



Finding Faults... we are good at it!

Cutting-edge tools, in hands of experts with wisdom from experience, is the Jasmin way.

There's nothing like a perfect world. Zero defects don't happen by default. Fault free products are inherently designed to be so. Downstream processes are meticulously planned & executed to find, fix & future-proof.

Article by Test Automation Team, Jasmin Silver

Exponential integration of functionality in silicon, an ever-shifting and diverse IP & service partners' ecosystem is the norm for new-age devices. Components compete with one-another in finding their place in the sharing, interacting & running off the same resources. Consequently, product testing validation processes have become even more complex & critical.

Machine Learning (ML) blended with Human Learning (HL)

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Jasmin's experienced team curates data & test cases to closely match products' needs & maturity, thereby maximizing the effectiveness of cutting-edge tools like AI & ML. This empowers customers to improve testing efficiency & accuracy. Effectiveness of advanced ML algorithms and techniques multiply at each level of testing life cycles.

Key aspects of ML-enabled solutions that leverage the immensely rich data generated are the following.

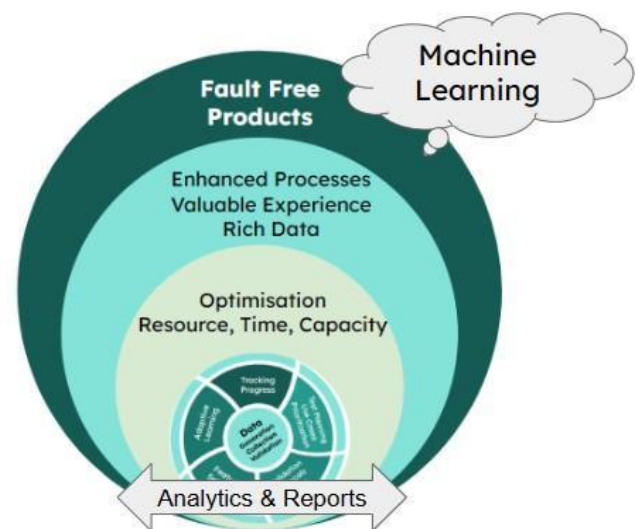
- Prioritization → Selection of Test cases
- Scanning → Scanning of changes in builds.
- Detection → Faults & Anomalies
- Test Cycling → Continuous, Sequencing
- Result Analysis → Trends, Weak links, Fault points

Best Practices

Architectures that can seamlessly integrate tools like ML & AI, act as force-multipliers, and thereby future-proof test capabilities.

It requires a multi-dimensional experienced team to architect such a truly scalable process. One that should adapt to varying needs of the ever-increasing product feature offerings.

Jasmin's Embedded Software Testing practice comprises systematic/structured methodologies and procedures for testing the functionality and performance of Embedded products. It includes test planning, test design, test execution, defect reporting & test report analysis





Future-ready... always!

Jasmin has chosen ML to translate its over two decades of Human Learning (HL) -- knowledge gained & wisdom of experience - into a future-ready testing practice

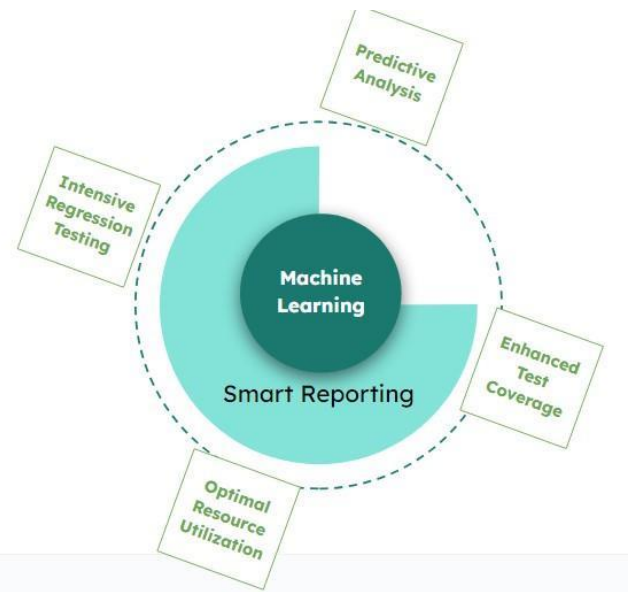
A unique initiative to leverage Machine Learning's (ML) tremendous capacity to assimilate, (re)-arrange, and analyse historical data and apply to real-time scenarios. All this while still collecting & correcting - a learning that never gets over.

ML offers the power to anticipate failure before it happens; and fix it along with any & all triggers or dependencies.

It promises to revolutionize embedded product testing methodologies. Applied across various facets of testing its impact is cross functional.

The targeted categories for initial deployments are **Embedded IoT products, Professional Audio Video & Control products, Consumer products.**

Various test practices & methodologies like **AGILE Testing, Exploratory testing, Behaviour -Driven testing, Security testing, Shift-Left testing,** may be adapted based on specific project requirements, objectives, constraints, etc.



