Competition: Can I make a wish? Predicting the presence of meteors in images

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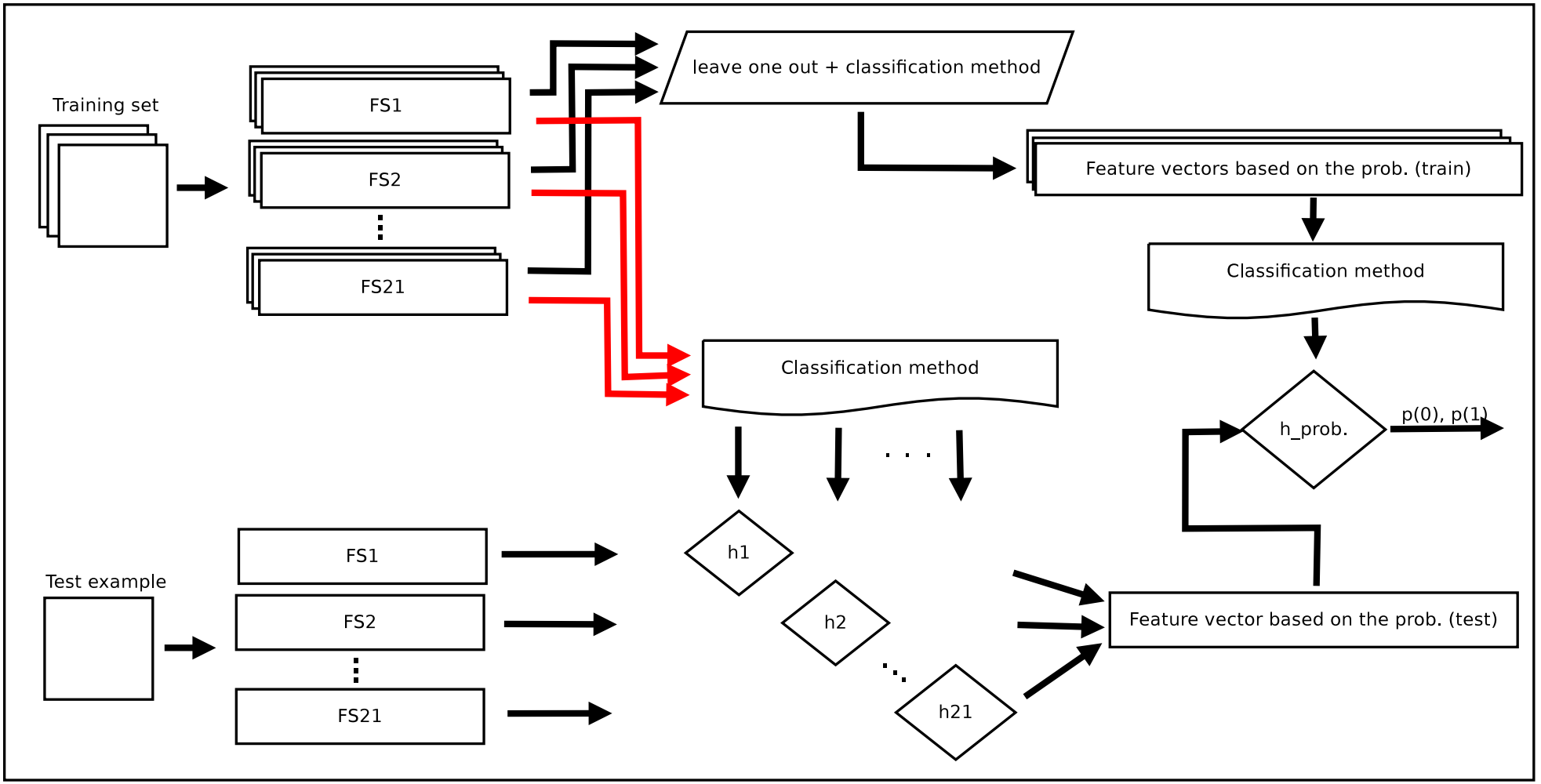
Introduction

- # training examples:
  - class 0 (non-meteor): 54
  - class 1 (meteor): 26
- Number of features: 3,451

Id	Feature set	# features
FS1	Auto Color Correlogram	768
FS2	CEDD	144
FS3	Color Histogram	64
FS4	FCTH	192
FS5	Fuzzy Histogram	125
FS6	Fuzzy Opponent Histogram	576
FS7	Gabor	60
FS8	Haralick	14
FS9	Histogram	256
FS10	JCD	168
FS11	Jpeg Coefficient Histogram	192

Id	Feature set	# features
FS12	Luminance Layout	64
FS13	MPEG7 Color Layout	33
FS14	MPEG7 Edge Histogram	80
FS15	Mean Intensity Local Binary Patterns	256
FS16	Mean Patch Intensity Histogram	256
FS17	Moments	4
FS18	Opponent Histogram	64
FS19	PHOG	40
FS20	Reference Color Similarity	77
FS21	Tamura	18

First selected submission



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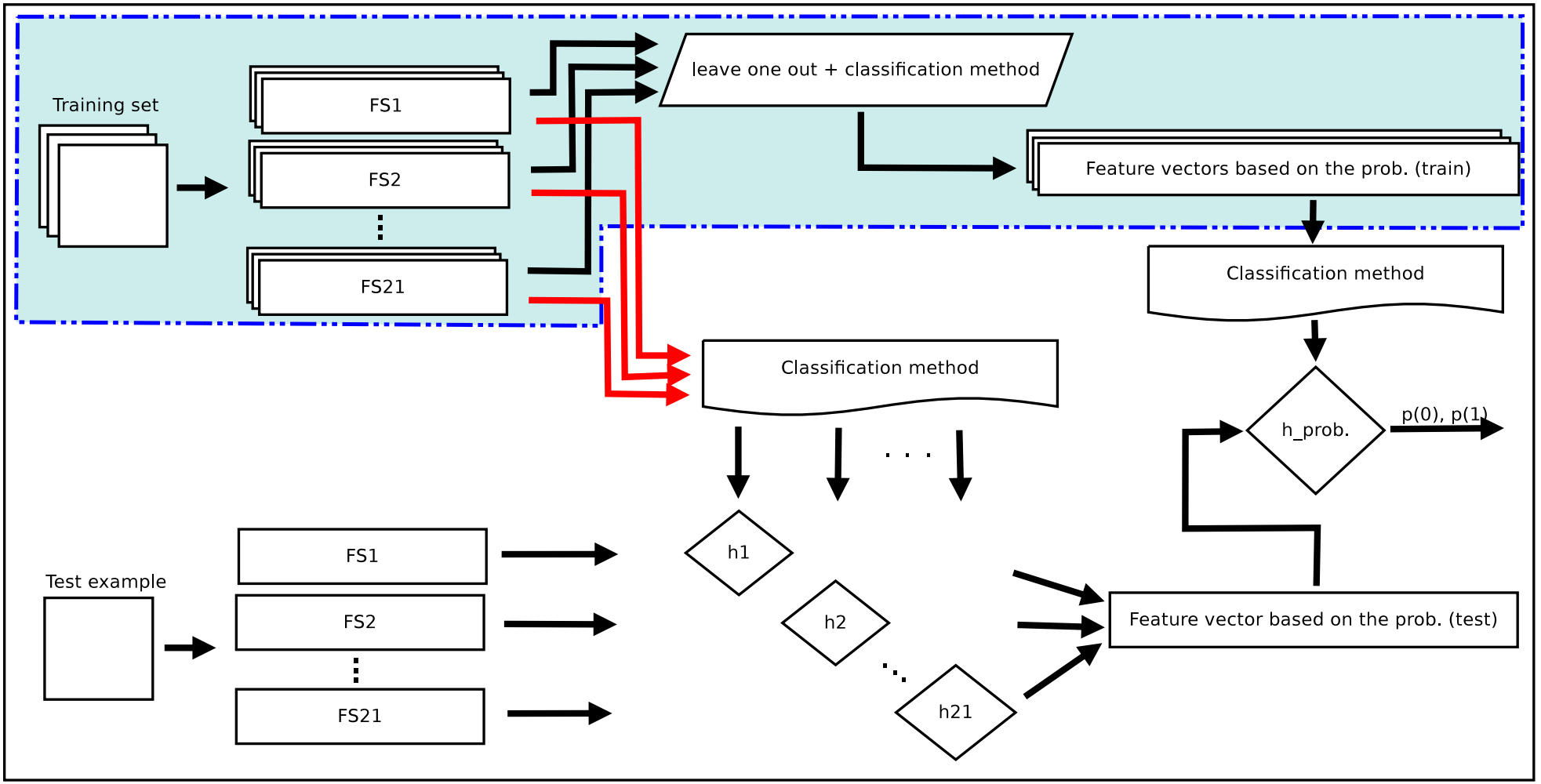

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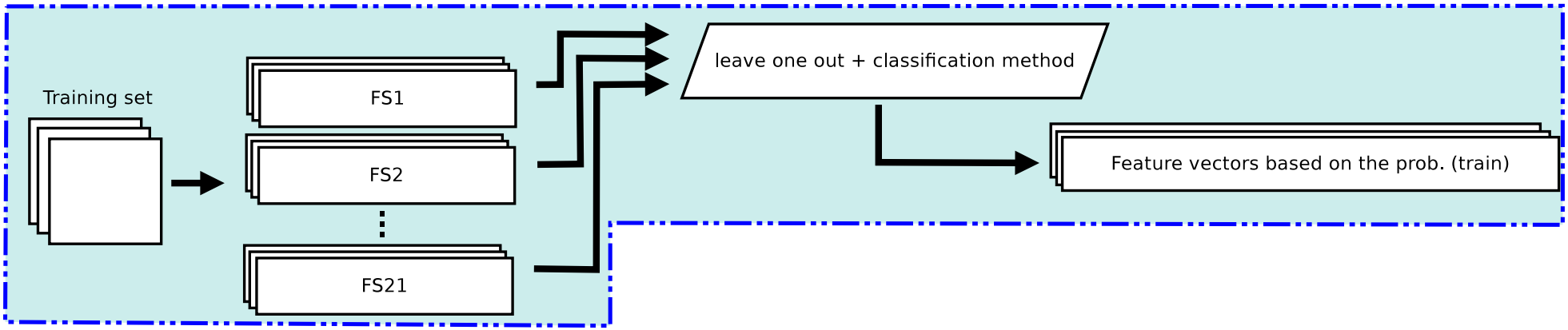

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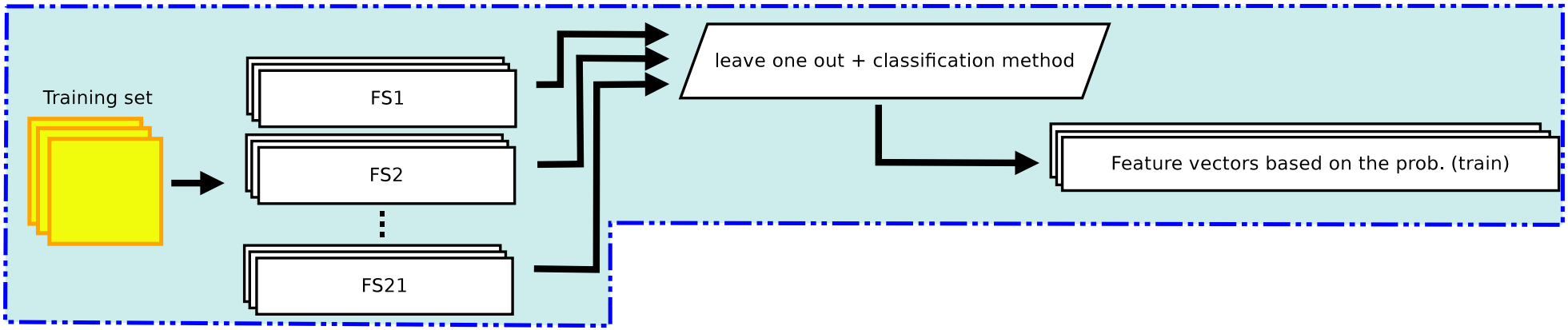

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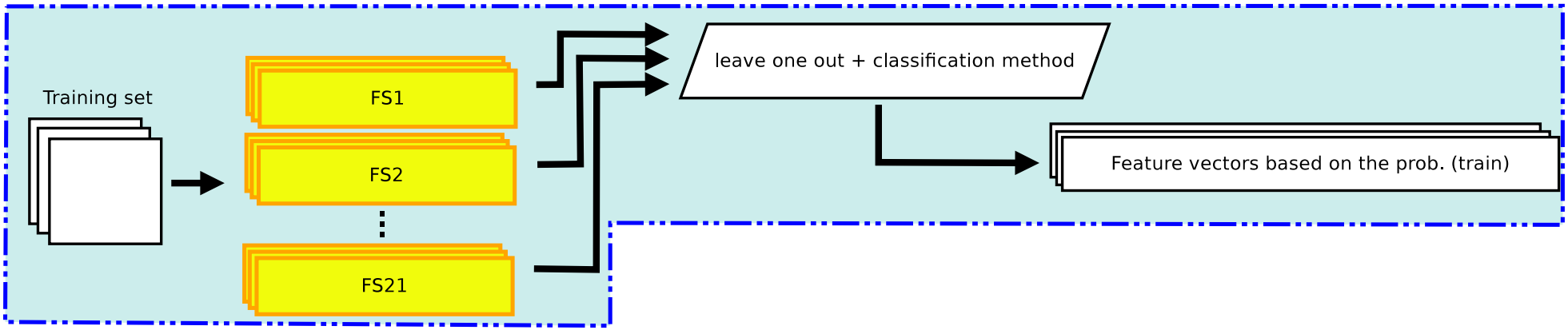

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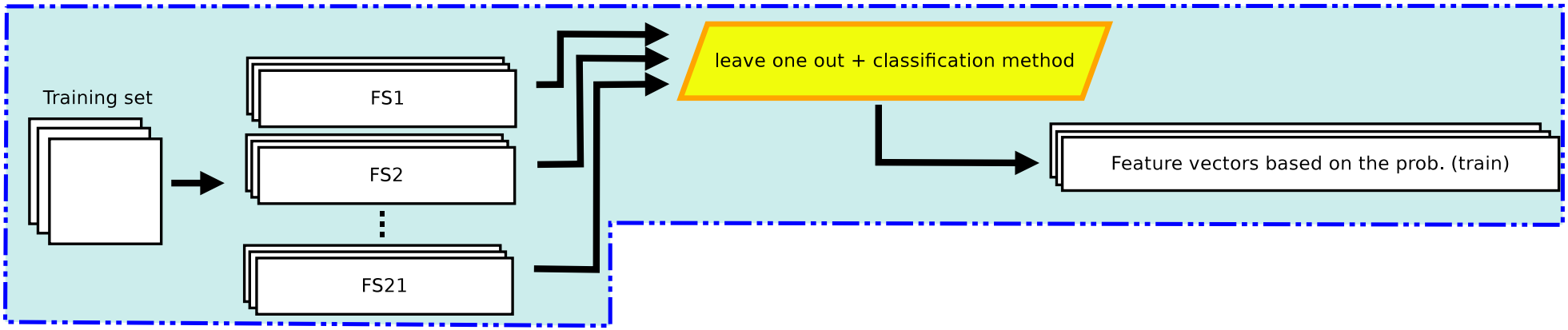

