1 609 452 7638

For more information,  
visit [www.softcrylic.com](http://www.softcrylic.com)

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