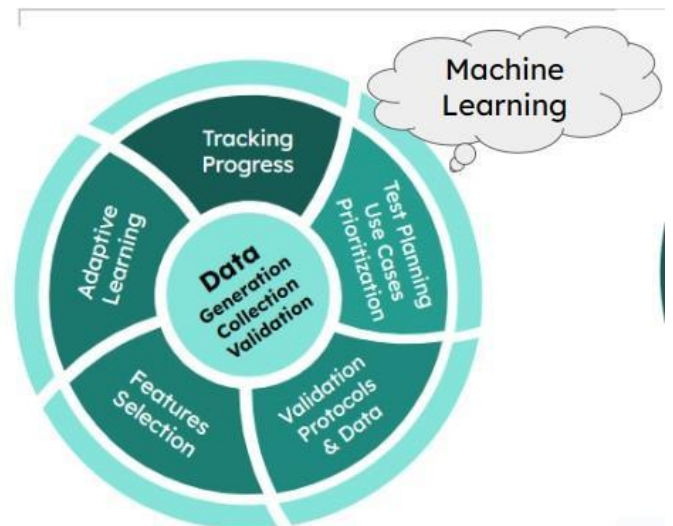
Fast Forward the Present

Existing customers need not start from scratch. They may reuse existing test platforms, thereby protecting past investments.

Supervised ML systems can be integrated with legacy test management systems, to improve upon existing test practices. Redeployment provides enormous benefits such as saving on regression testing resources, further enhancement of test coverage, predictive defect analysis, and so on.

Predictive analysis with statistical method-based anomaly detection with prior data history will be utilized as a model for the new customers in order to obtain the same advantages on embedded products testing.

It attempts to improve testing efficiency, accuracy, and effectiveness by incorporating advanced machine learning algorithms and techniques at each level of the testing lifecycle.



Seizing the Opportunity

These next generation technologies of tomorrow are not mere jargon but are making their impact felt today - across many dimensions of work, work-life & life as such. Machine Learning (ML) powered by the intelligence of the machine, will lead an exponentially growing innovation curve. It's about time when Human Learning starts playing catch up, with their machine.



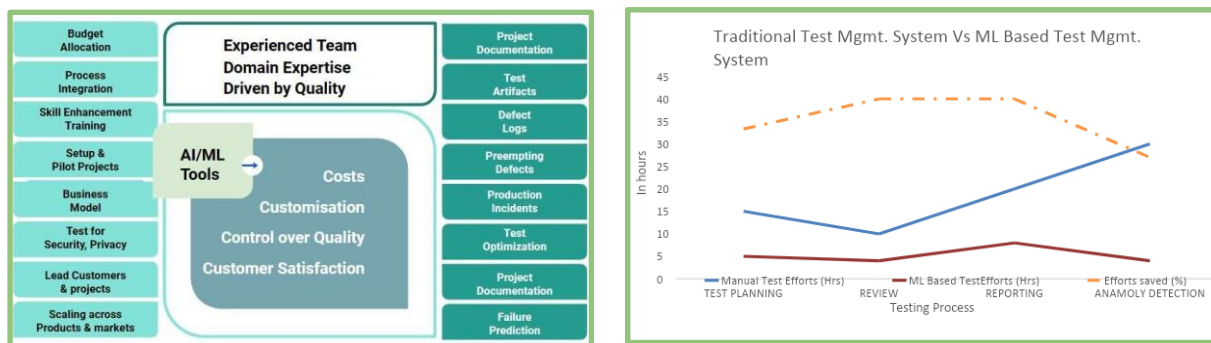
The AI/ML/Automation trinity is set to cause major disruptions in the testing services deployment & delivery value chain. Unlike the many disruptive events/phases we have witnessed thus far - innovation will not be solely human endeavors. Rather the initiative & speed of innovations will be driven by the very systems that are being intelligently disrupted.

Investments - Tools, Training & Time

Platforms of the future need serious commitment by way of investments & management involvement, Investment decisions despite limited visibility of the future & for that future, will require handholding; to navigate through this radical paradigm shift. Process impact will affect existing organization structures, manifesting in communication, interpersonal & team relation vulnerabilities.

Allocating budgets, along with setting aside training time will be necessary for effective deployments which can fully realize the potential of investments.

A training plan on the testing automation tools that generate data to enable deeper analysis is required. Product testers will be challenged in both skills & in perspectives; as they upskill to be expert test analyst for their product-line category,



Balance between outcomes, costs & time. ...takes experience.

In traditional test management, the efforts on manual Test Planning, Review, Reporting, and anomaly detection consume time and efforts which impact the project cost. In ML/AI based Test Management system helps to reduce the cost greatly and test management efforts which will be utilized/invested on undertaking multiple project management.

Start small. Start a pilot run

Test waters with one foot on ground. Go for piloting and trials. Evaluate new acquired skills and optimize for specific use cases. Initiate the R&D activities based on proposed plan and priorities to acquire customer confidence level.

Work out pricing models and feature variants to adopt new technology based on customer specification. Perhaps start with providing certain features free subscription, to build confidence, learning & to assess the performance. Having established the value of your offering, you may propose longer term commitments under a “pay-as-you-go” model.

Participation online webinars, Trade Shows, etc., Ability to showcase the pilot projects and presentations about Architecture and feature engineering on Customer’s requirement.

And Jasmin is with you through the entire cycle.



ABOUT JASMIN EMBEDDED SOFTWARE TESTING TEAM

Jasmin Infotech testing team has fine-tuned the art of Fault Finding; with over two decades of delivering testing services to plenty of customers around the world.

The categories served range from networked, Audio Video Consumer, Professional, Prosumer products. From standalone units to now cloud delivered products & services.

DISCLAIMER

Earlier generations of products were relatively less complex with limited functionalities, use cases & segregated blocks of technologies. Given enough time, enough resources, eventually these were testable.

However, as the complexity of software and components in the system grows, it is necessary to integrate existing test automation solutions with these smart fault-finding systems to improve test coverage and boost test efficiency.

Jasmin Silver of the Test Automation team has developed over 30,000 manual test cases for a testing project. To improve effective test coverage for each software release in the project, 25000+ manual test cases were automated. Our customers have benefited from 90% test productivity and zero-defect product delivery because of this.

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