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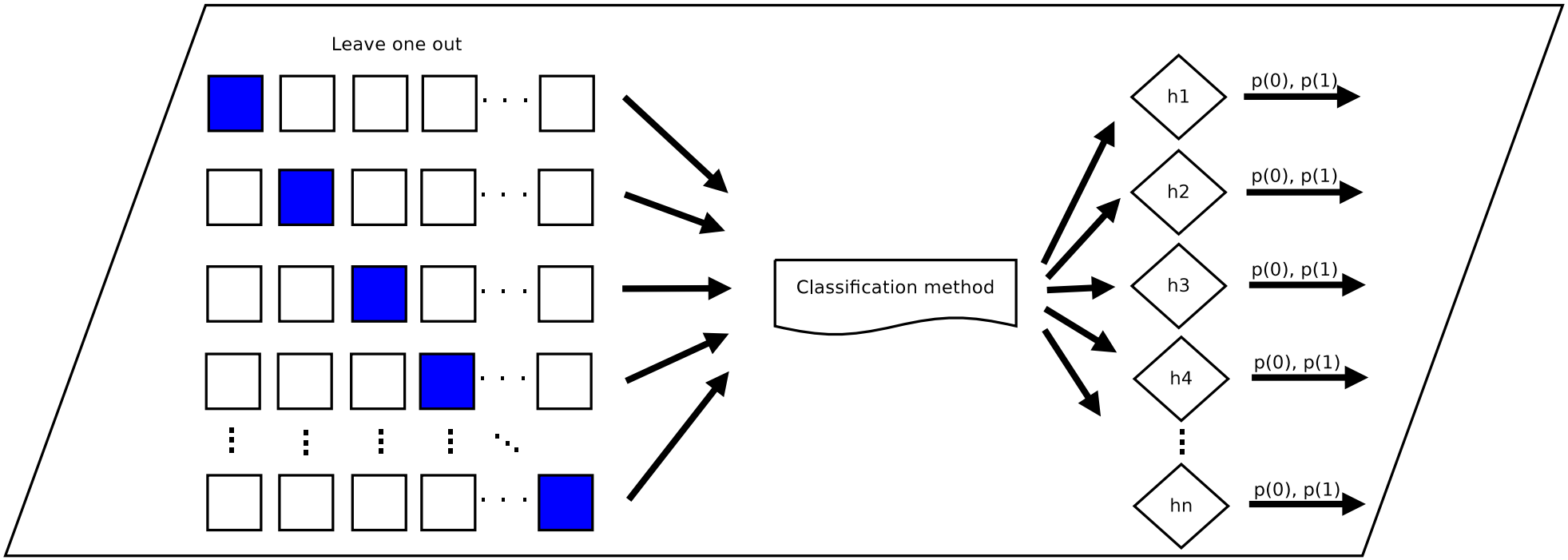

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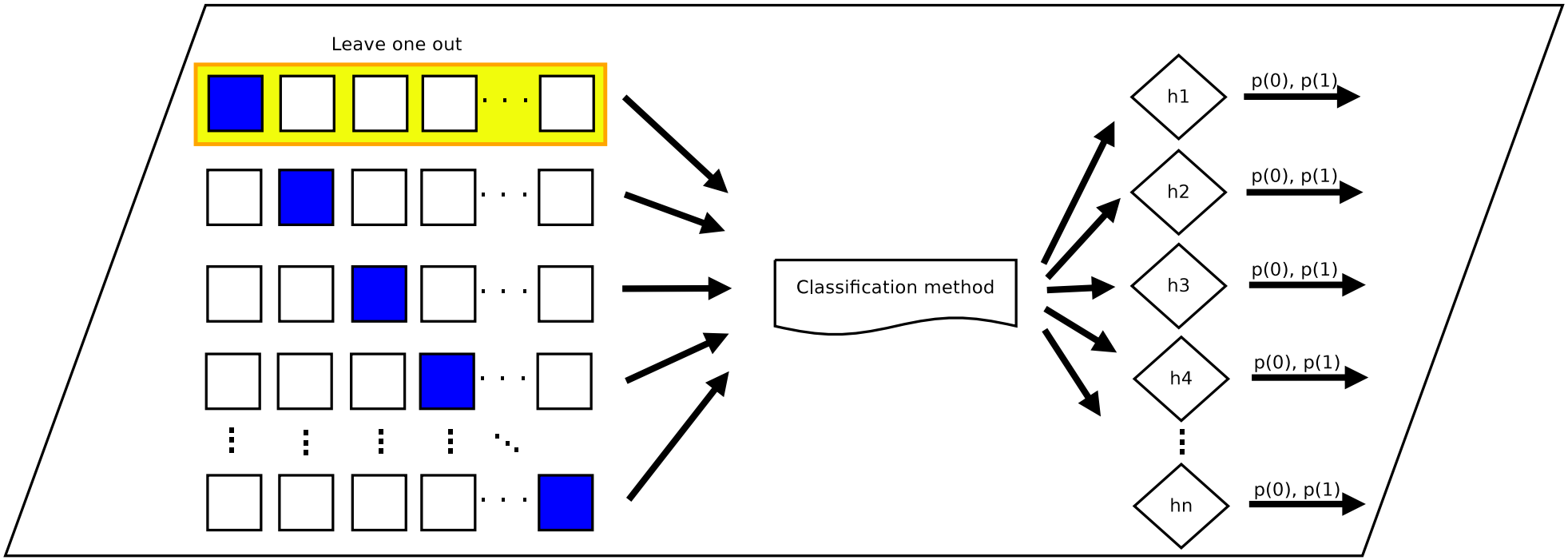

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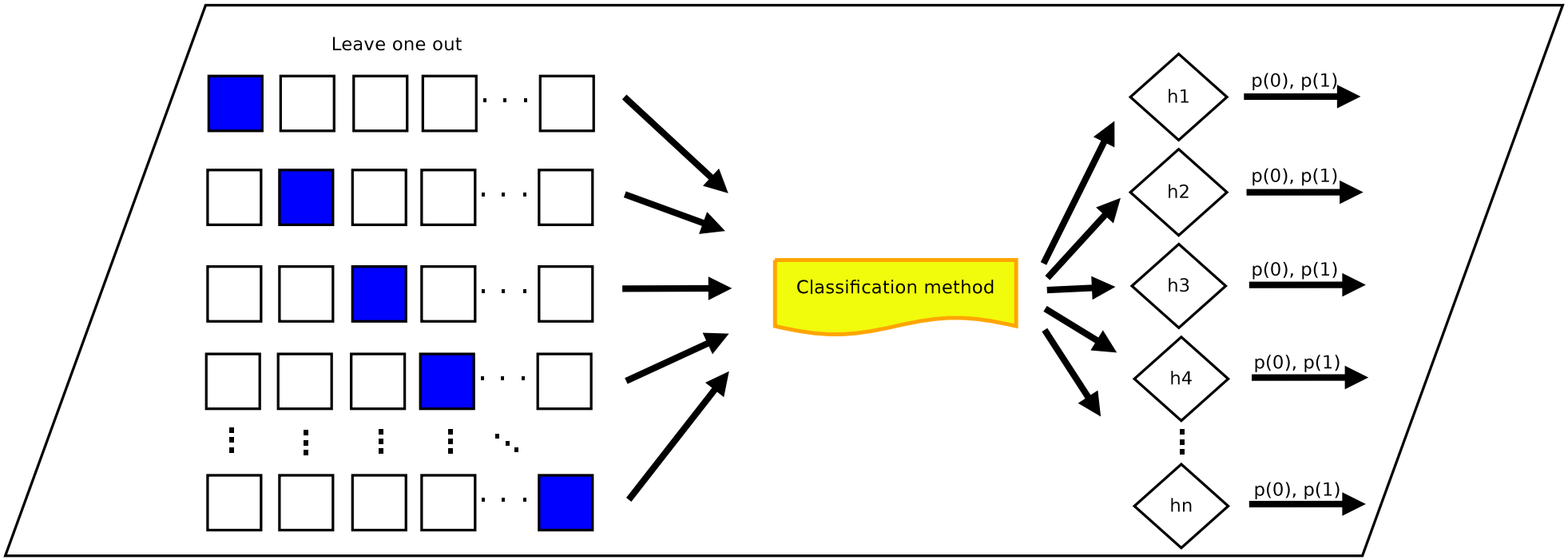

- classification method: Logistic Regression
- class balancing: SMOTE (Synthetic Minority Over-sampling Technique)

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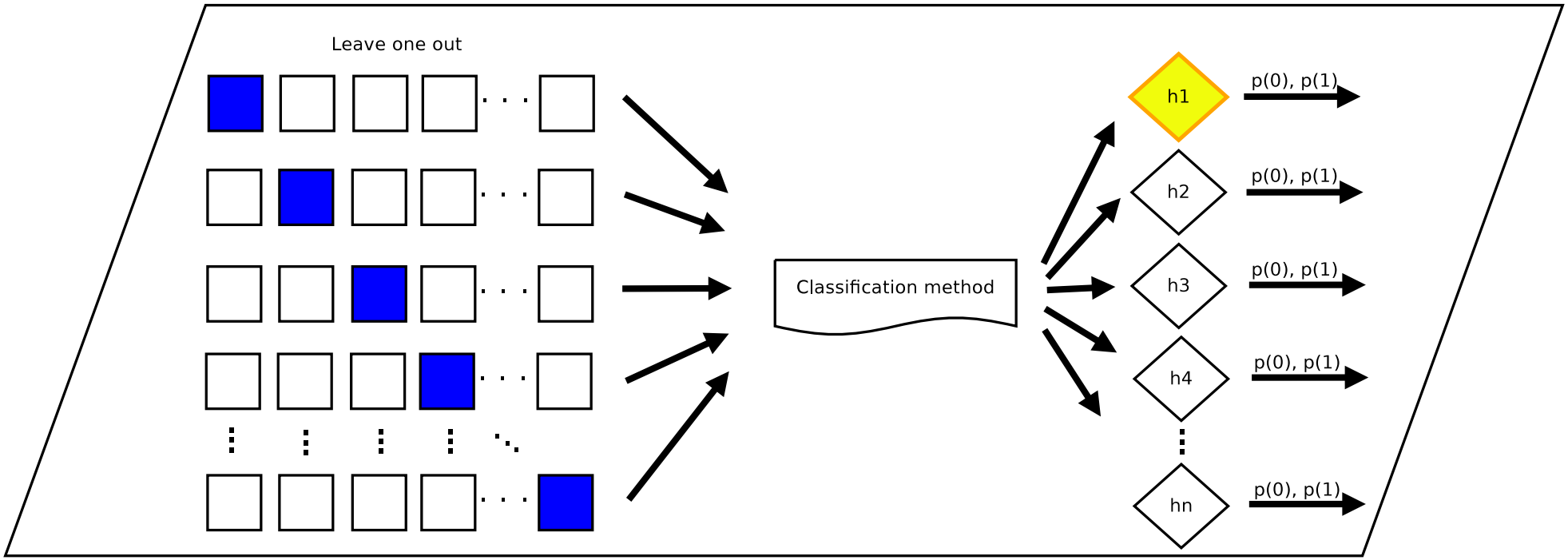

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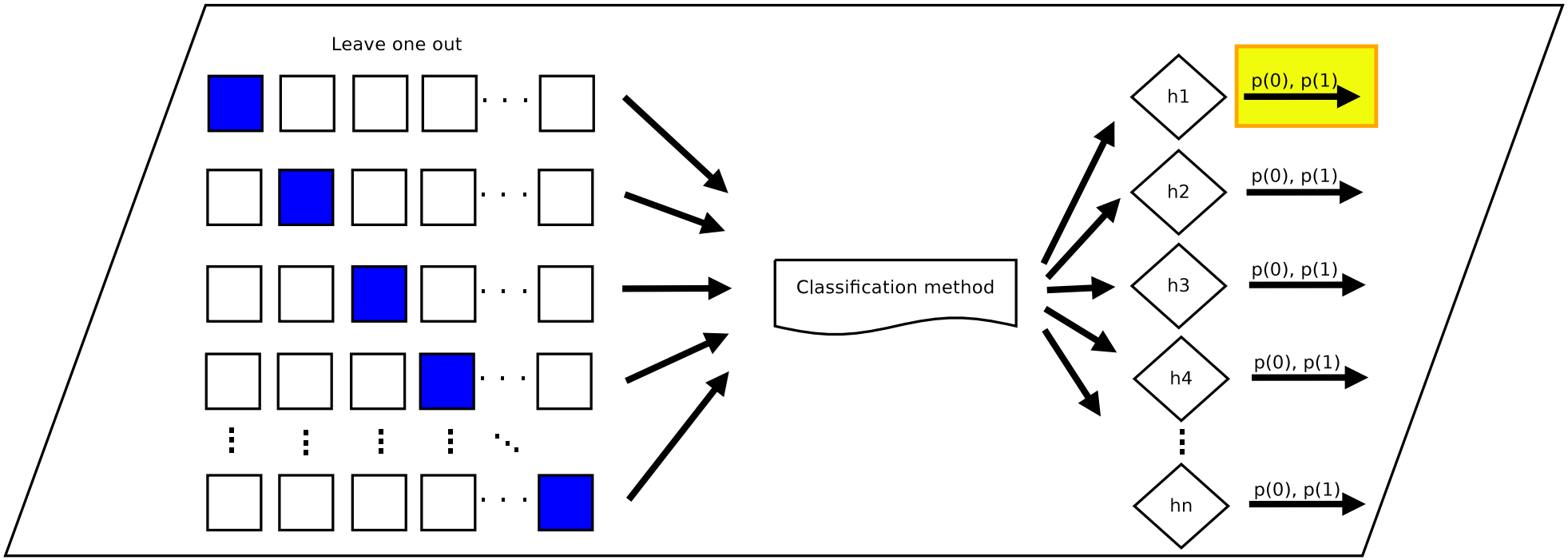

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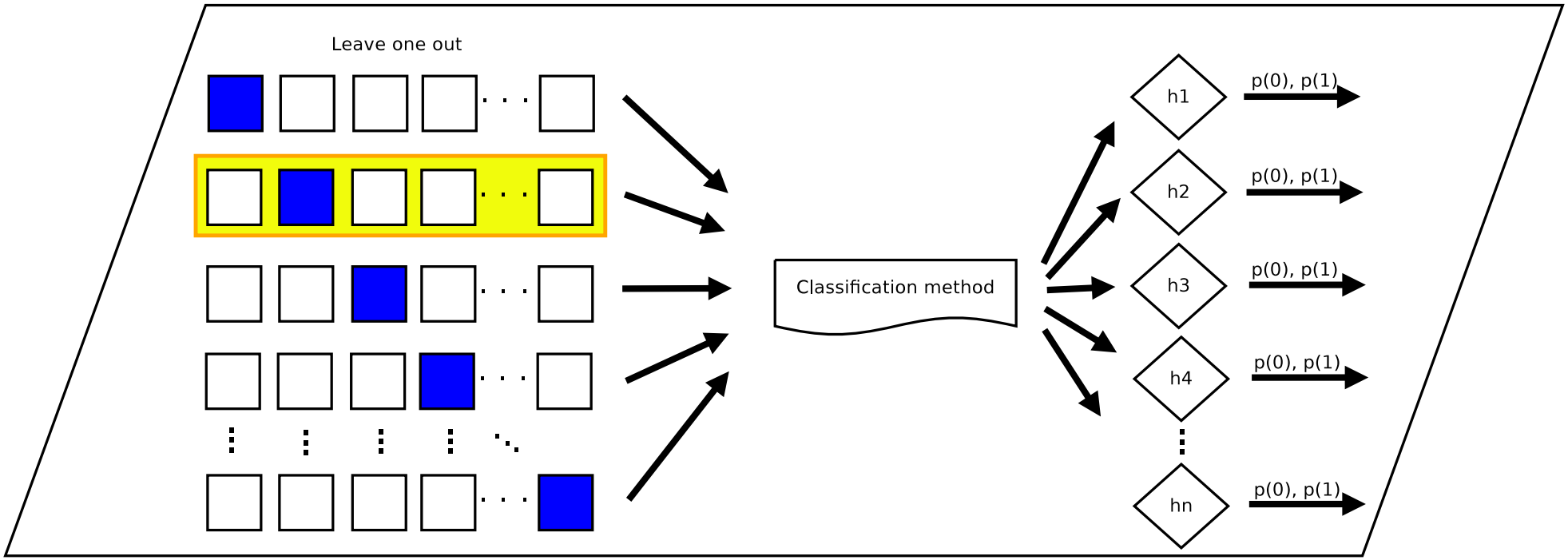

