Maximizing Test Coverage with AI-Powered Test Automation

Revolutionizing Software Testing

Okan Cakmak
Principal Consultant @Padran Inc.

Meet the Speaker

Okan Çakmak (Ókán Csákmák)
Founder / Principal Consultant @Padran

20+ years experience in Software Quality
- Test Process Improvement,
- Test Automation,
- Performance Testing,
- Official ISTQB trainer.

Outside of the Work
- Plays clarinet.

okan.cakmak@padran.com
@okancakmak

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Agenda

01. **Exploring the Testing Landscape:** Understanding Evolution & Challenges

02. **Overcoming Testing Challenges:** Strategies & Solutions

03. **AI in Testing:** Technologies, Benefits, & Real-World Applications

04. **Looking Forward & Interactive Session:** Bright Horizons, Q&A

The Testing Landscape

Manual Testing

Traditional Automation

AI-Powered Test Automation

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

The Test Automation Wall

Test creation barriers
It takes time to build and design effective tests.

Acquiring the right skills
Test automation is hard and require considerable skill.

Insufficient test coverage
There's so much more that we need to test.

Relentless test maintenance
Continuous maintenance holds everyone back.

Time-consuming test execution
Testing takes time, and feedback cannot be given at speed.

We Need to Work Smarter

- Test Design
- Test Automation
- Test Maintenance

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Overcoming the Test Automation Wall

Artificial Intelligence

Incorporate Machine Learning, Computer Vision, and Natural Language Processing.

Platform Availability

Access remote devices for development, debugging, testing and monitoring.

Shift Left

Enable testing to begin earlier within the development lifecycle.

Shift Right

Lower the barrier to test automation by allowing anyone in the team to test.

DevOps Ready

Leverage capabilities of other tools by integrating across the DevOps landscape.

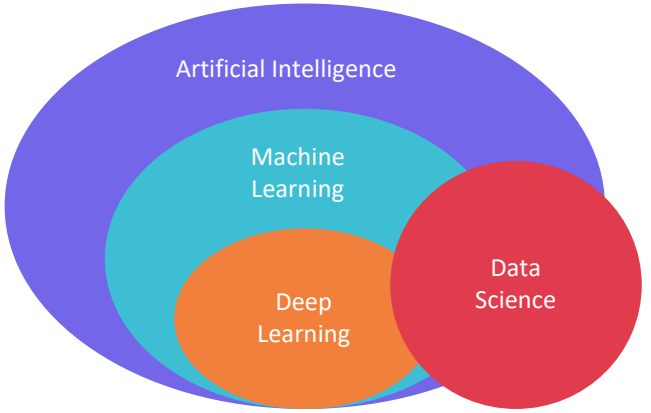
Better Together

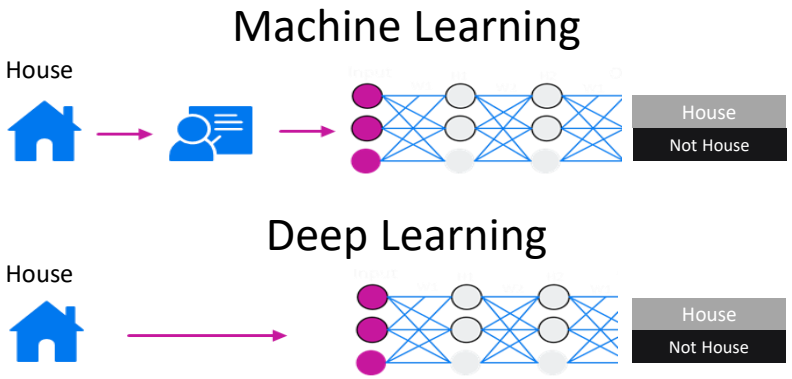
Get more out of your testing assets by sharing them across the team

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Artificial Intelligence in a Nutshell

