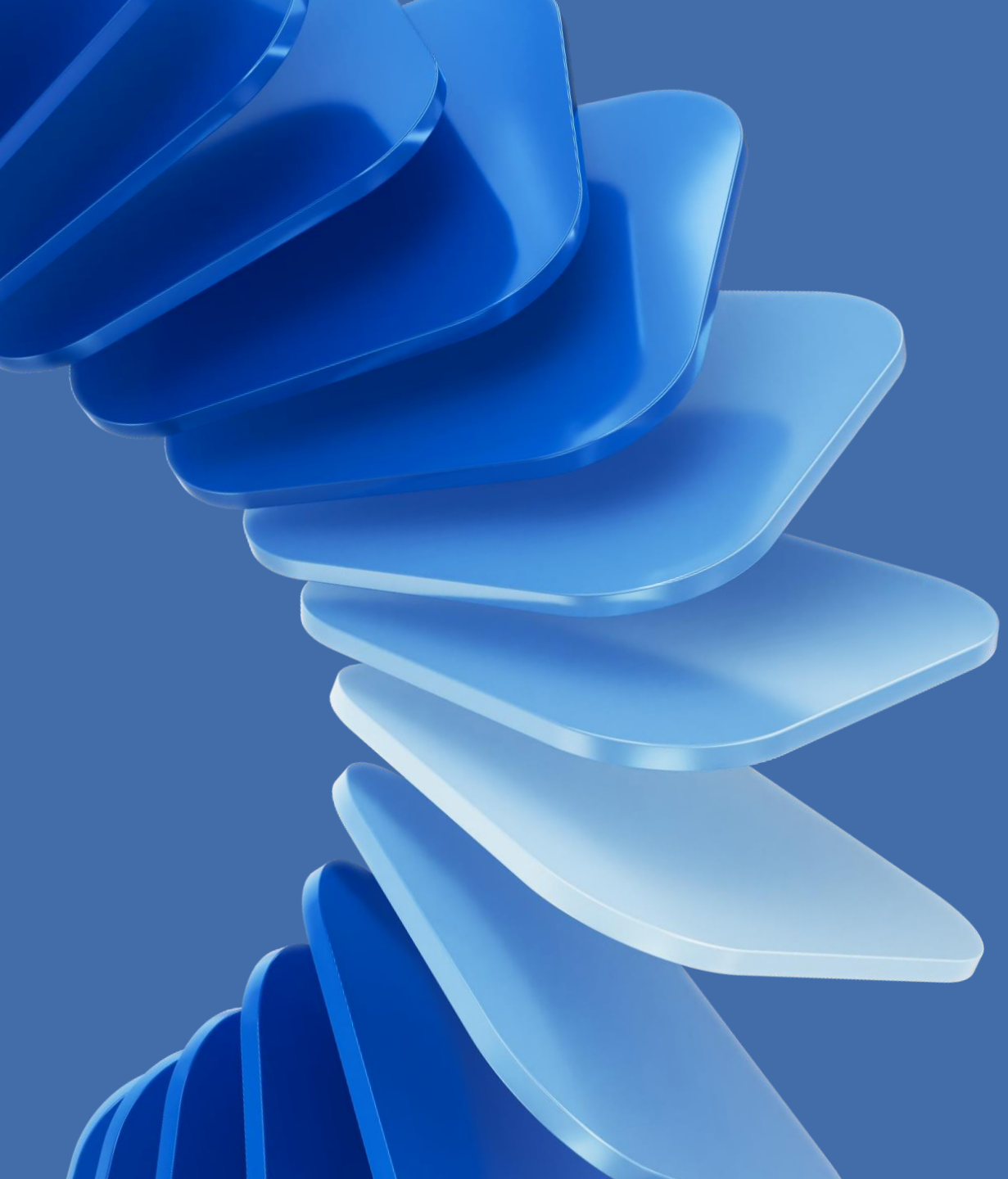

Simplifying Income Verification through Machine Learning

Laura Waterfield

Wednesday 27th August
15:50 - 16:25

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Contents

What are we going to cover?

Section One:
What is the problem?