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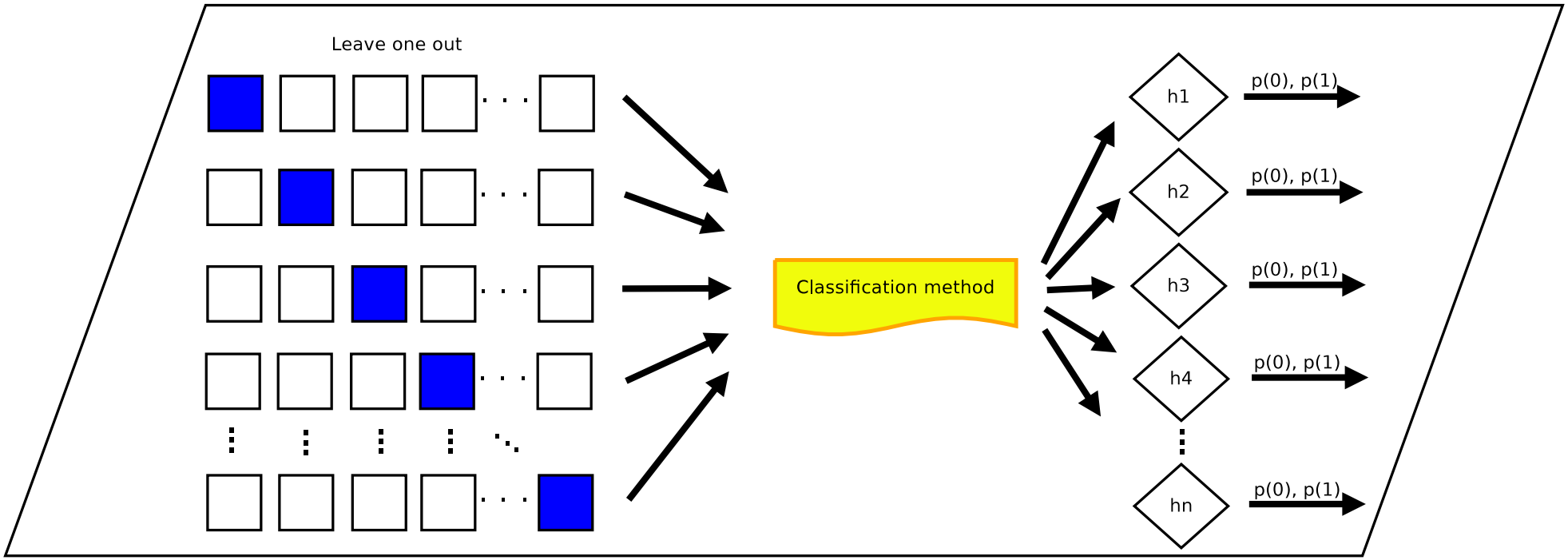

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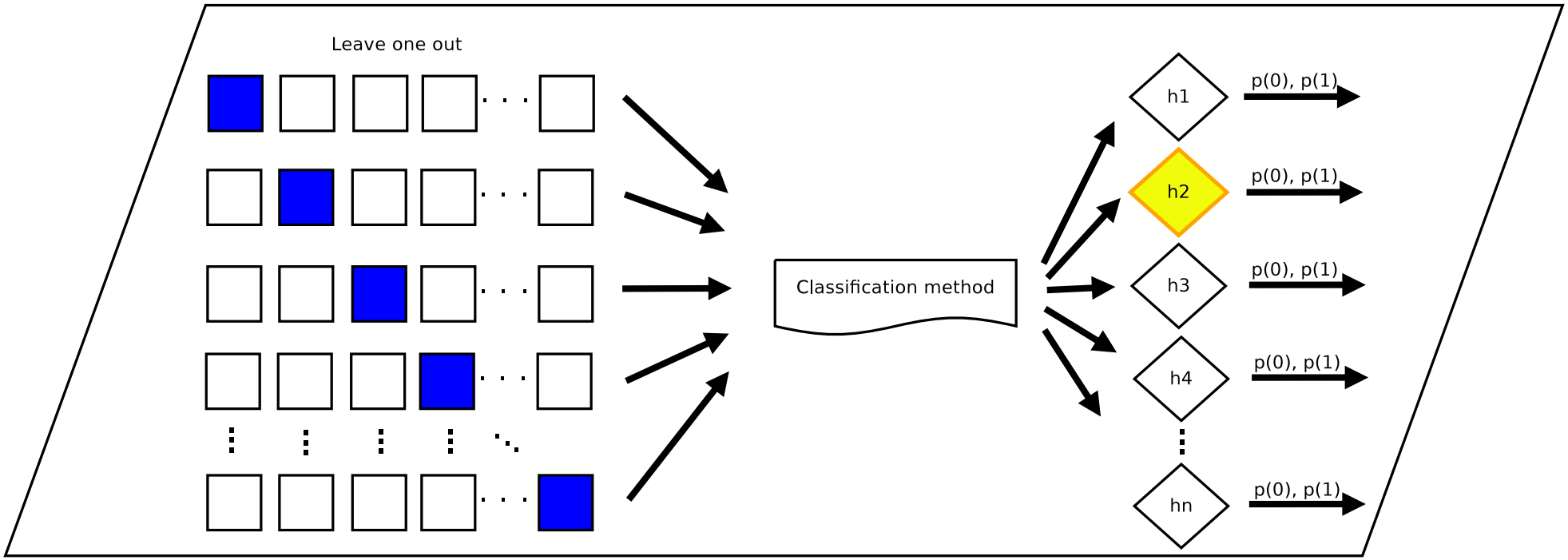

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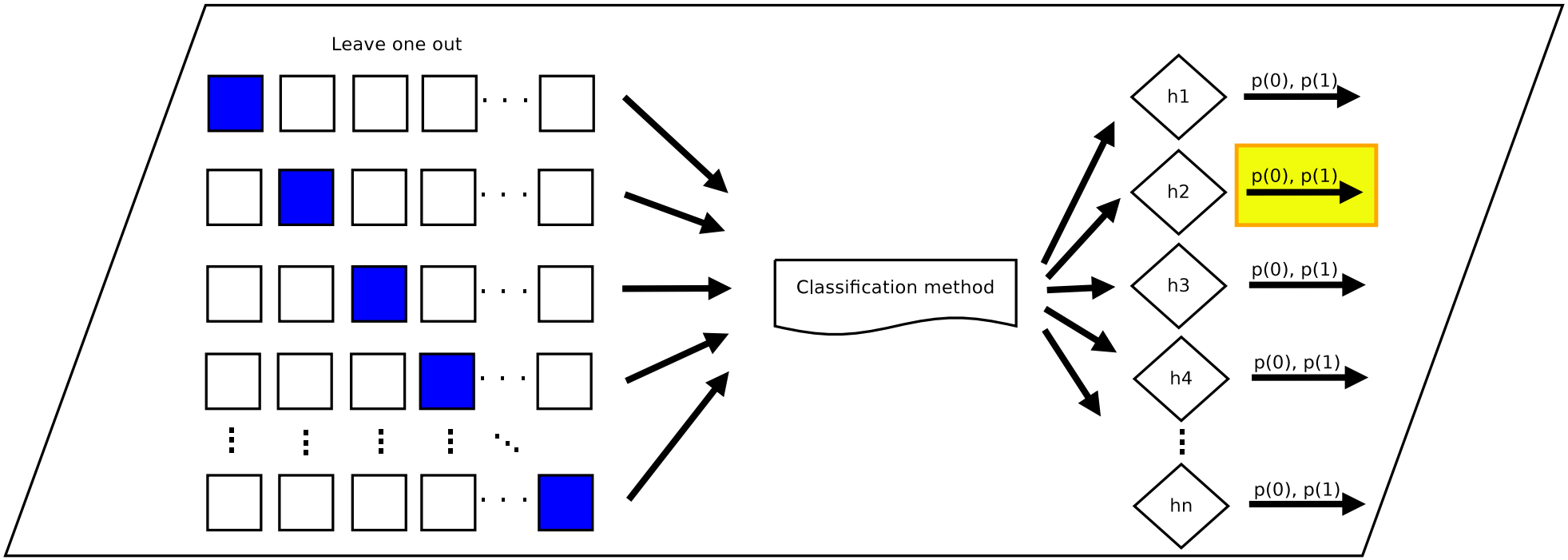

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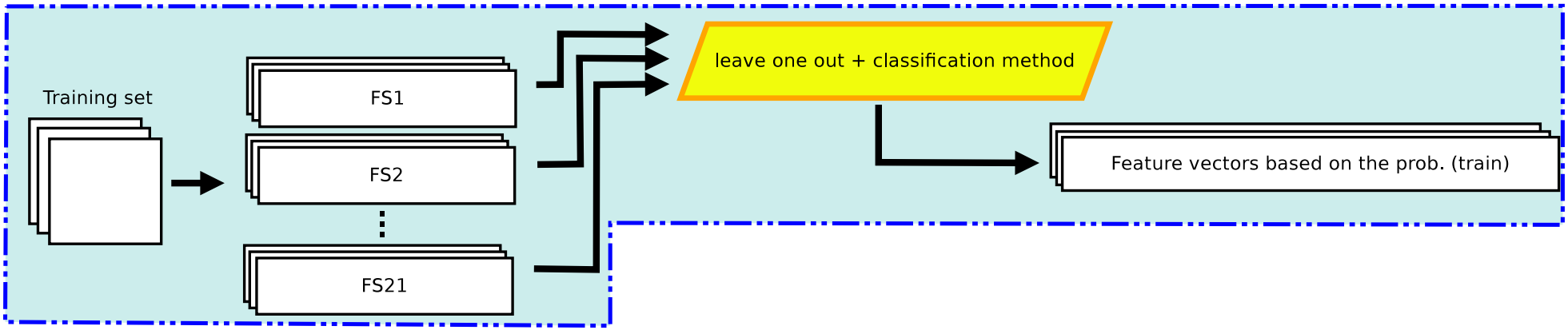

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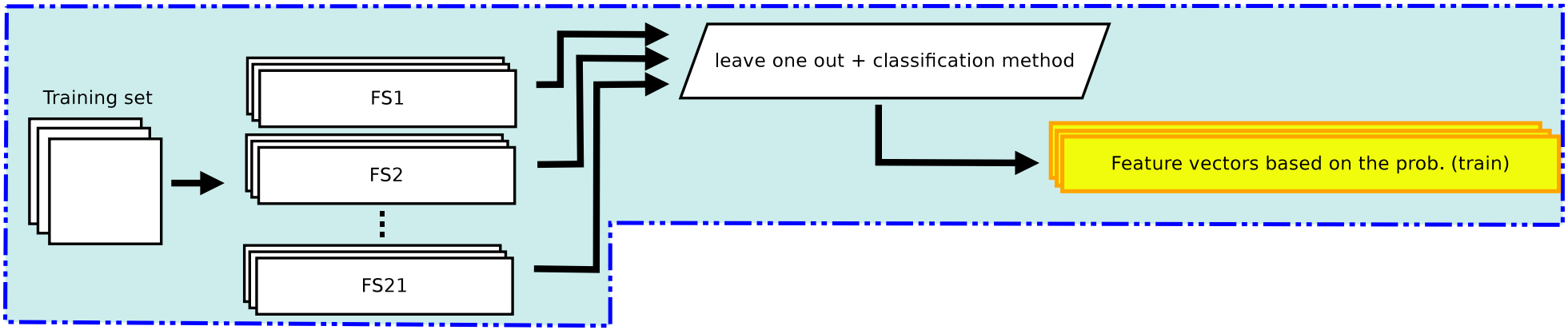
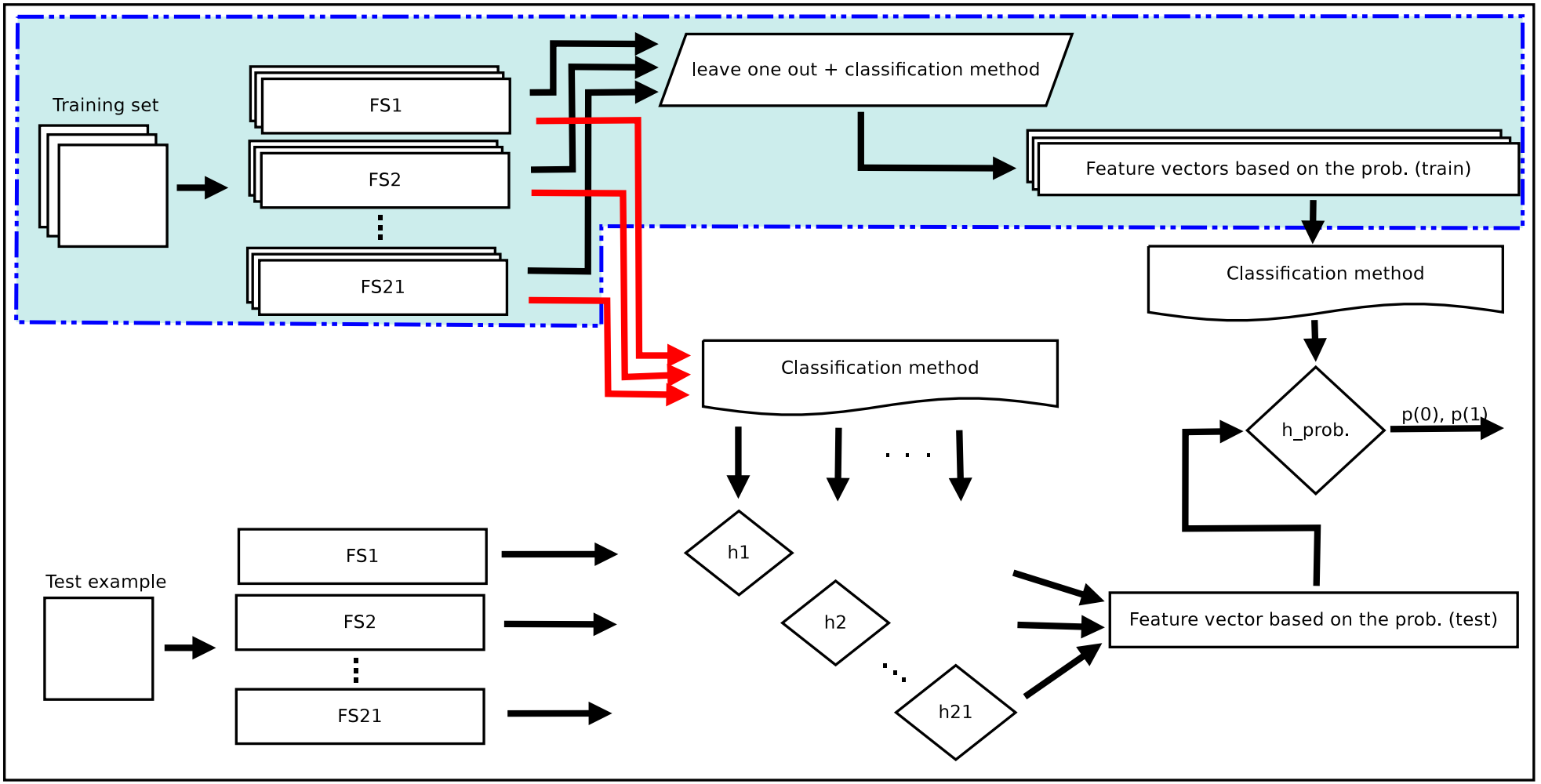


Id	FS1	FS2	FS3	...	FS21
1	$\text{Prob}_{\text{Id}=1,1}$	$\text{Prob}_{\text{Id}=1,2}$	$\text{Prob}_{\text{Id}=1,3}$	...	$\text{Prob}_{\text{Id}=1,21}$
2	$\text{Prob}_{\text{Id}=2,1}$	$\text{Prob}_{\text{Id}=2,2}$	$\text{Prob}_{\text{Id}=2,3}$	...	$\text{Prob}_{\text{Id}=2,21}$
5	$\text{Prob}_{\text{Id}=5,1}$	$\text{Prob}_{\text{Id}=5,2}$	$\text{Prob}_{\text{Id}=5,3}$	...	$\text{Prob}_{\text{Id}=5,21}$
8	$\text{Prob}_{\text{Id}=8,1}$	$\text{Prob}_{\text{Id}=8,2}$	$\text{Prob}_{\text{Id}=8,3}$	...	$\text{Prob}_{\text{Id}=8,21}$
10	$\text{Prob}_{\text{Id}=10,1}$	$\text{Prob}_{\text{Id}=10,2}$	$\text{Prob}_{\text{Id}=10,3}$	...	$\text{Prob}_{\text{Id}=10,21}$
⋮	⋮	⋮	⋮	⋱	⋮
122	$\text{Prob}_{\text{Id}=122,1}$	$\text{Prob}_{\text{Id}=122,2}$	$\text{Prob}_{\text{Id}=122,3}$	...	$\text{Prob}_{\text{Id}=122,21}$