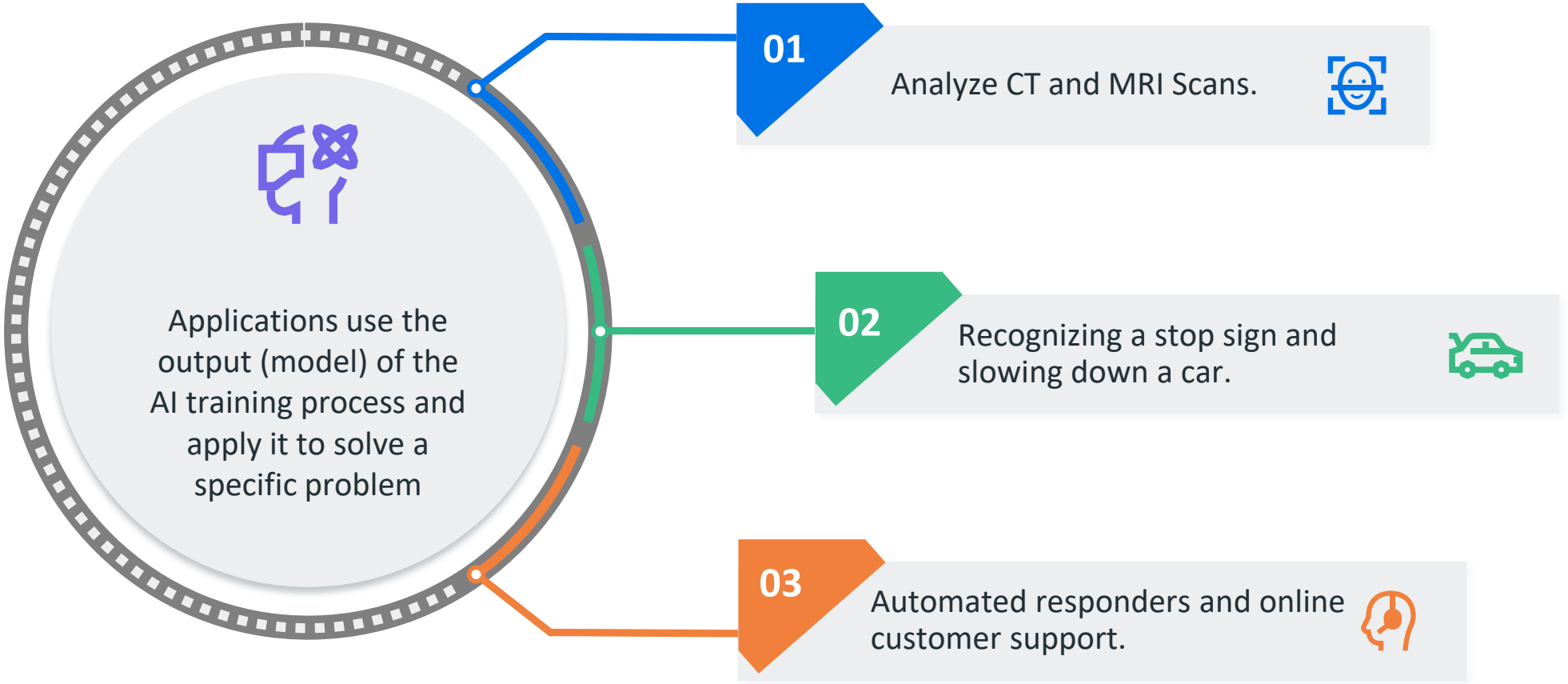
AI is an area of computer science that emphasizes the creation of intelligent machines.





HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

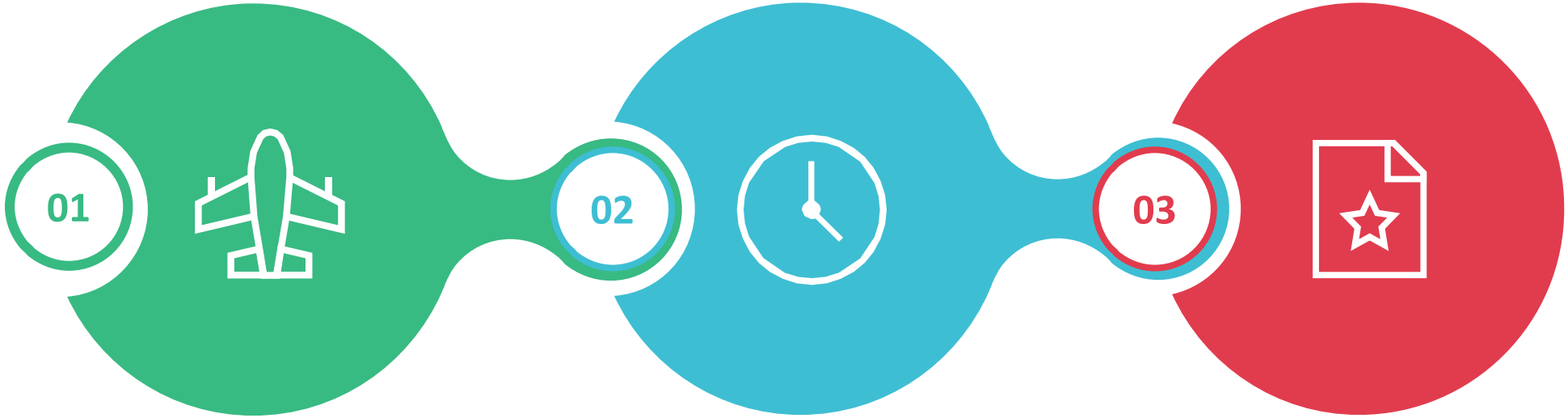
AI Around Us: It’s Everywhere



What challenges prevent us from scaling test automation?

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

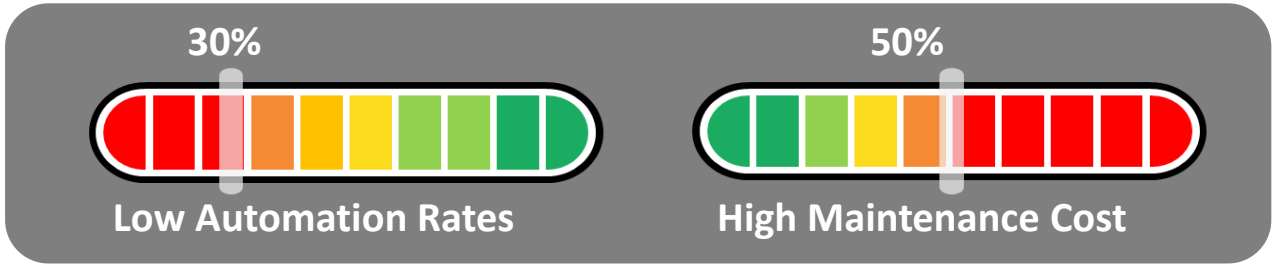
Challenges in Scaling Automation



Frequent releases
Difficult to keep pace with change

Time and effort
Spent on design and execution

Skill set
Automation is hard

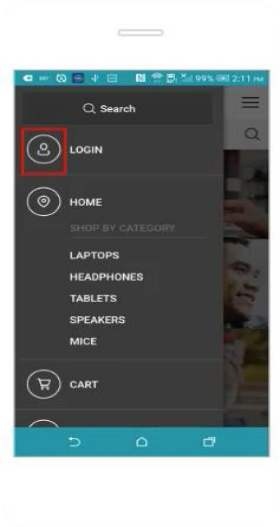


HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

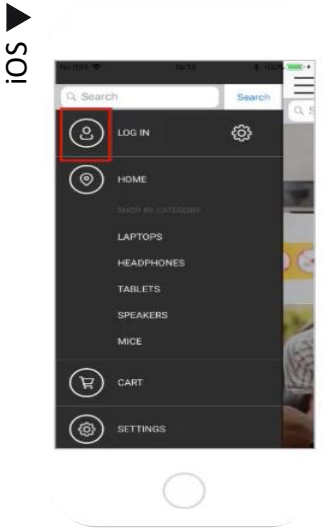
An example from today's reality

Use Case	• Automate a business process of buying an item in an e-commerce application • The application is available as native mobile app as well as hybrid one and on desktop browser
Challenges	• Four scripts are required to automate the same flow! -> **TIME TO MARKET CHALLENGES** • Changes in the application break the automated scripts -> **HIGH MAINTENANCE COST**