Section Two:
Introduction to CaaSPay

Section Three:
Solving the problem

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'Base Pay’	
A.	basic_salary
B.	car_allowance
C.	travel_or_daily_allowances
D.	holiday_pay

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‘t-yrn-csp’	
A.	car_allowance
B.	sick_pay
C.	maternity_pay
D.	salary_sacrifice

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The Problem

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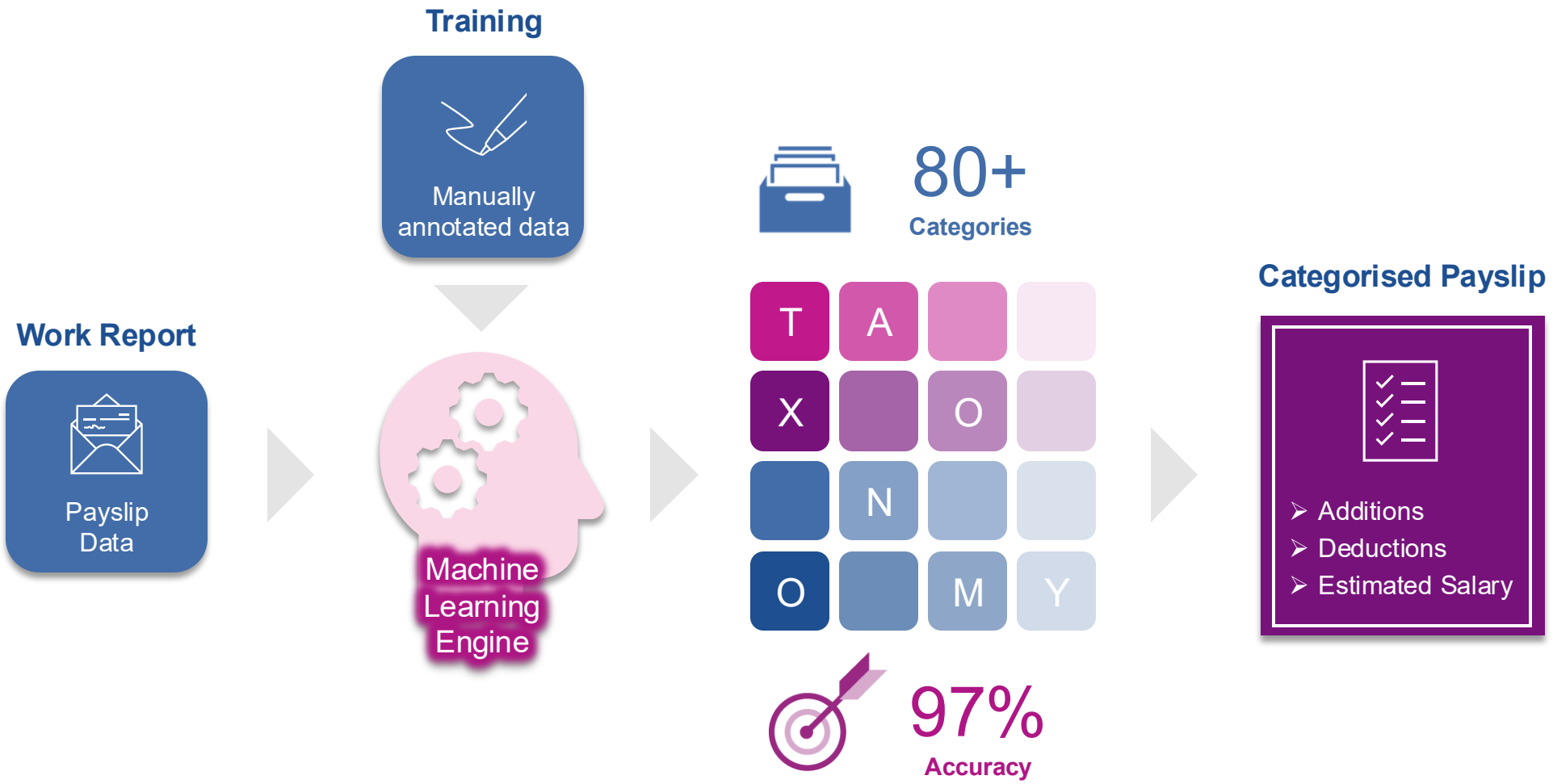
Introduction to CaaSPay