First selected submission



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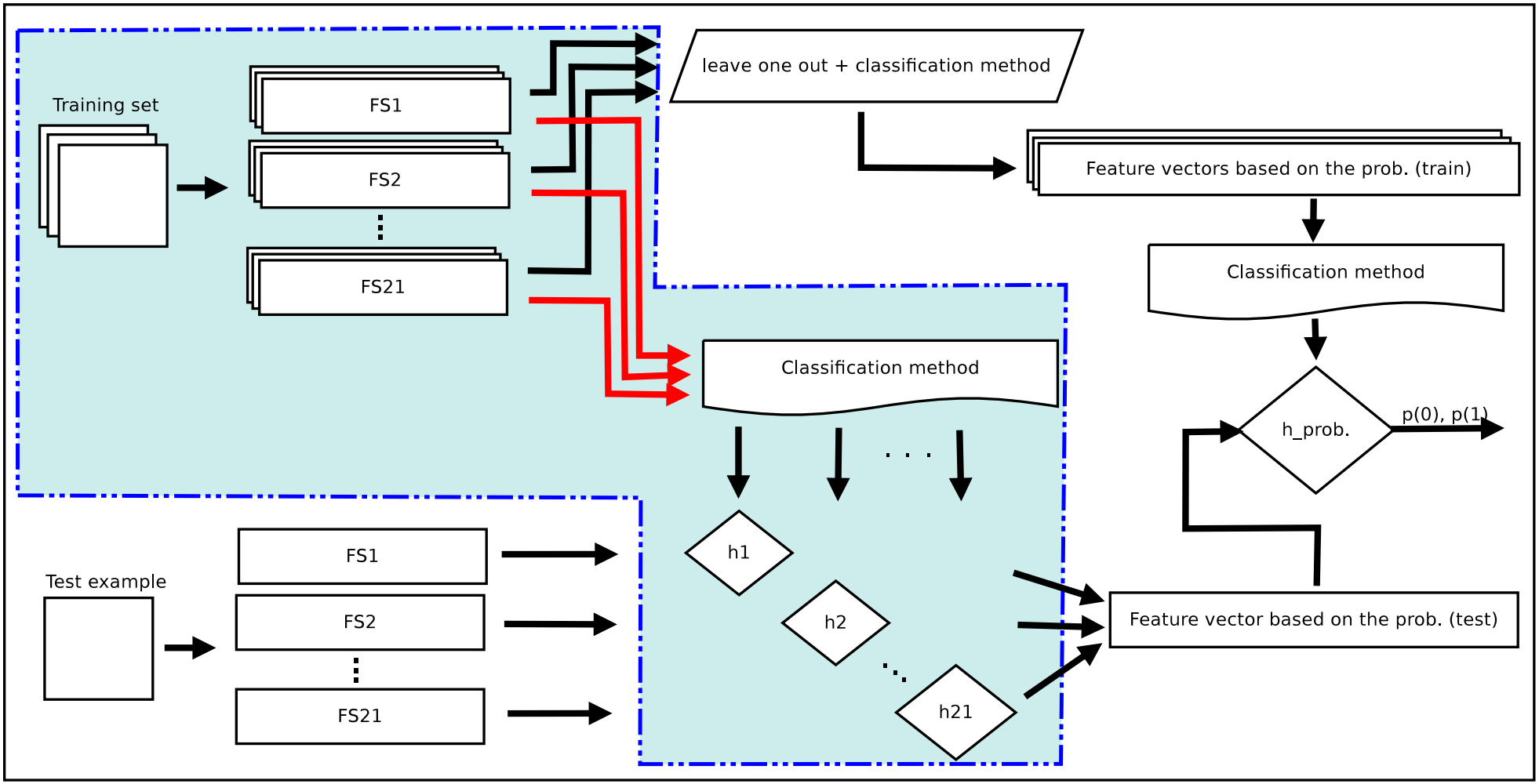

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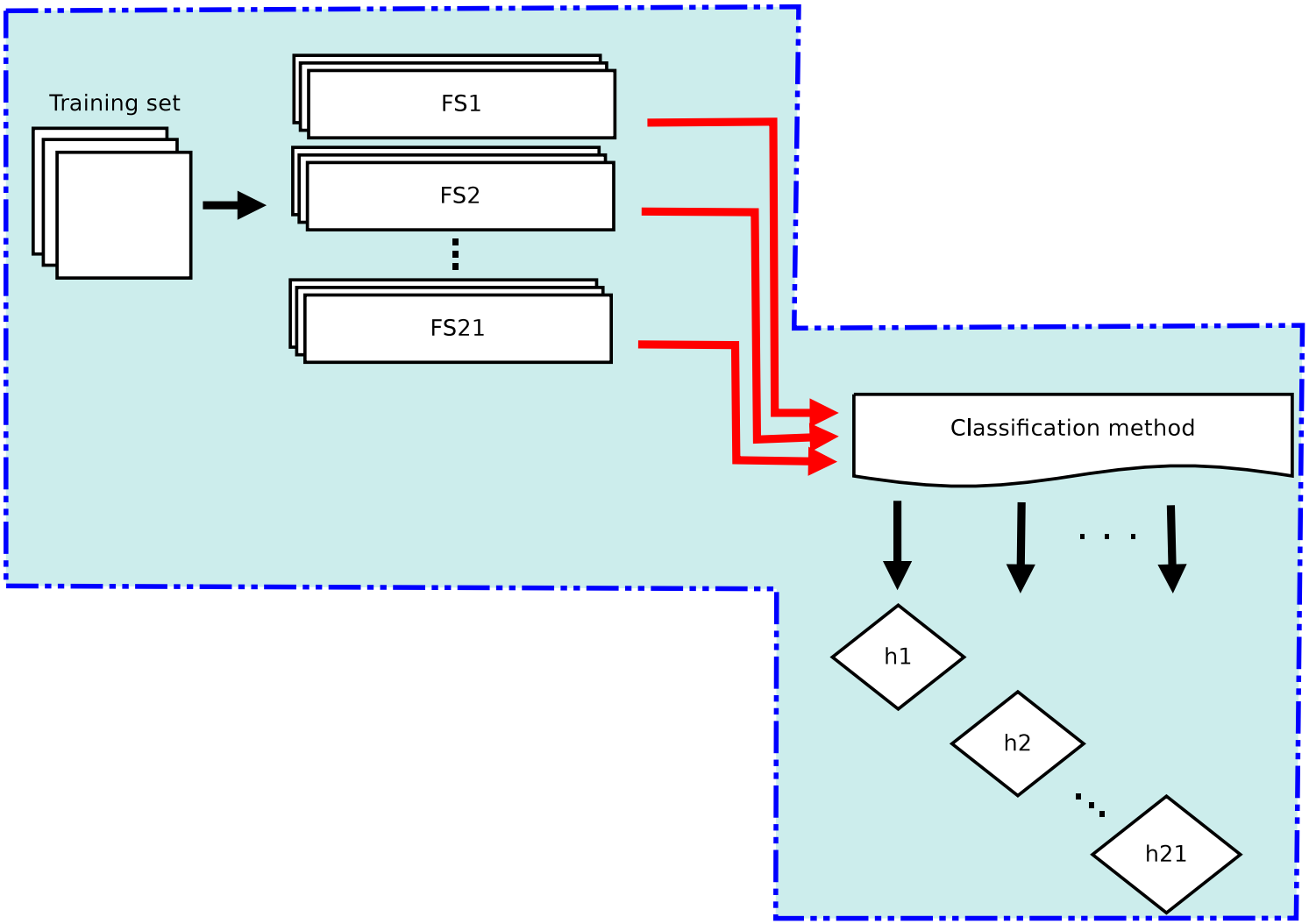

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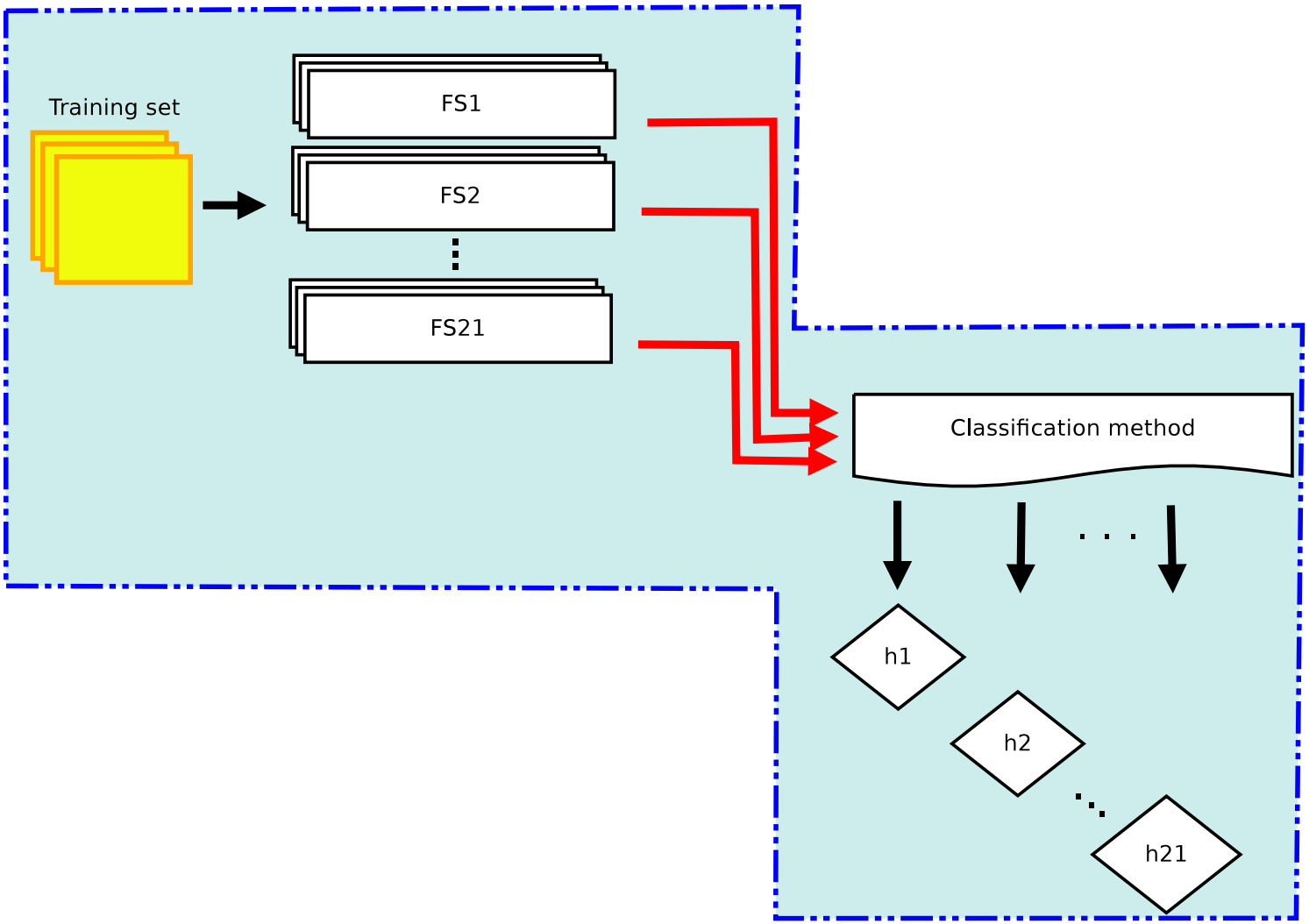

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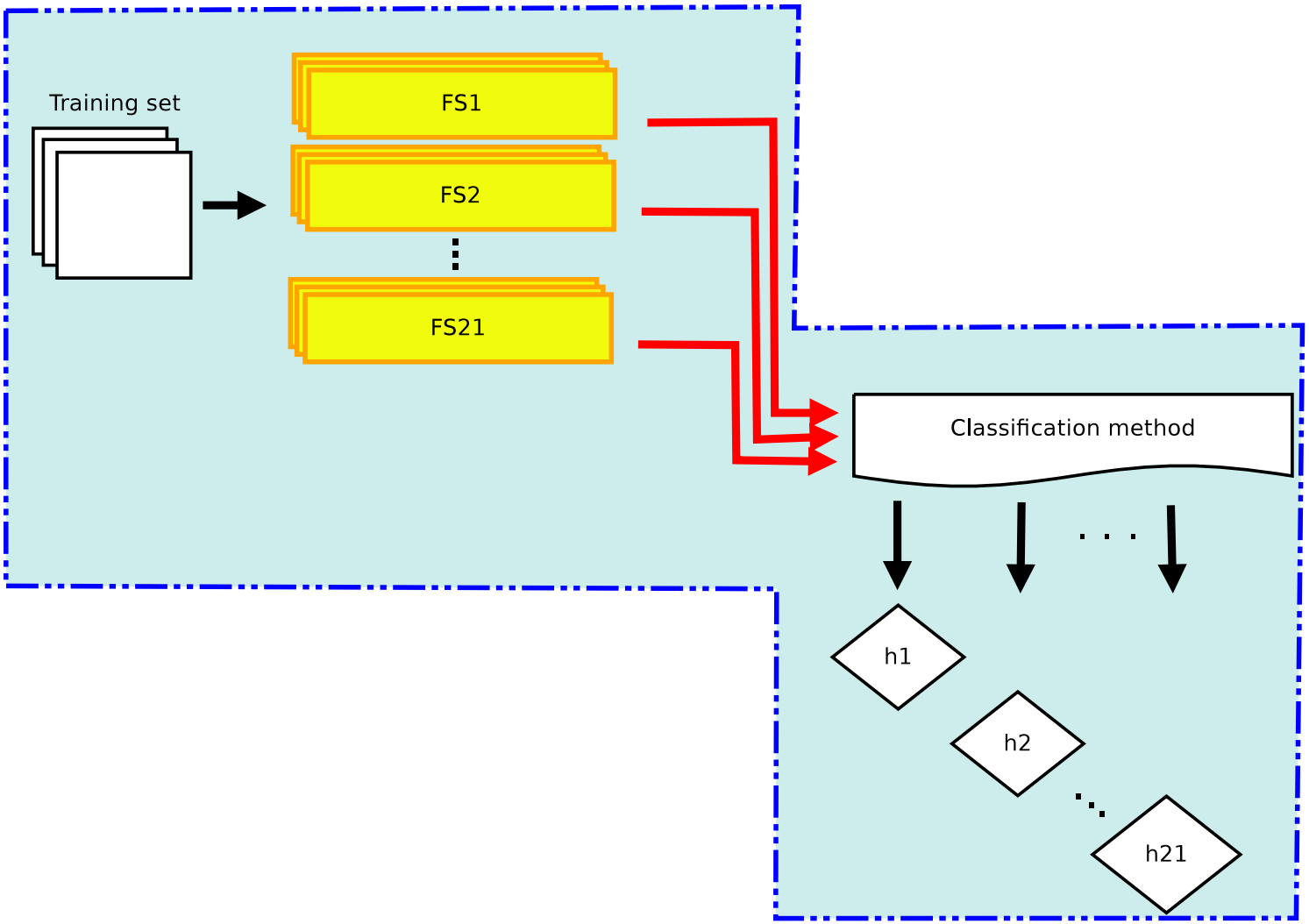

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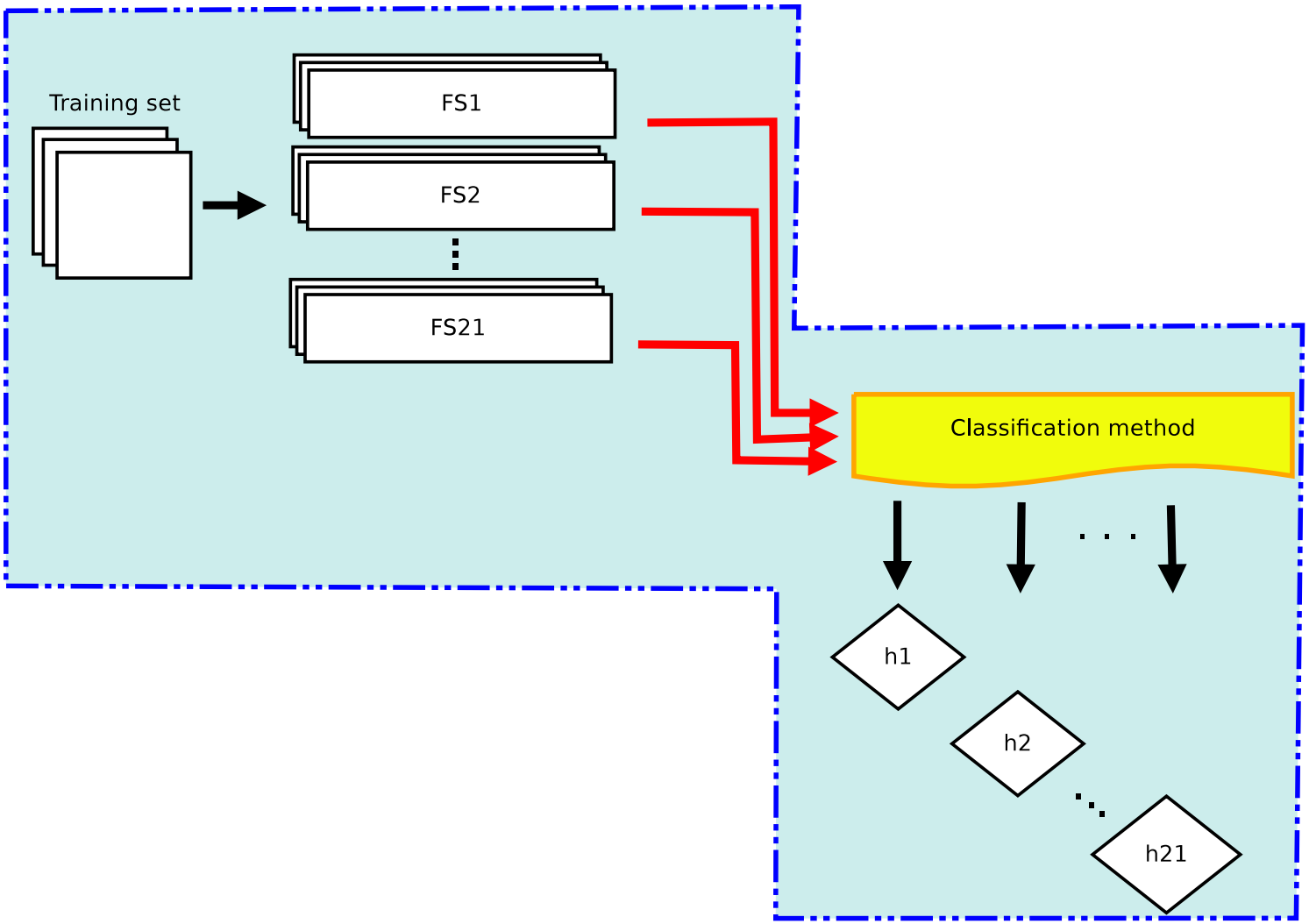