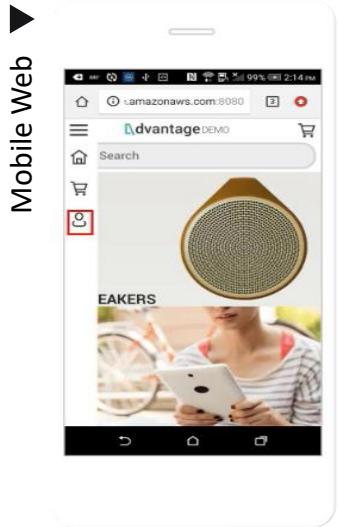
Android



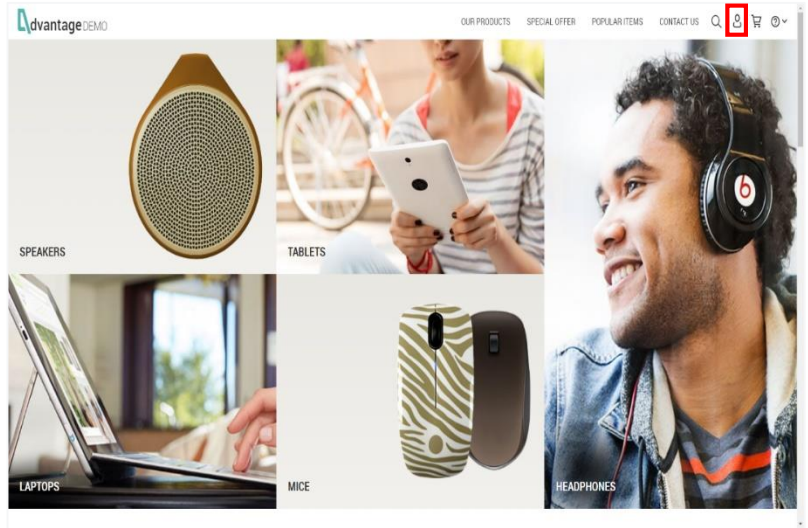
iOS



Mobile Web



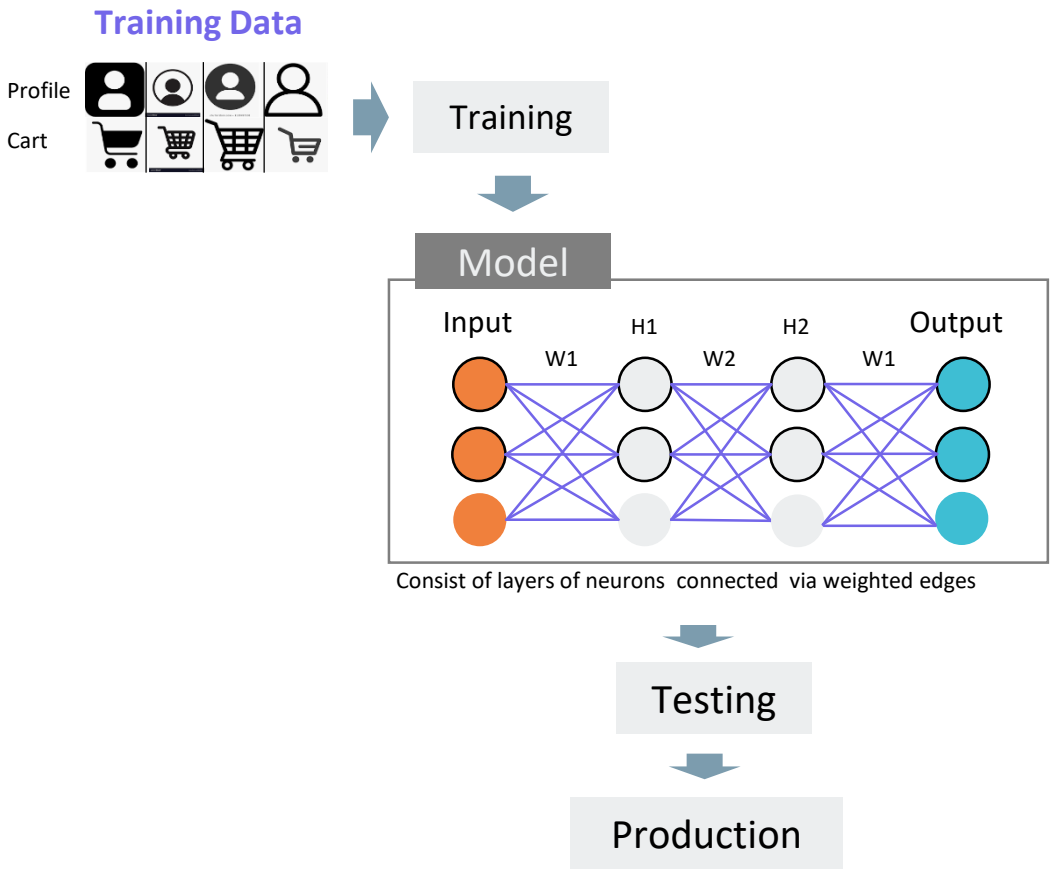
Desktop Browser



HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Artificial Intelligence in Test Automation

The software of AI is trained to perform simple tasks as well as complex ones.



HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Blending AI & Test Automation: A Smooth Combo

Computer Vision

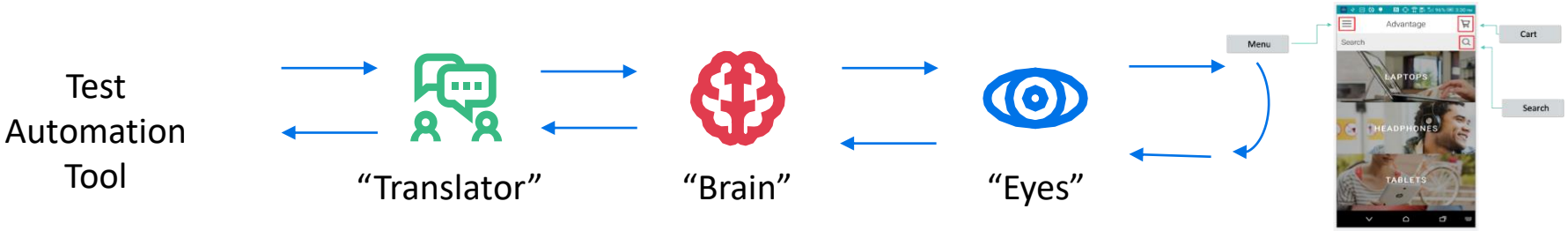
Identify objects the same way as a human does

Neural Networks

Interact with and manipulate objects naturally

Natural Language

Write tests using plain English (almost)



HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Automate Intelligently

Save Time with AI-Based Test Automation

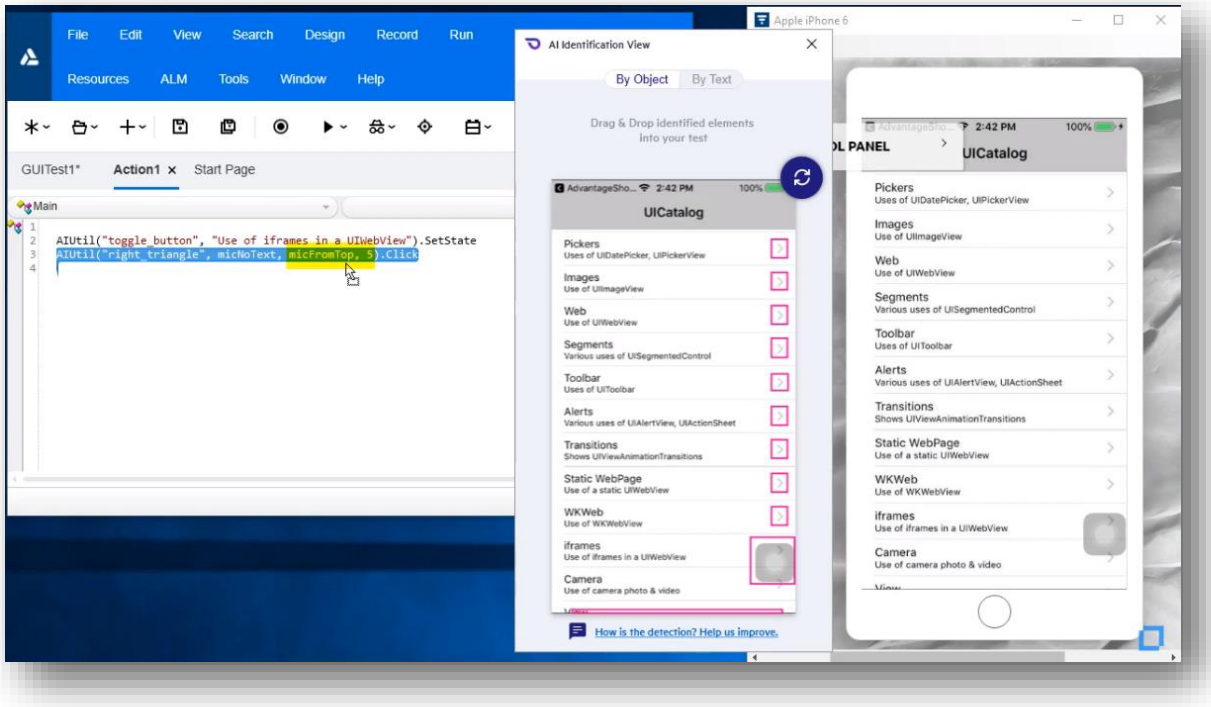
OBJECT RECOGNITION
IDENTIFY OBJECTS USING AI-BASED MACHINE LEARNING (ML) AND ADVANCED OPTICAL CHARACTER RECOGNITION (OCR)

OBJECT INTERACTION
ARTIFICIAL NEURAL NETWORK (ANN) UNDERSTANDS EACH OBJECT AND ITS CONTEXT AND MANIPULATES IT IN A NATURAL WAY

SINGLE SCRIPT RUNS ON MULTIPLE PLATFORMS
OBJECT RECOGNITION AND OBJECT INTERACTION COMBINE SO THAT A SINGLE SCRIPT RUNS ON MULTIPLE PLATFORMS

NATURAL LANGUAGE TEST SCRIPT CREATION
NATURAL LANGUAGE PROCESSING (NLP) ENGINE ENABLES TESTS TO BE WRITTEN IN SIMPLE ENGLISH

MULTI-PLATFORM TEST EXECUTION
AI-BASED OBJECT RECOGNITION, OBJECT INTERACTION, AND NATURAL LANGUAGE SCRIPT CREATION ALLOW TESTS TO BE WRITTEN AND EXECUTED ON MULTIPLE PLATFORMS WITHOUT MODIFICATION



HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Key Benefits of Leveraging AI in Test Automation