Under the hood



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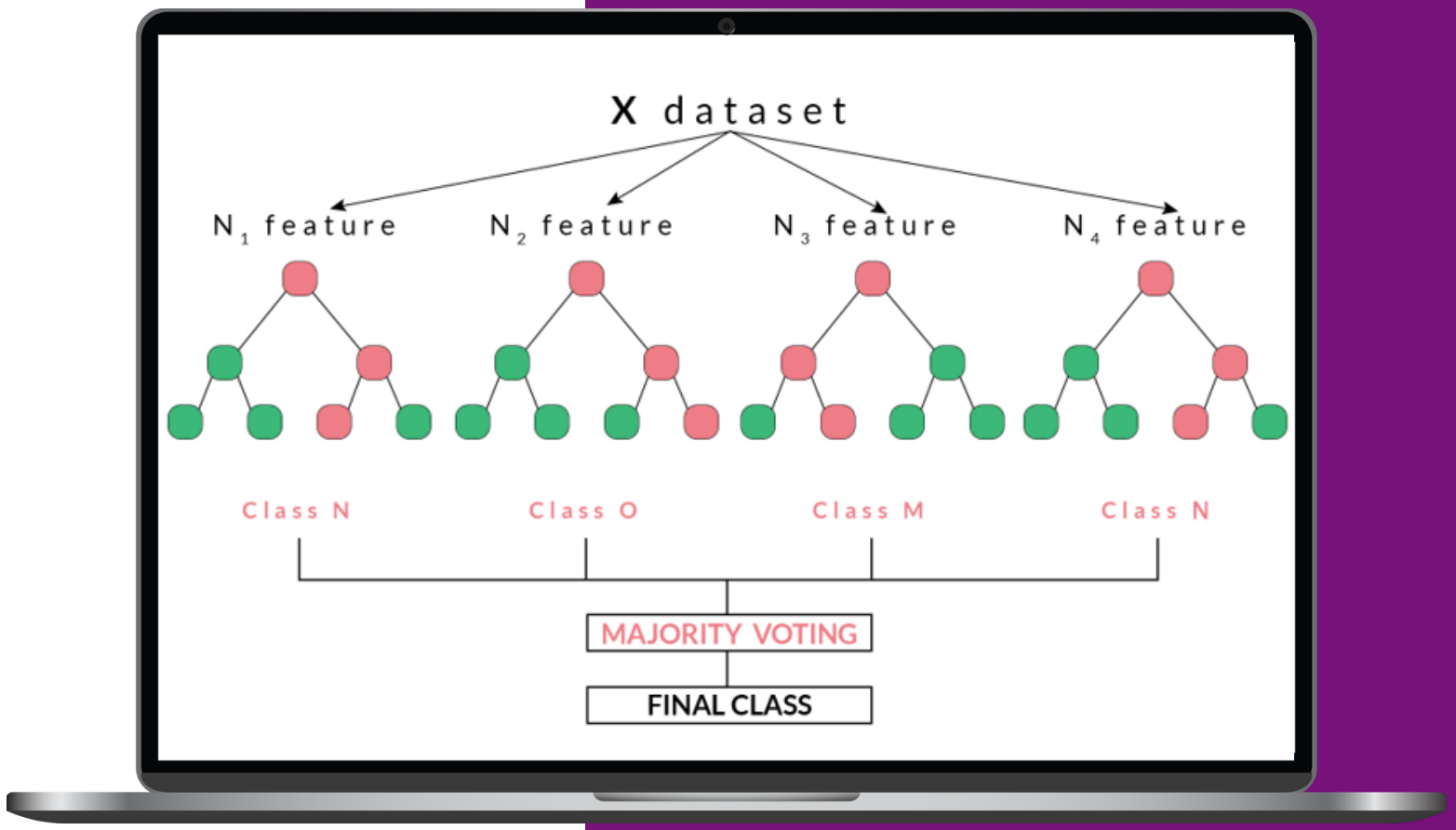
Introduction to CaaSPay

Random Forest Classifiers



- Supervised Learning
- Random Forest builds multiple decision trees to improve prediction accuracy and reduce overfitting
- Each tree trains on a random data subset using bootstrap aggregating to introduce diversity
- Random selection of features at each split reduces correlation and enhances model generalization
- Final prediction is based on majority vote from all trees, improving robustness and accuracy

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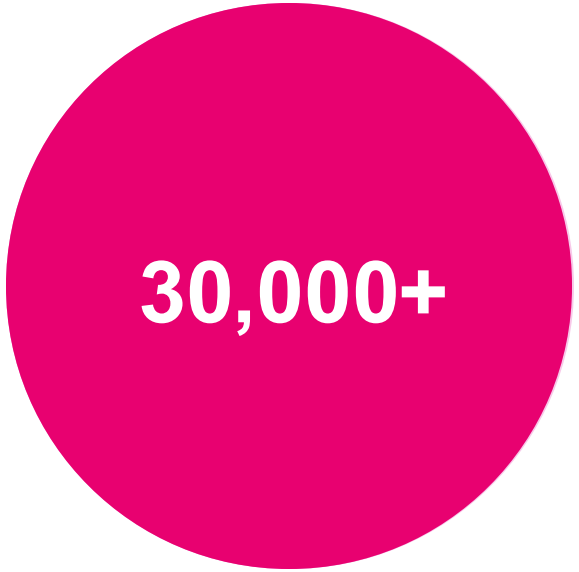
Solving the Problem