- classification method: Logistic Regression
- class balancing: SMOTE (Synthetic Minority Over-sampling Technique)

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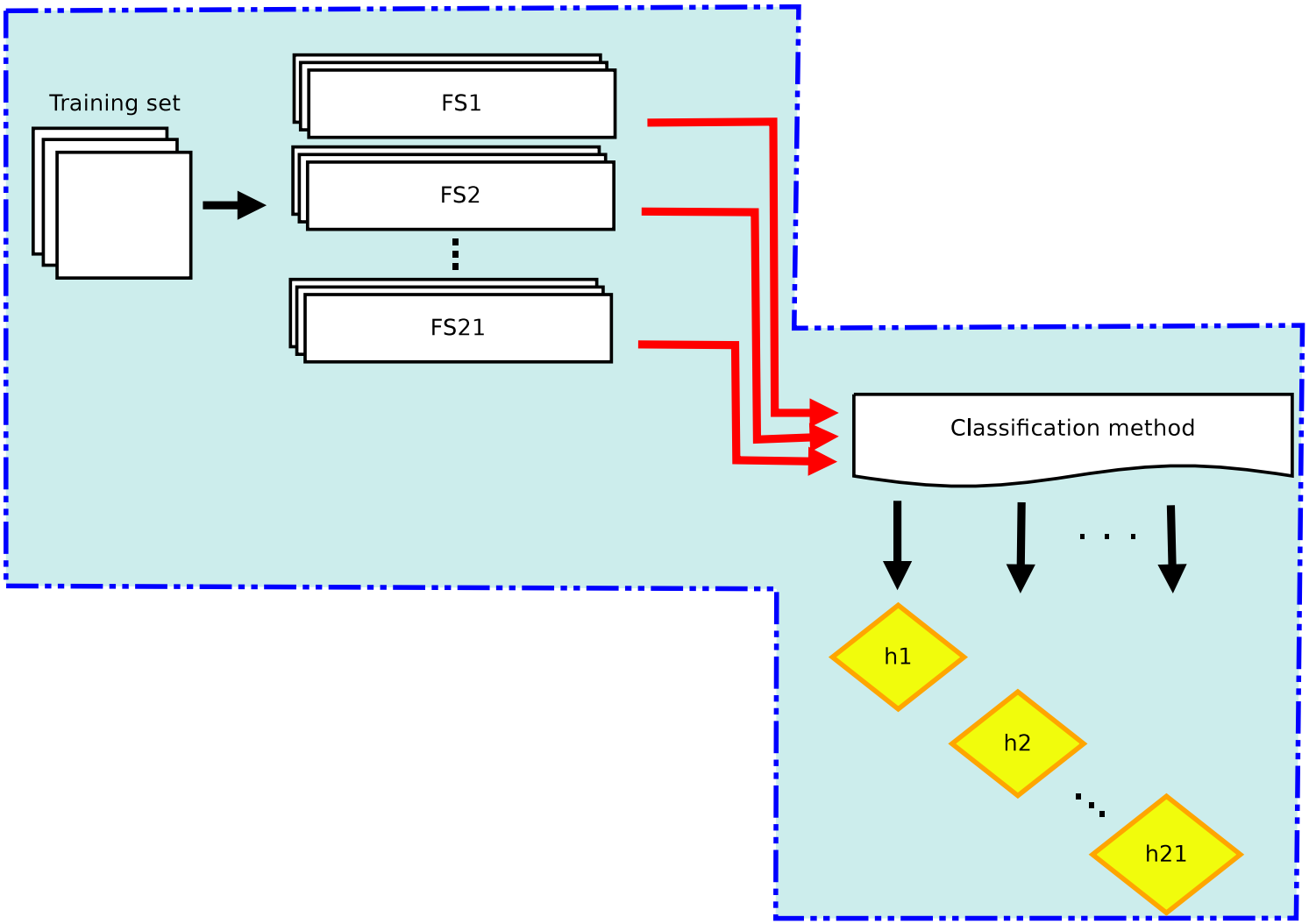

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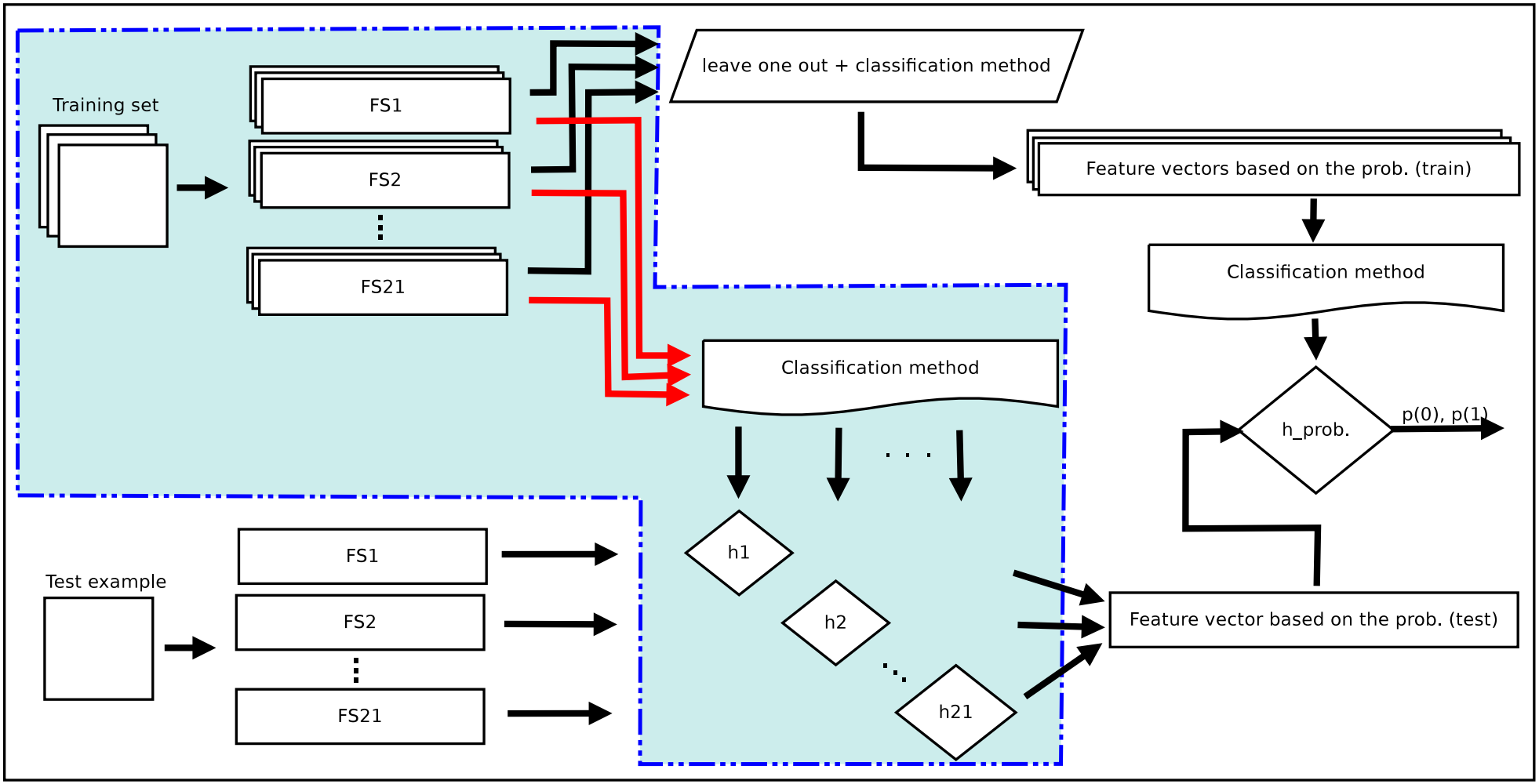

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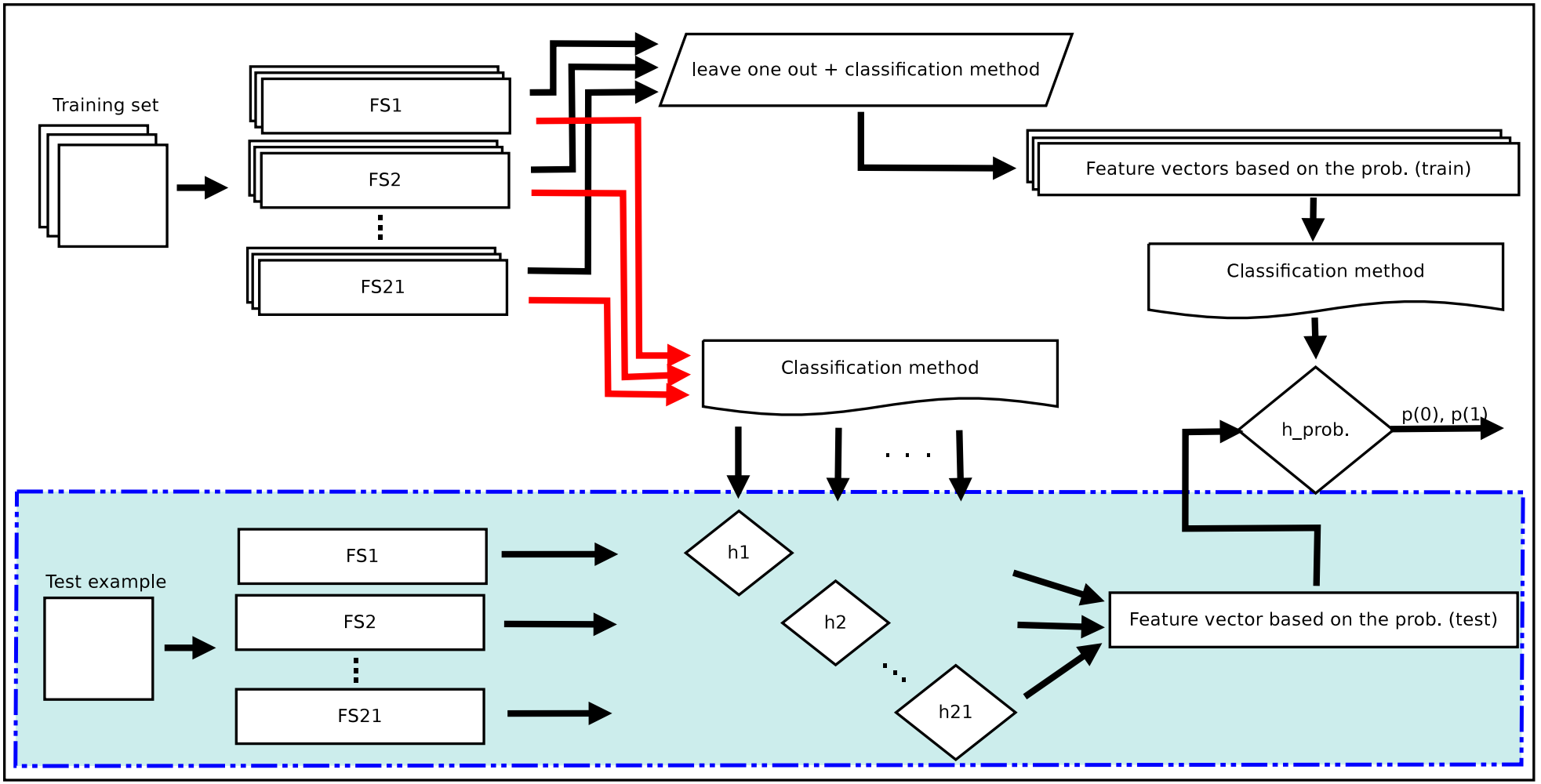

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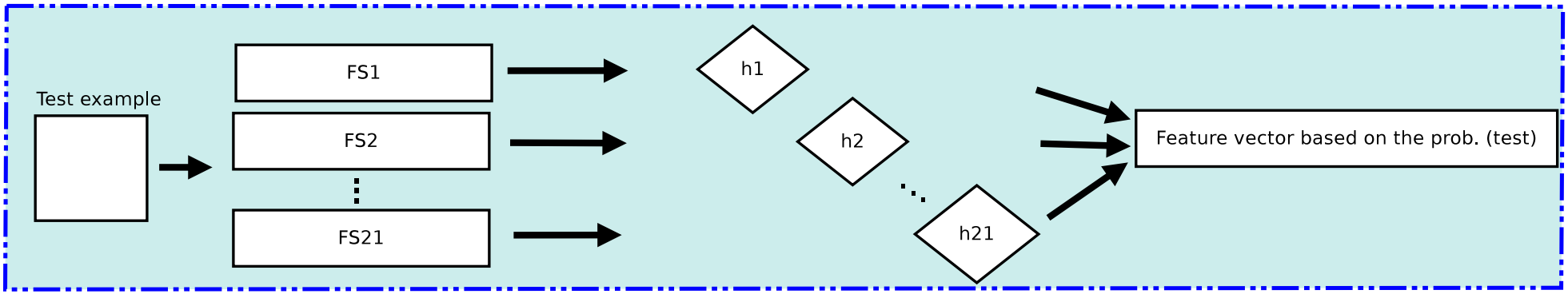

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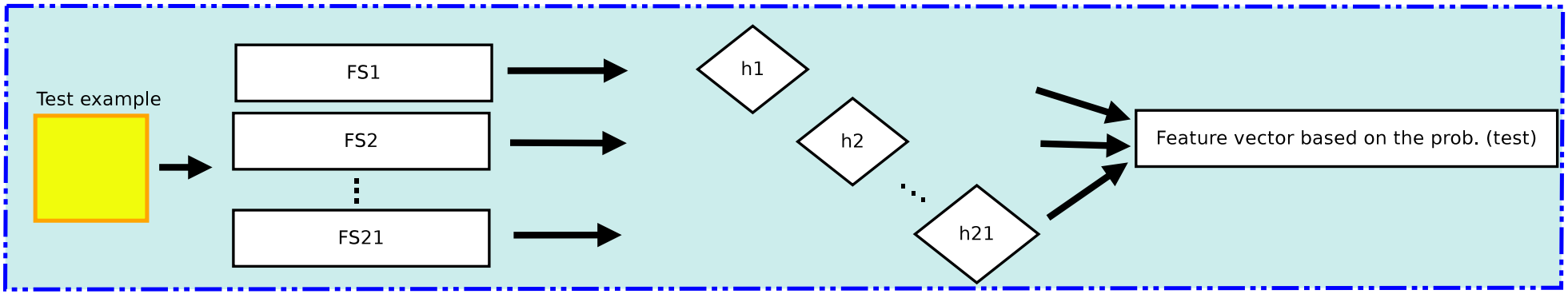

