REACTIVE TO PROACTIVE

REACTIVE QA
Quality Assurance after the product is made

PROACTIVE QA
Quality Assurance while the product is made

Yesterday
Today

PROACTIVE TO PREDICTIVE

REACTIVE QA
Quality Assurance after the product is made

PROACTIVE QA
Quality Assurance while the product is made

PREDICTIVE QA
Quality Assurance before the product is made
PREDICTIVE QUALITY ASSURANCE

An ML Driven Approach
THE RISE OF MACHINE INTELLIGENCE

First Computer 1900
Super Computer 1960
Insect Brain 2000
Mouse Brain 2018
Human Brain 2040
Multiple Human Brains 2060

Digital Data - 163,000,000,000,000,000,000,000,000 bytes

ANI – Artificial Narrow Intelligence
AGI – Artificial General Intelligence
ASI – Artificial Super Intelligence
INTELLIGENCE FROM DATA

PRICE

BUILDING ATTRIBUTES

PRICE

BUILDING ATTRIBUTES
DATA → PATTERNS → PREDICTIONS

1. Data Gathering & Processing
   - Gathering data
   - Data Splitter
   - Training Dataset
   - Testing Dataset

2. Choosing the right Model
   - Training Dataset
   - Prediction Model

3. Evaluate the Model
   - Testing Dataset
   - Prediction Model

4. Predicting Outcomes for new data
   - Gathering data
   - New Data
   - Prediction Model
   - Predictions
QA PREDICTIONS

- Code
  - Predict defects based on possible code changes
- Build
  - Predict build success
- Test
  - Predict root cause
  - Predict right test data
- Operate
  - Predict customer needs
- Release
  - Release success predictor

- Plan
  - Natural Language Processing
- Requirements
  - Predict risky test cases
  - Predict possible defects
- User story point predictor
  - Predict schedule variance

- Machine Learning

- Quality Gates
EXAMPLE 1: INCIDENT PREDICTION

Historic Data Gathering & Processing

Historic Data from Sprint 1 to..n-1

Requirements

Code Changes

Incidents

MongoDB

MongoDB

MongoDB

Machine Learning Algorithms

Incident Prediction Model

Incident Prediction Model

Predict Incidents for Current Sprint

Requirements

Code Changes

Patient

Predict Incidents for Current Sprint
**EXAMPLE 2: TEST DATA PREDICTION**

### Production Data Combinations

<table>
<thead>
<tr>
<th>Id</th>
<th>Mode of Payment</th>
<th>Room Type</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>0094625</td>
<td>Netbanking</td>
<td>Triple</td>
<td>Corporate</td>
</tr>
<tr>
<td>0094629</td>
<td>Creditcard</td>
<td>Double</td>
<td>Early Payment</td>
</tr>
<tr>
<td>0096638</td>
<td>Cash</td>
<td>Double</td>
<td>Corporate</td>
</tr>
<tr>
<td>0084829</td>
<td>Creditcard</td>
<td>Single</td>
<td>Corporate</td>
</tr>
</tbody>
</table>

### Test Data Combinations

<table>
<thead>
<tr>
<th>Id</th>
<th>Mode of Payment</th>
<th>Room Type</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>0094636</td>
<td>Netbanking</td>
<td>Double</td>
<td>Corporate</td>
</tr>
<tr>
<td>0094640</td>
<td>Debit</td>
<td>Single</td>
<td>Corporate</td>
</tr>
<tr>
<td>00976489</td>
<td>Cash</td>
<td>Double</td>
<td>Corporate</td>
</tr>
<tr>
<td>0084829</td>
<td>Creditcard</td>
<td>Single</td>
<td>Corporate</td>
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</tbody>
</table>

### Missing Data Combinations

<table>
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<tr>
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</tr>
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</table>
EXAMPLE 3: REQUIREMENT PREDICTION

Sentiment
User Experience
Functionality
Performance

Customer’s Perception is Reality
PREDICTIVE TO COGNITIVE

PREDICTIVE QA
- Quality Assurance before the product is made

COGNITIVE QA
- Zero Touch QA from product conceptualization to realization

PROACTIVE
- Quality Assurance before the product is made

REACTIVE
- Quality Assurance as soon as the product is made

Tomorrow
Are predictions predictable?

QA of Machine Intelligence
PREDICTABILITY OF PREDICTIONS

Non Deterministic Nature | Platforms & Environment | Linguistic Variations

What will you test?

I got approval to work from home.

My chatbot will answer all of my emails and text messages.

Chatbot answers would be useless.

I hope so. Otherwise it won't sound like me.

Smart Devices & Dumb Experiences
TEST THE UN-TESTABLES

Turing Test

Visualization

Crowd Testing

Bot Vs Bot

Metrics

API Testing
TESTING THE COGNITIVE ASSISTANTS

Validate Responses

Skills Testing

Accent Testing

Crowd Testing

Regression

Text to Speech
LIMITATIONS & LEARNINGS

- Clear business need and use case
- Finding right data attributes
- Cannot predetermine the success of the model
- Interpretation & Visualisation of results
- Good infrastructure requirements
- Steep learning curve
THE BEGINNING OF THE END

How will AI impact software testing?

How will AI impact you?

“Natural Stupidity Is More Dangerous Than Artificial Intelligence”
Thank You