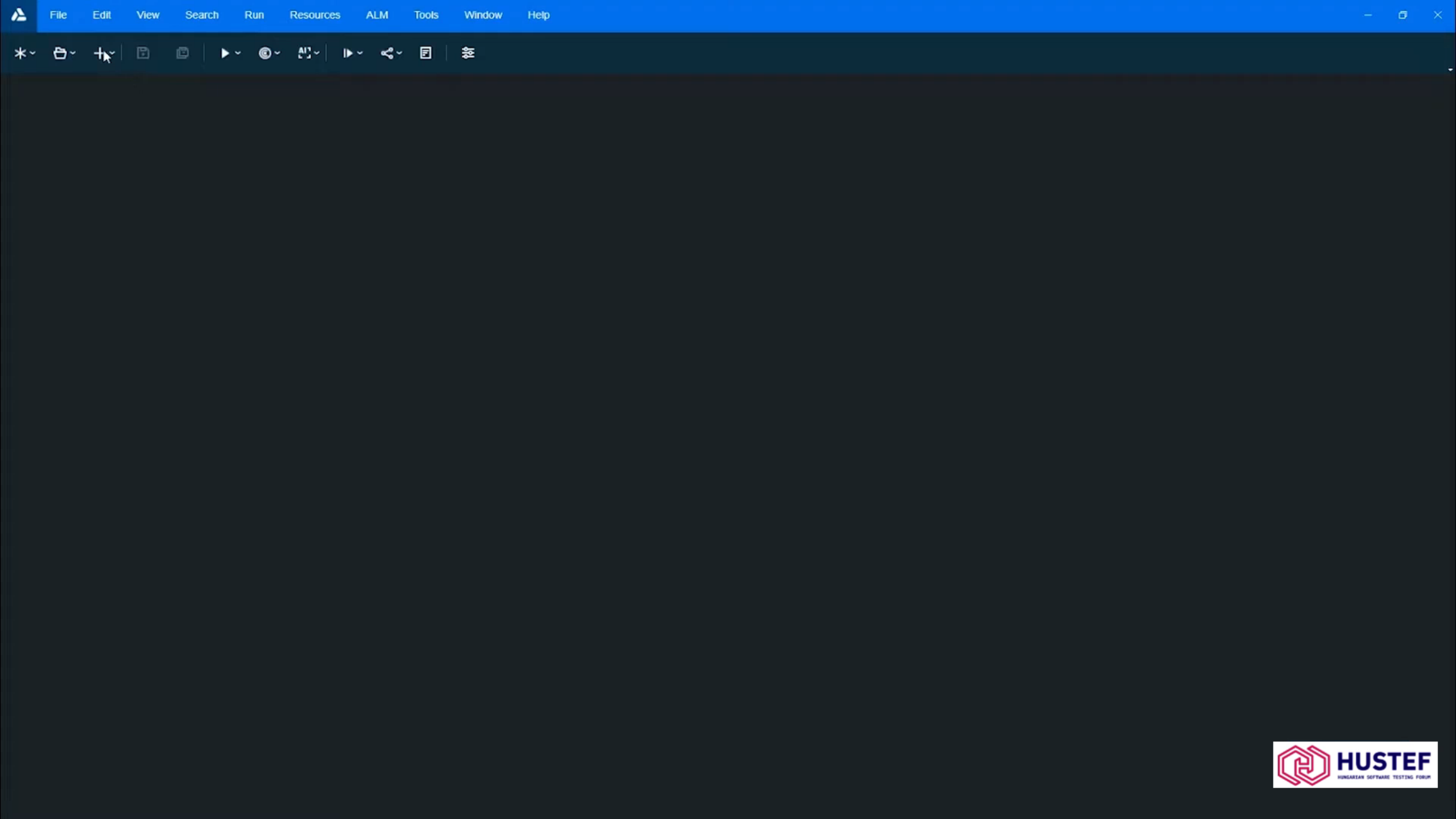
70% or more reduction in maintenance costs

30% or more increase in automation coverage

3x increase in test development speed

Extend reach so everyone on the team can test

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM


File
Edit
View
Search
Run
Resources
ALM
Tools
Window
Help
HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM

Looking Forward

Bright Horizons & Closing Remarks

- **Summary of Journey:** We've explored the challenges, discussed innovative solutions, and glimpsed real-world implementations of AI in test automation.
- **Transformative Potential:** AI is not just a trend; it's a transformative force reshaping the testing landscape with promising advancements.
- **Encouragement for Exploration:** The future is bright, and it's in our hands to shape it. Let's embrace AI in our testing initiatives with confidence and curiosity.
- **Appreciation:** A heartfelt thank you to everyone for participating, interacting, and contributing to the dialogue. Your curiosity and eagerness fuel progress.

Thank you

okan.cakmak@padran.com

@okancakmak

HUSTEF
HUNGARIAN SOFTWARE TESTING FORUM