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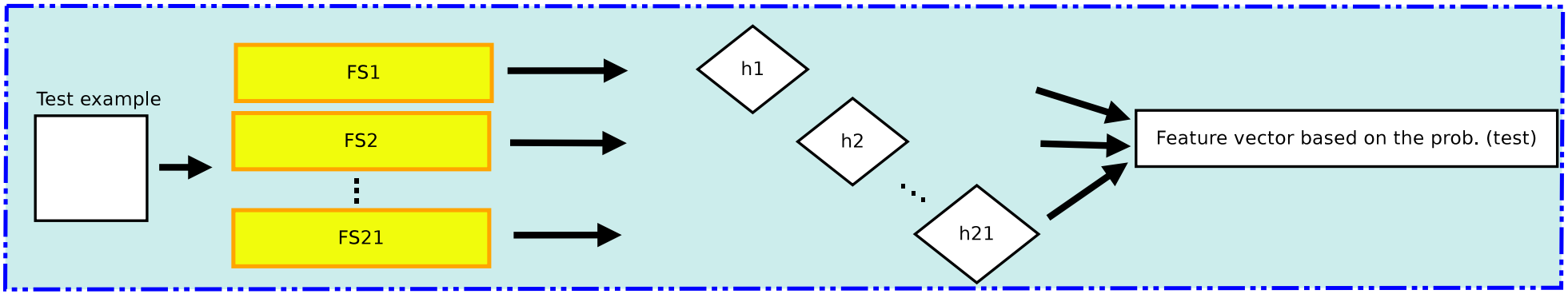

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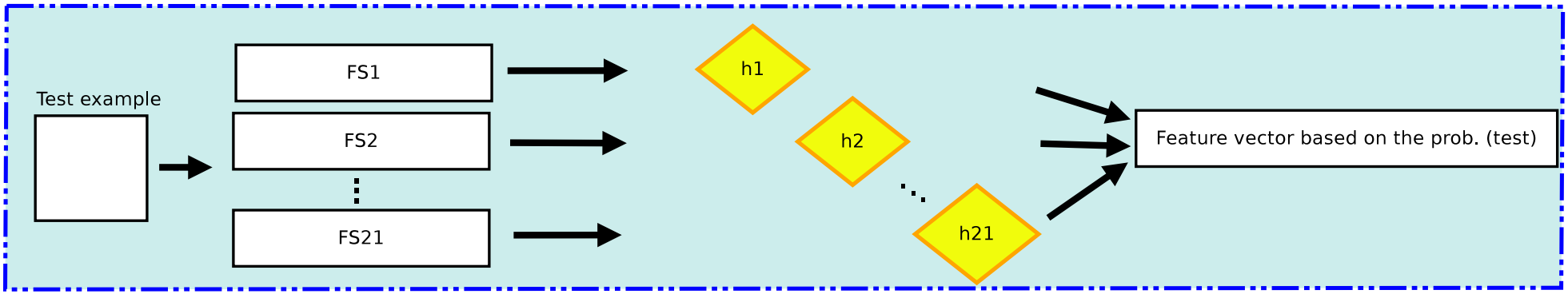

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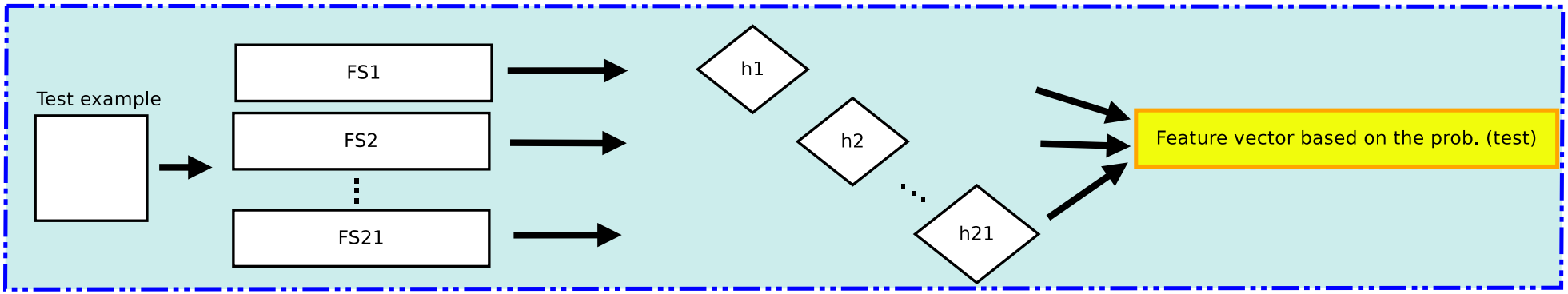

Id	FS1	FS2	FS3	...	FS21
i	$\text{Prob}_{\text{Id}=i,1}$	$\text{Prob}_{\text{Id}=i,2}$	$\text{Prob}_{\text{Id}=i,3}$	...	$\text{Prob}_{\text{Id}=i,21}$

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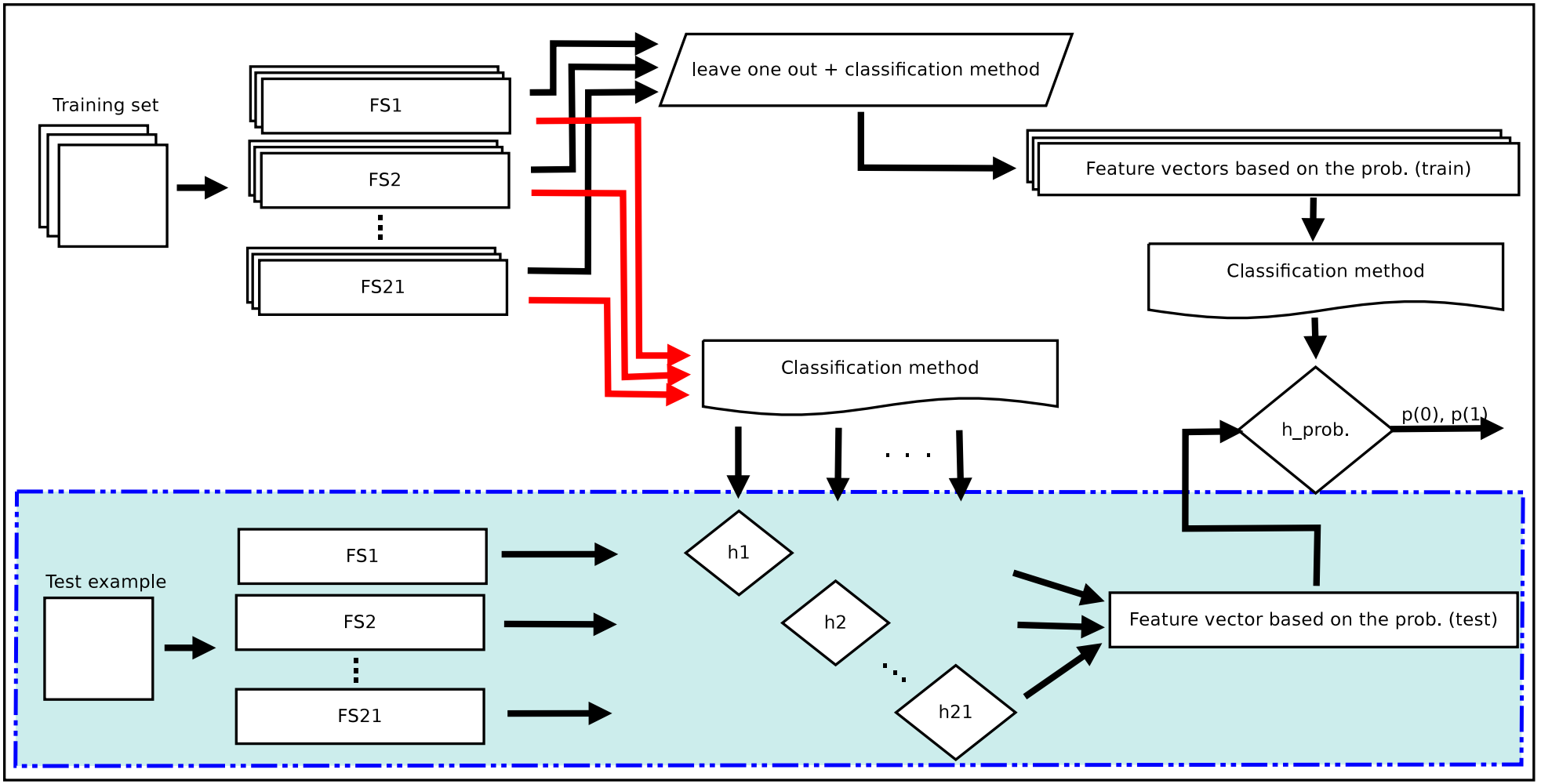

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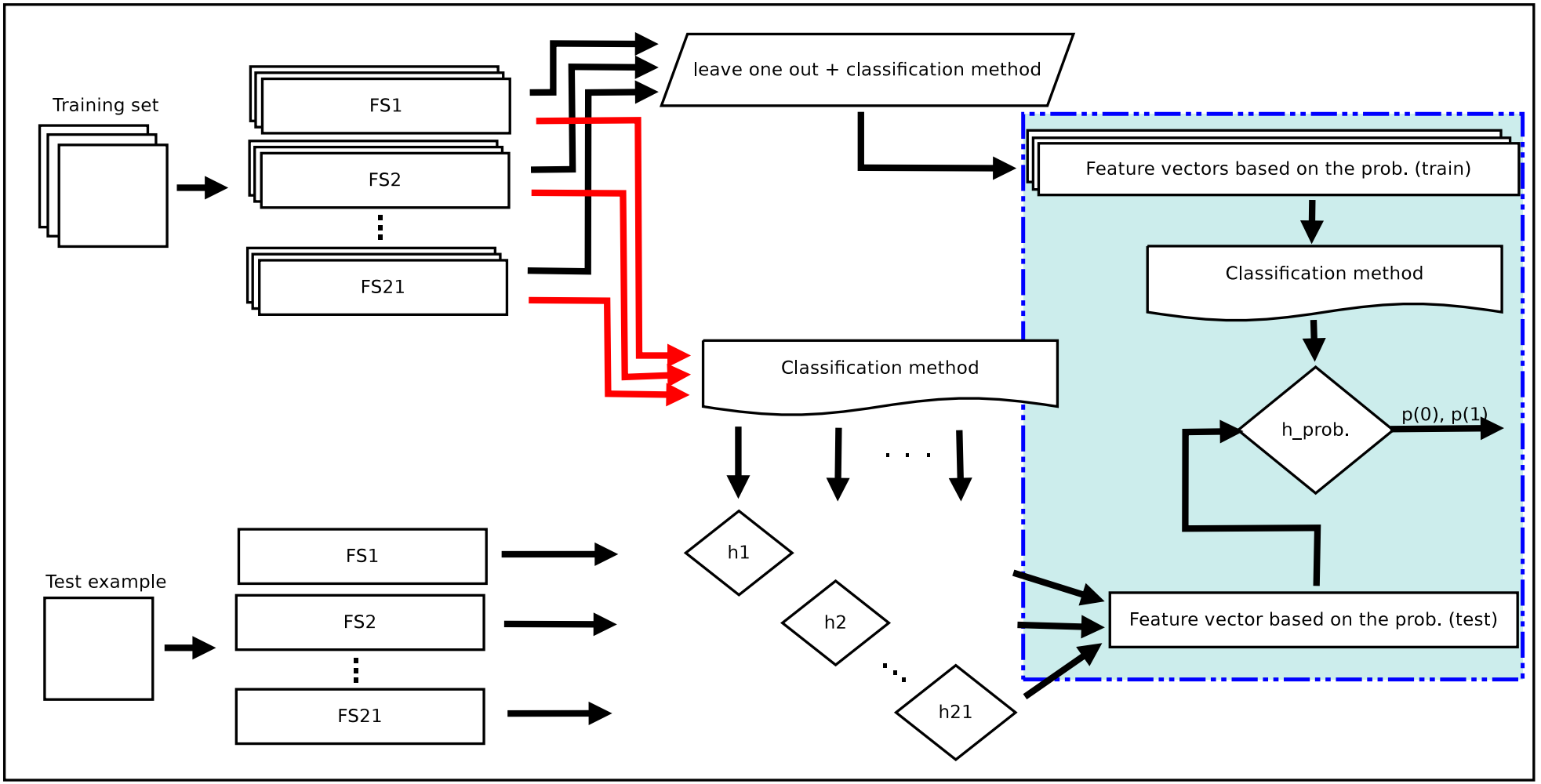

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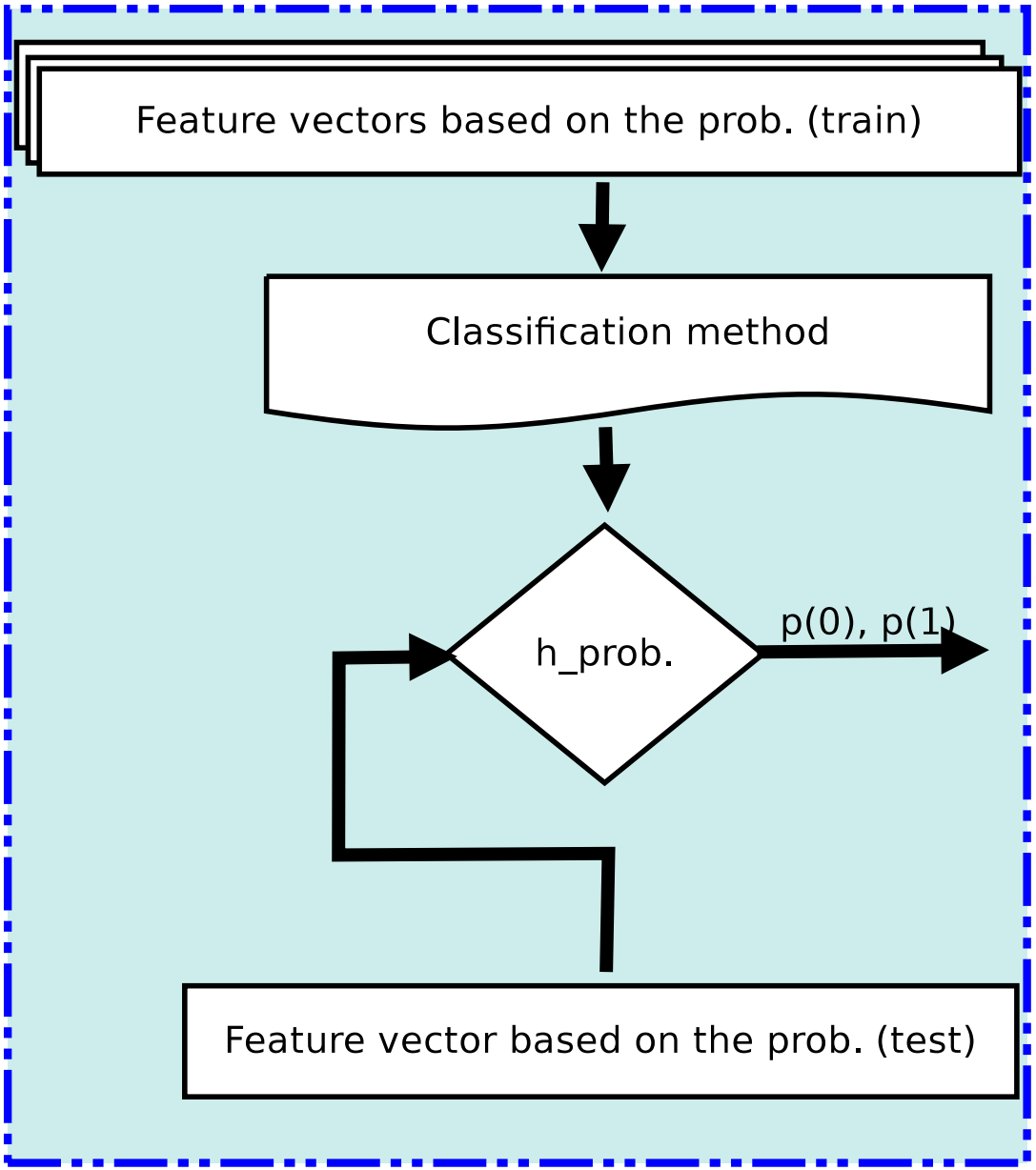