Standardisation of payslip data



unique labels describing payslip income & deductions

examples:

- s.s.p
- a sick pay hours
- occupational sick pay

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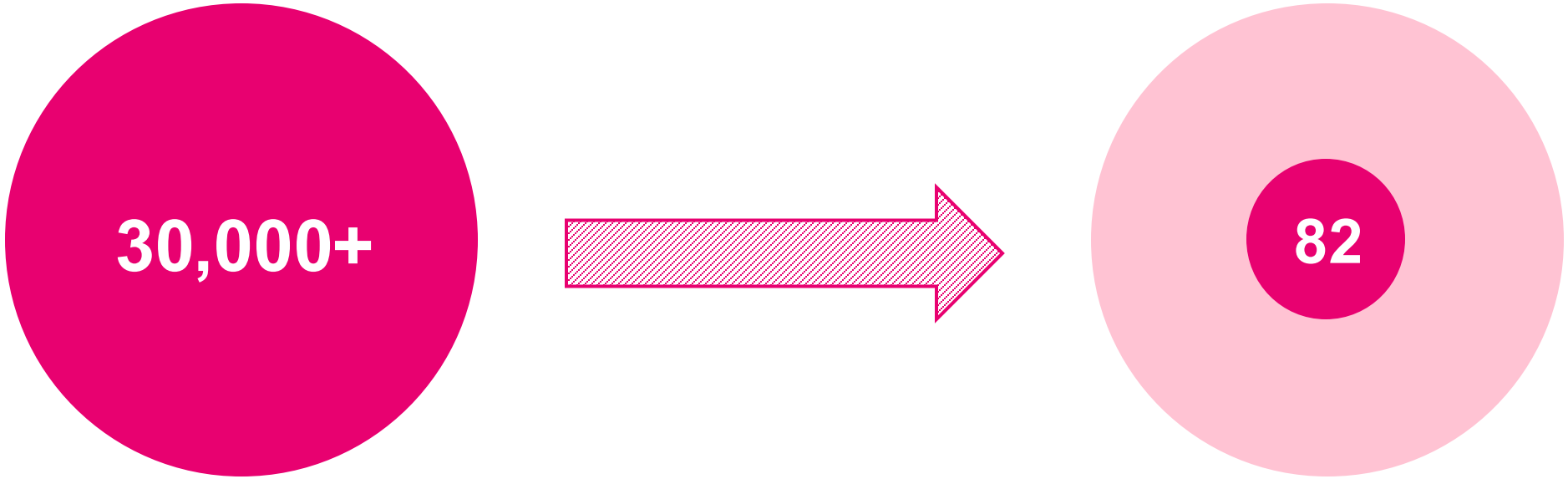
Solving the Problem

Standardisation of payslip data



unique labels describing payslip income & deductions
examples:

- s.s.p
- a sick pay hours
- occupational sick pay

CaaS labels describing payslip income & deductions
example:

- Sick pay (income)

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Name: Angela

Employer: Experian

Pay Date: 23-01-2023

Additions		Deductions	
Base Pay	£2000	P.A.Y.E	£120
Time 1/2	£230	N.I	£75
Time 1/3	£110	Car	£450
SSP	£55	Sharesave	£200
Nightshift	£300	Cushon ISA	£100
Holiday	£80	BUPA	£25
Total	**£2775**	**Total**	**£970**

Gross Income £2775

Net Income £1805

Solving the problem

Payslip example

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Additions		Category	Deductions		Category
Base Pay	£2000	salary	P.A.Y.E	£120	tax
Time 1/2	£230	additional_hours	N.I	£75	tax
Time 1/3	£110	additional_hours	Car	£450	lifestyle_deduction
SSP	£55	time_off_allowance	Sharesave	£200	savings_deduction
Nightshift	£300	additional_hours	Cushon ISA	£100	savings_deduction
Holiday	£80	time_off_allowance	BUPA	£25	lifestyle_deduction
Total	**£2775**		**Total**	**£970**	

Solving the problem

Payslip example

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Additions

Salary	£2000
Additional Hours	£640
Time Off Allowance	£135

Deductions

Tax	£195
Lifestyle Deductions	£475
Savings Deductions	£300

Estimated Salary £24,000

Solving the problem

Payslip example

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Solving the Problem

Who does CaaSPay help?

Lenders

- Accurate Financial Assessment
- Risk Mitigation
- Operation Efficiency

Applicants

- Clarity and Transparency
- Improved Loan Approval Chances
- Streamlined Experience

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