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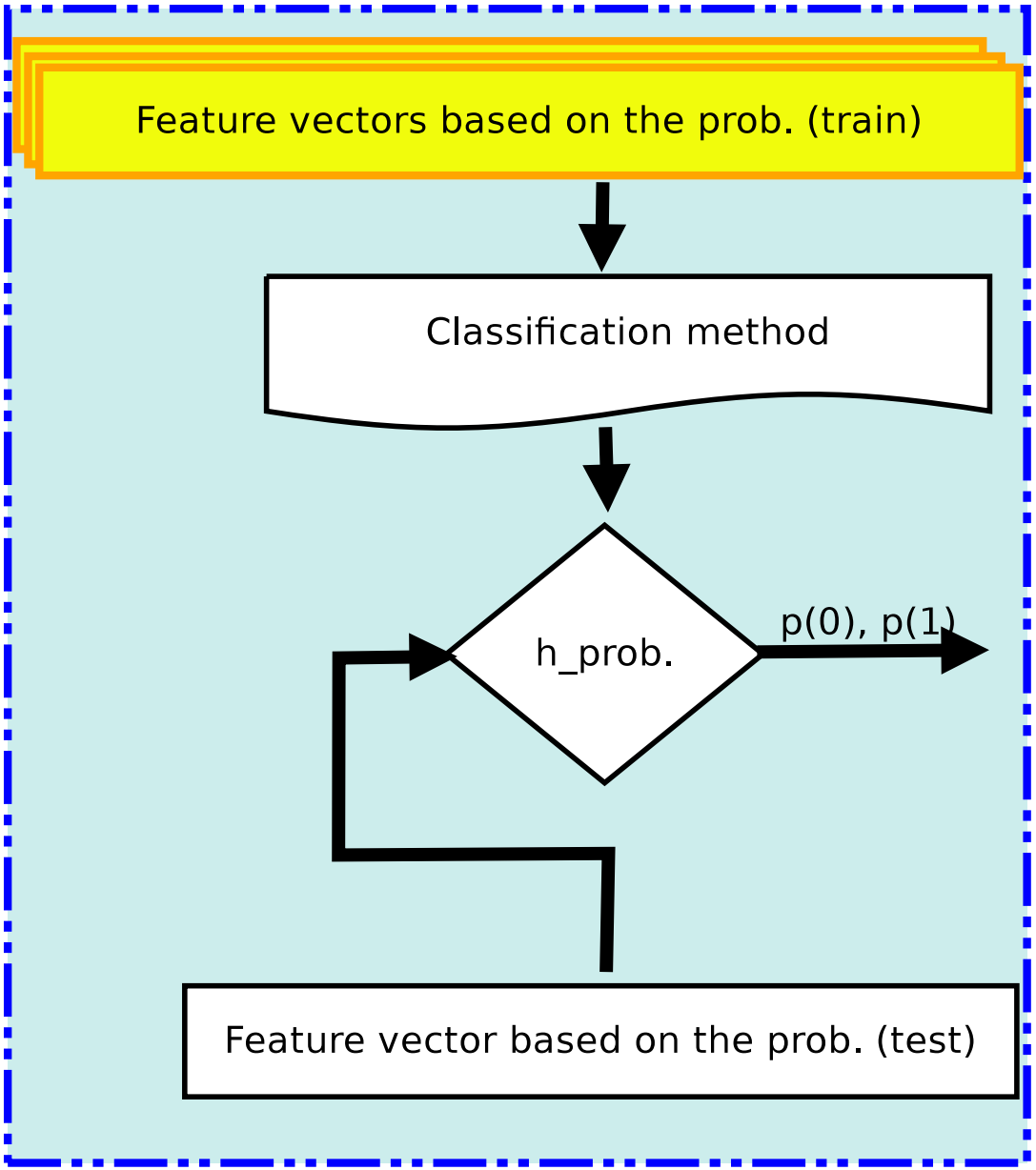

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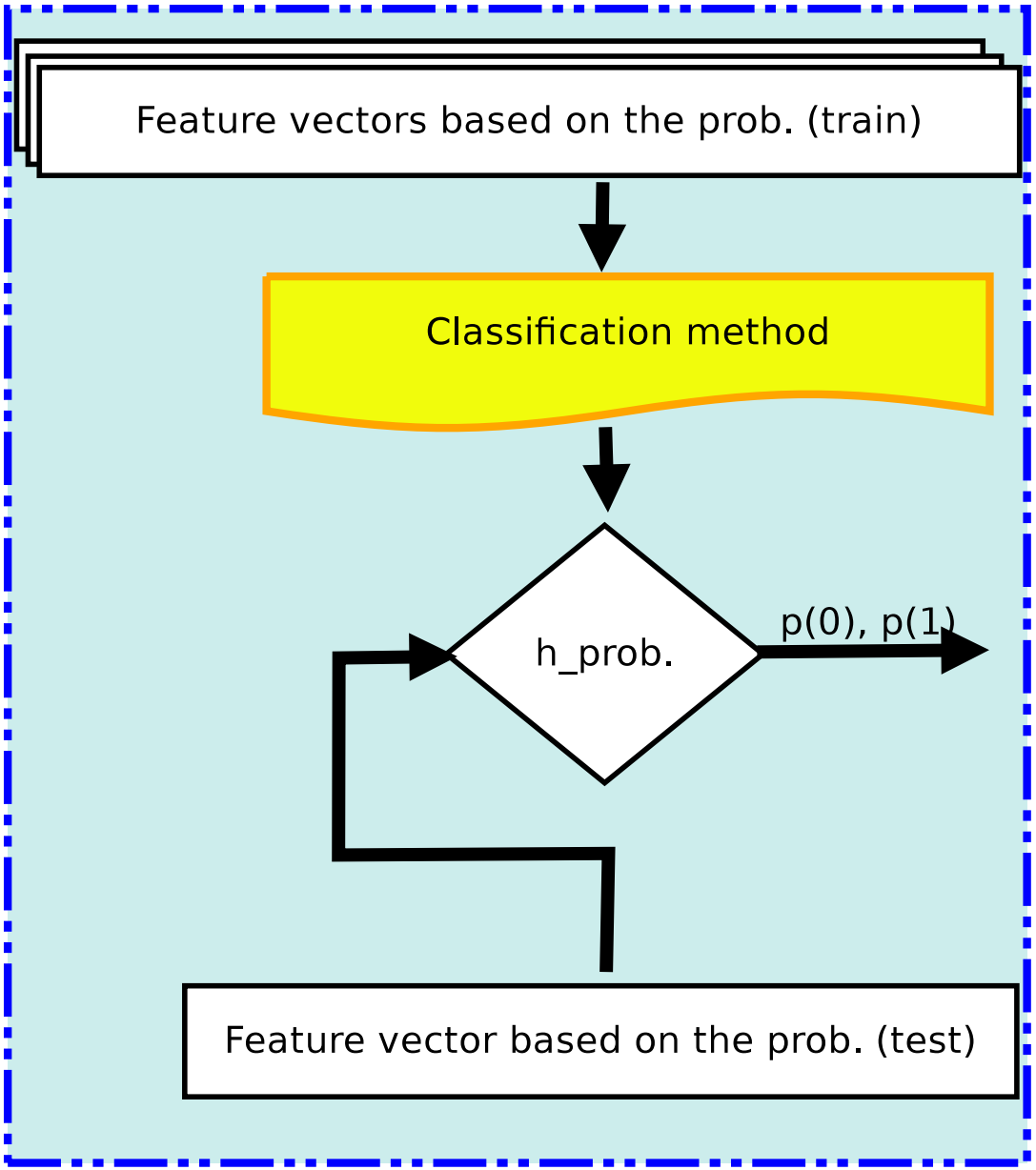

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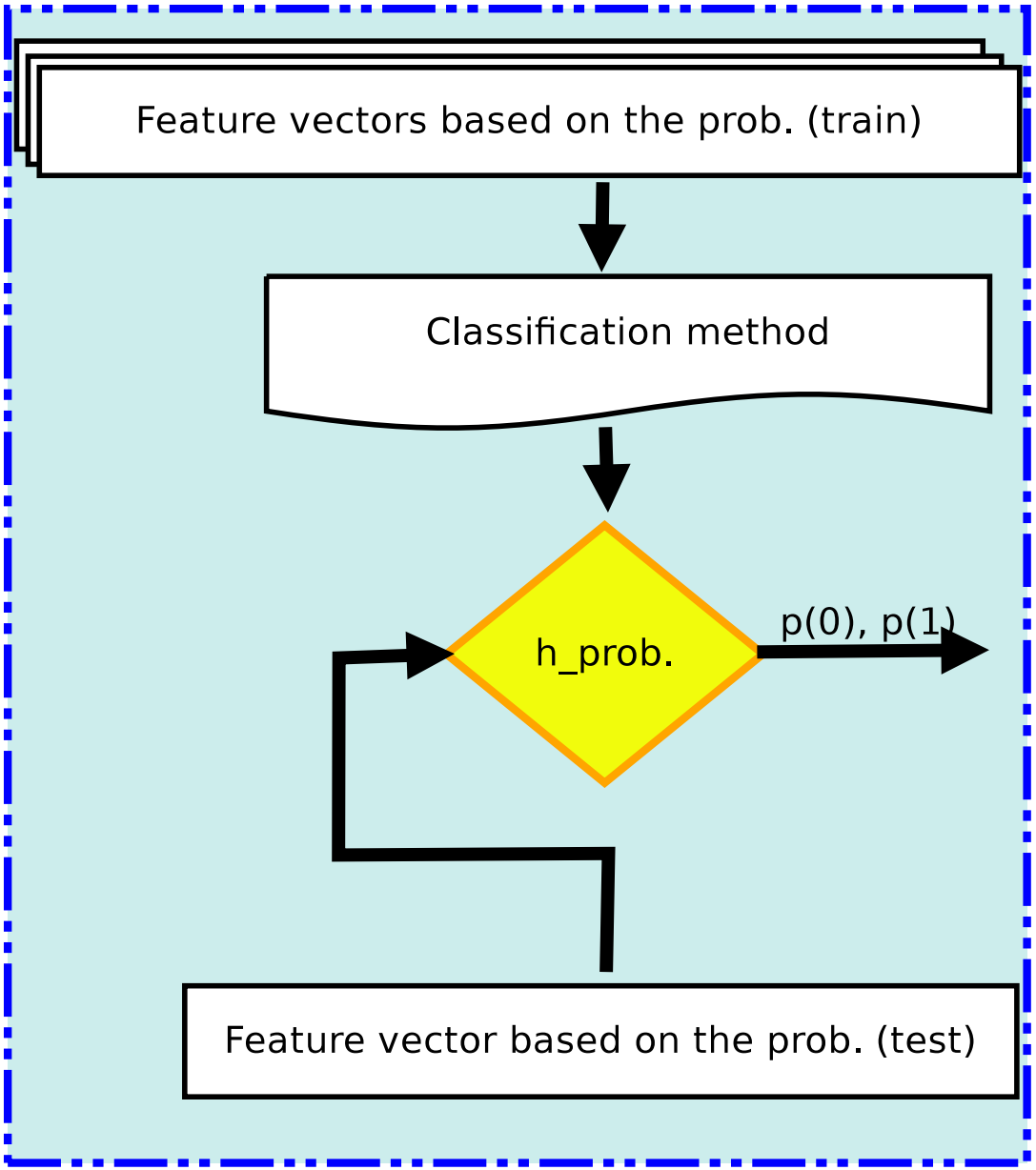

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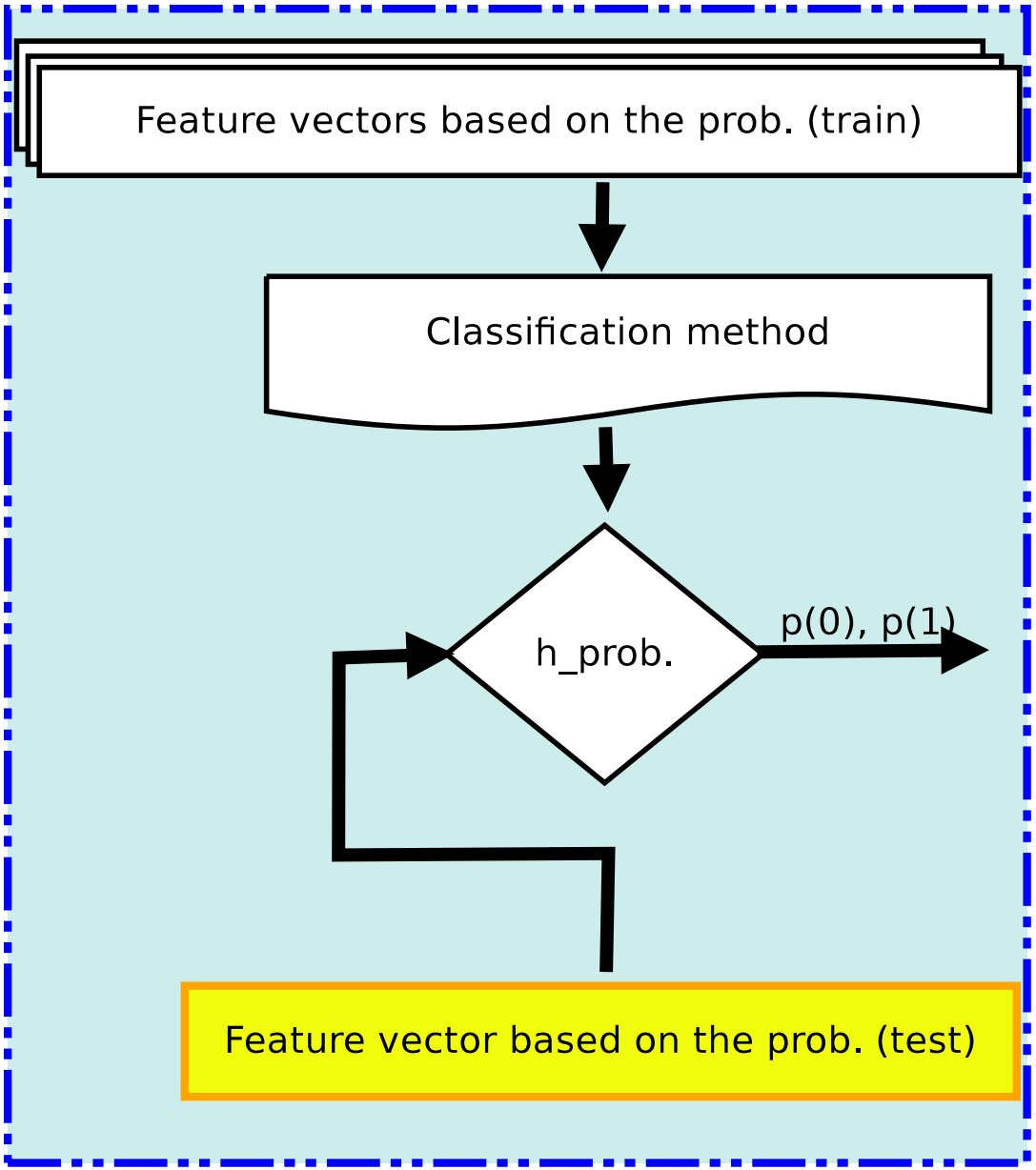

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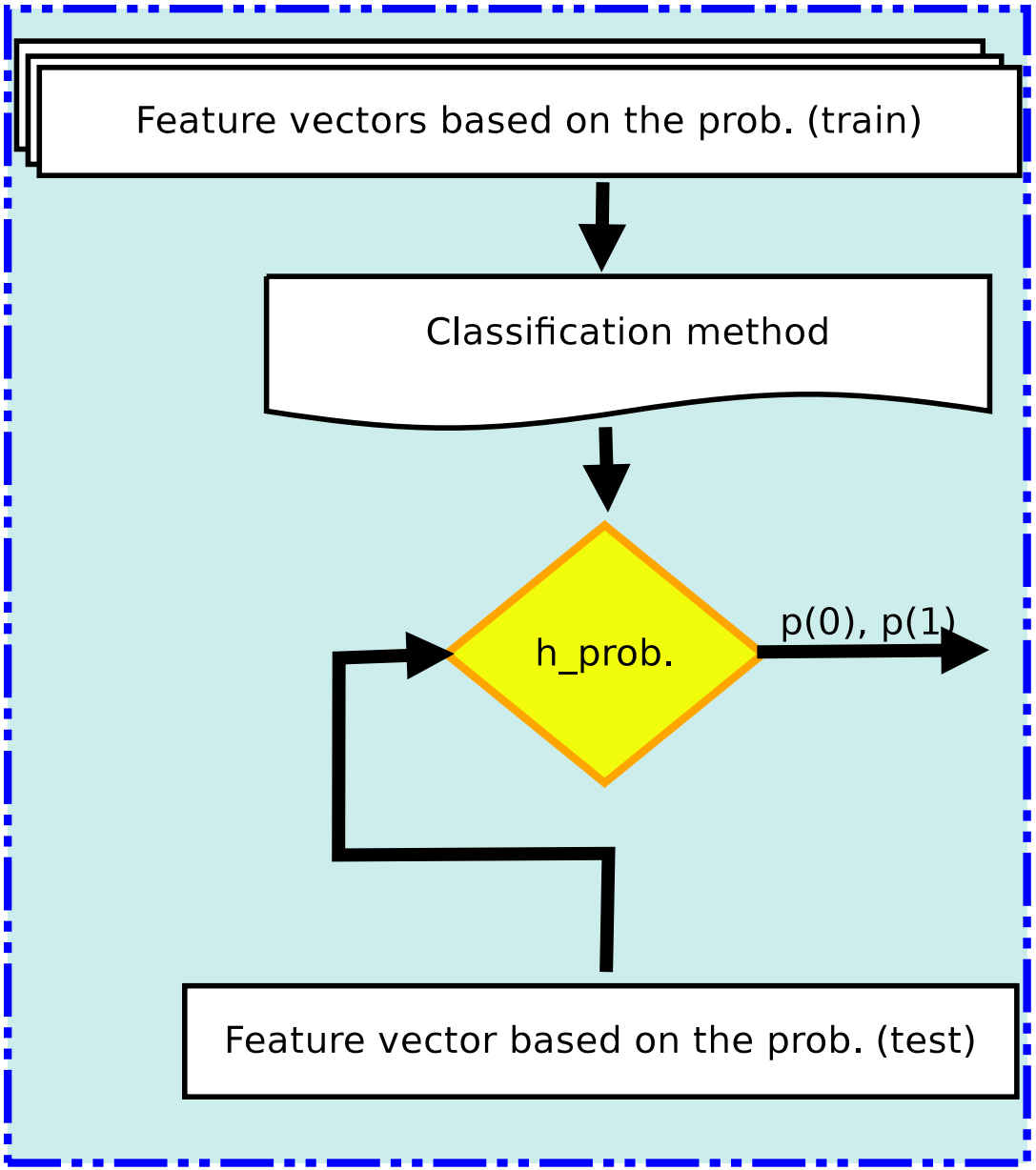

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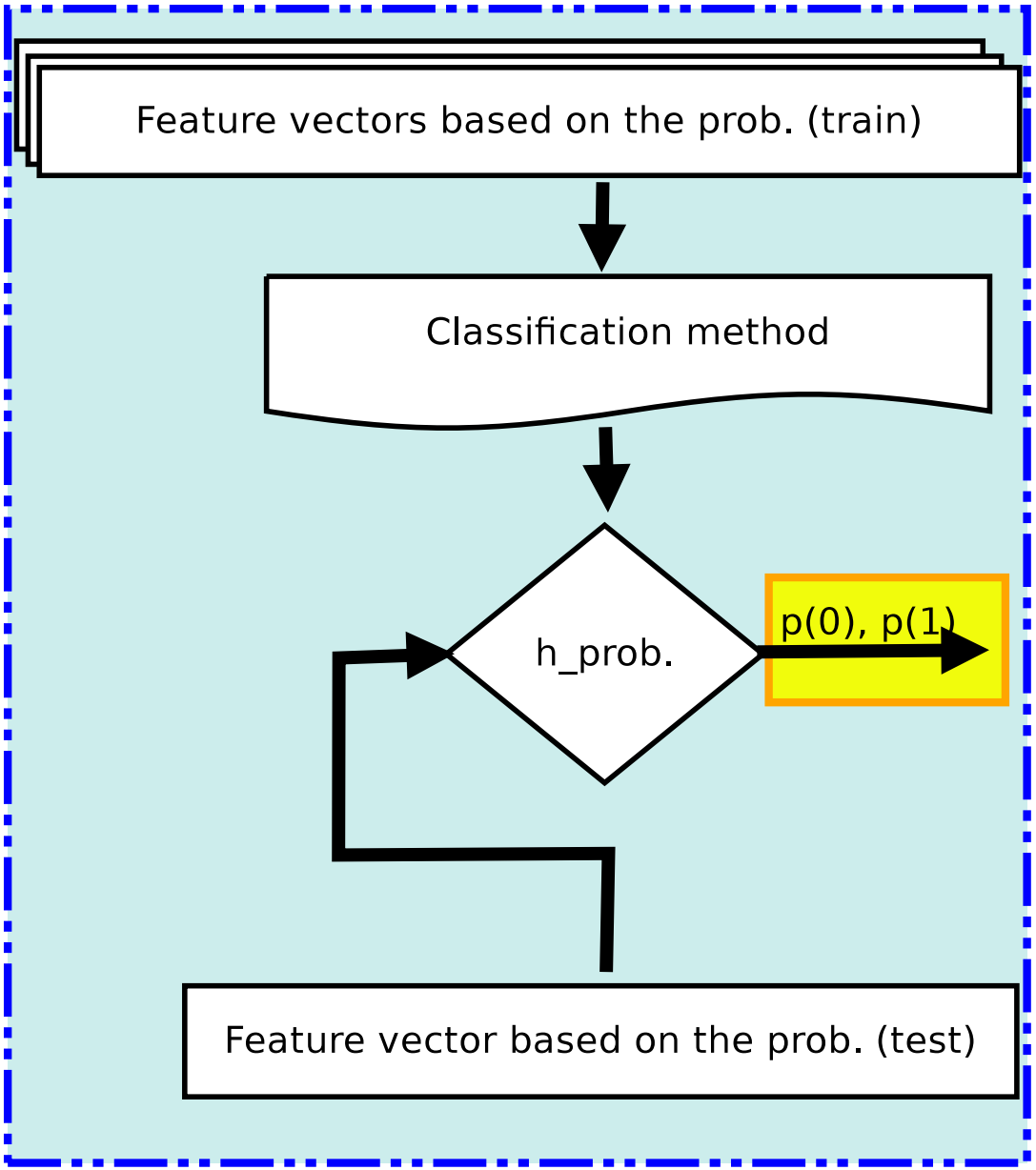

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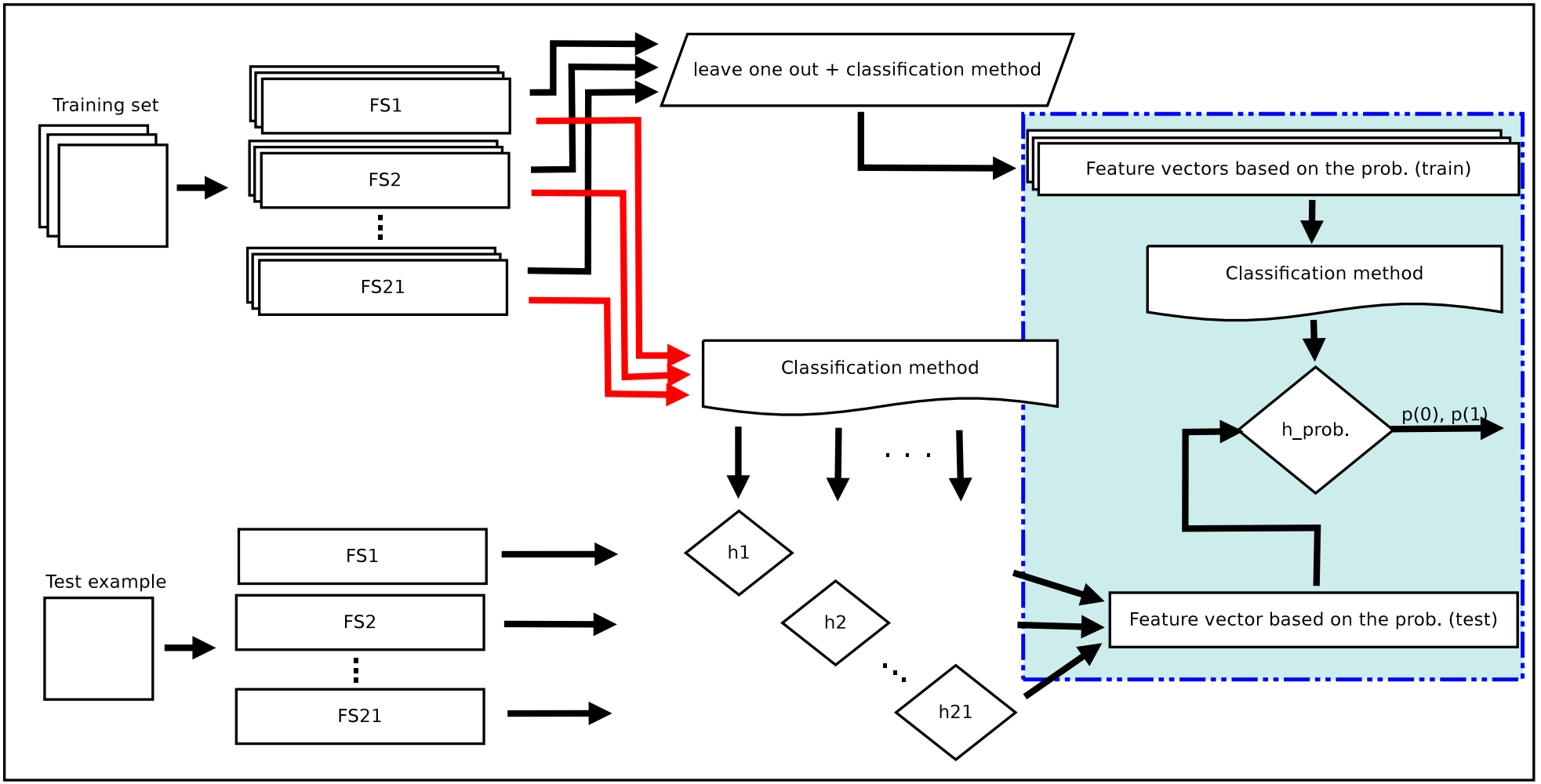

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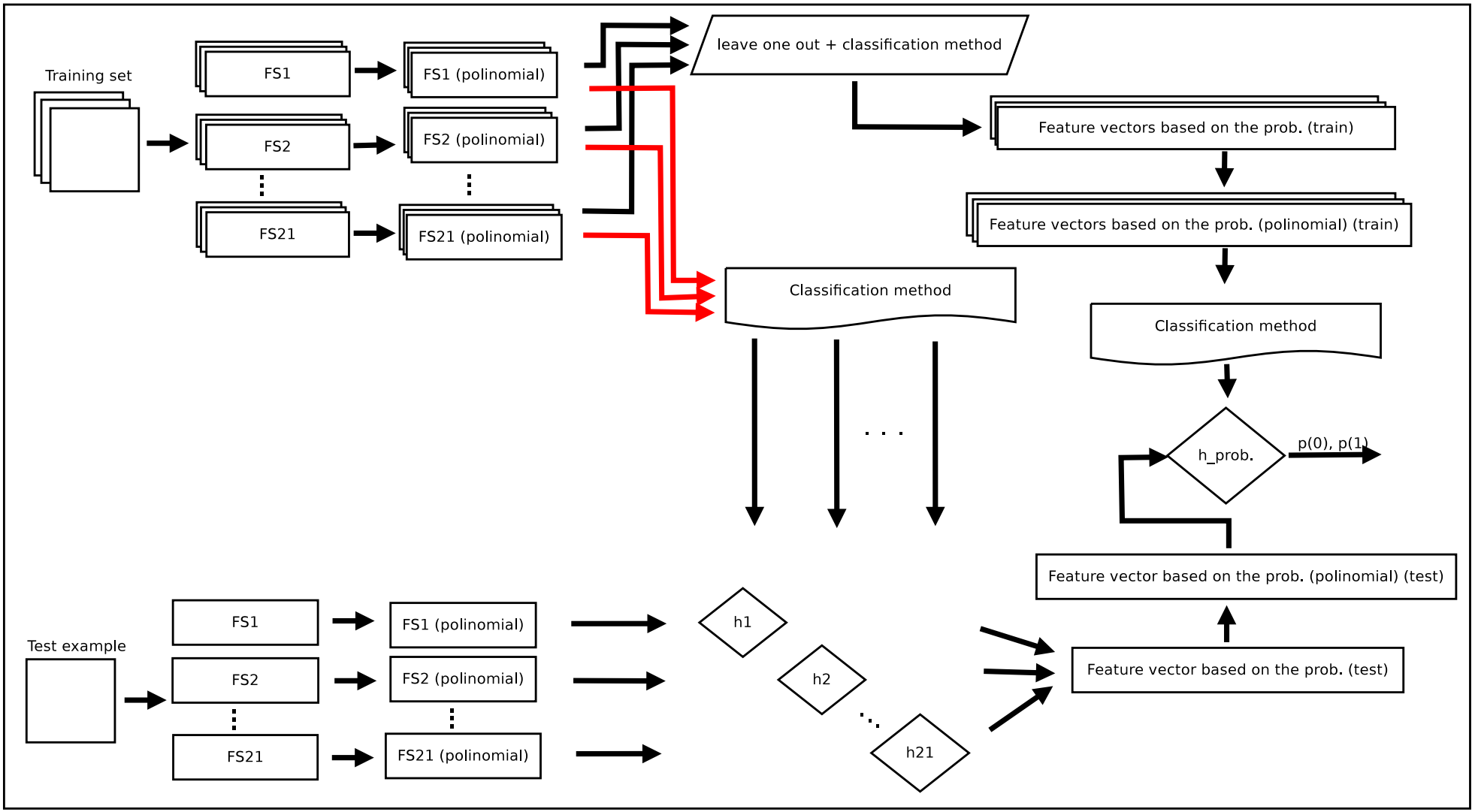

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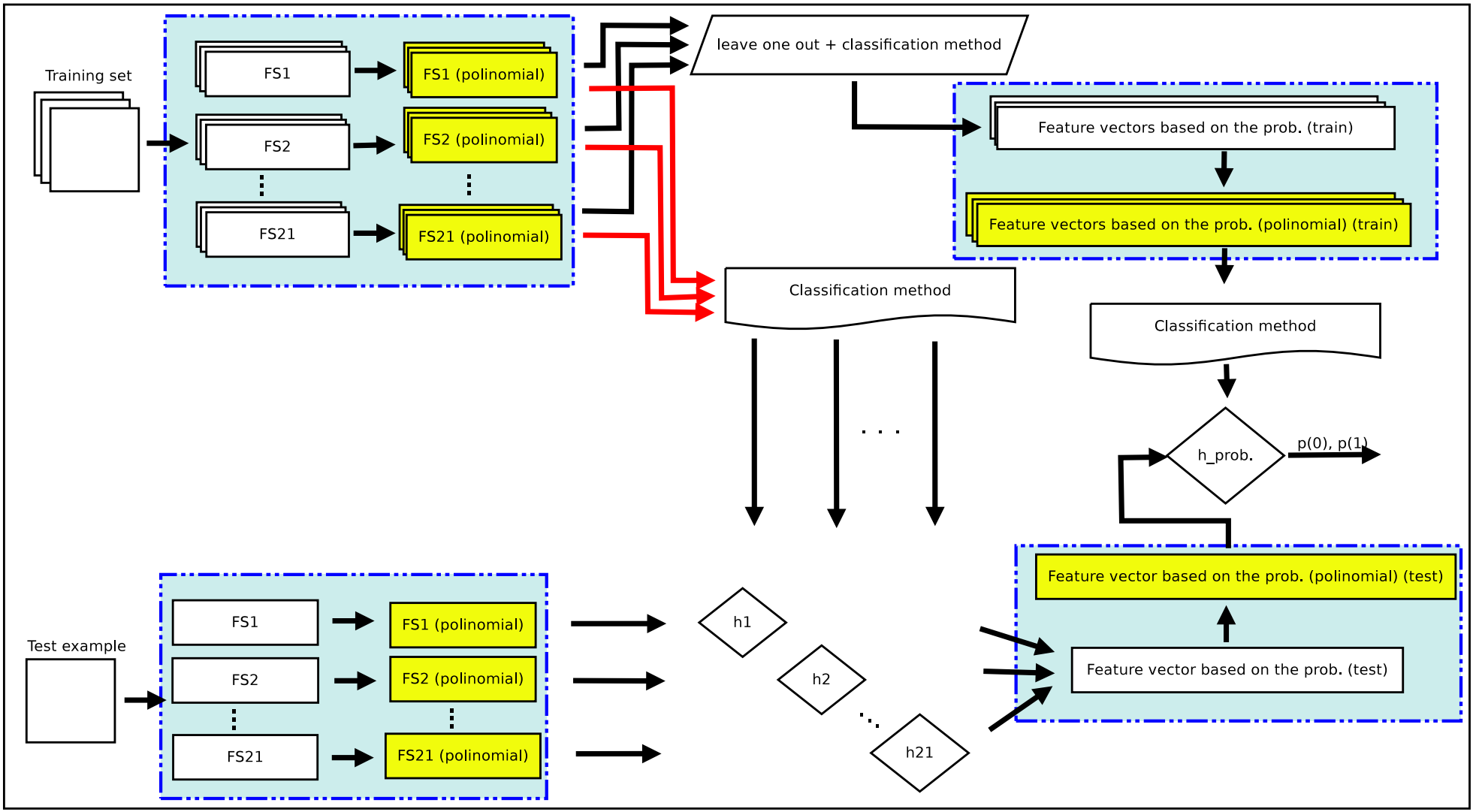
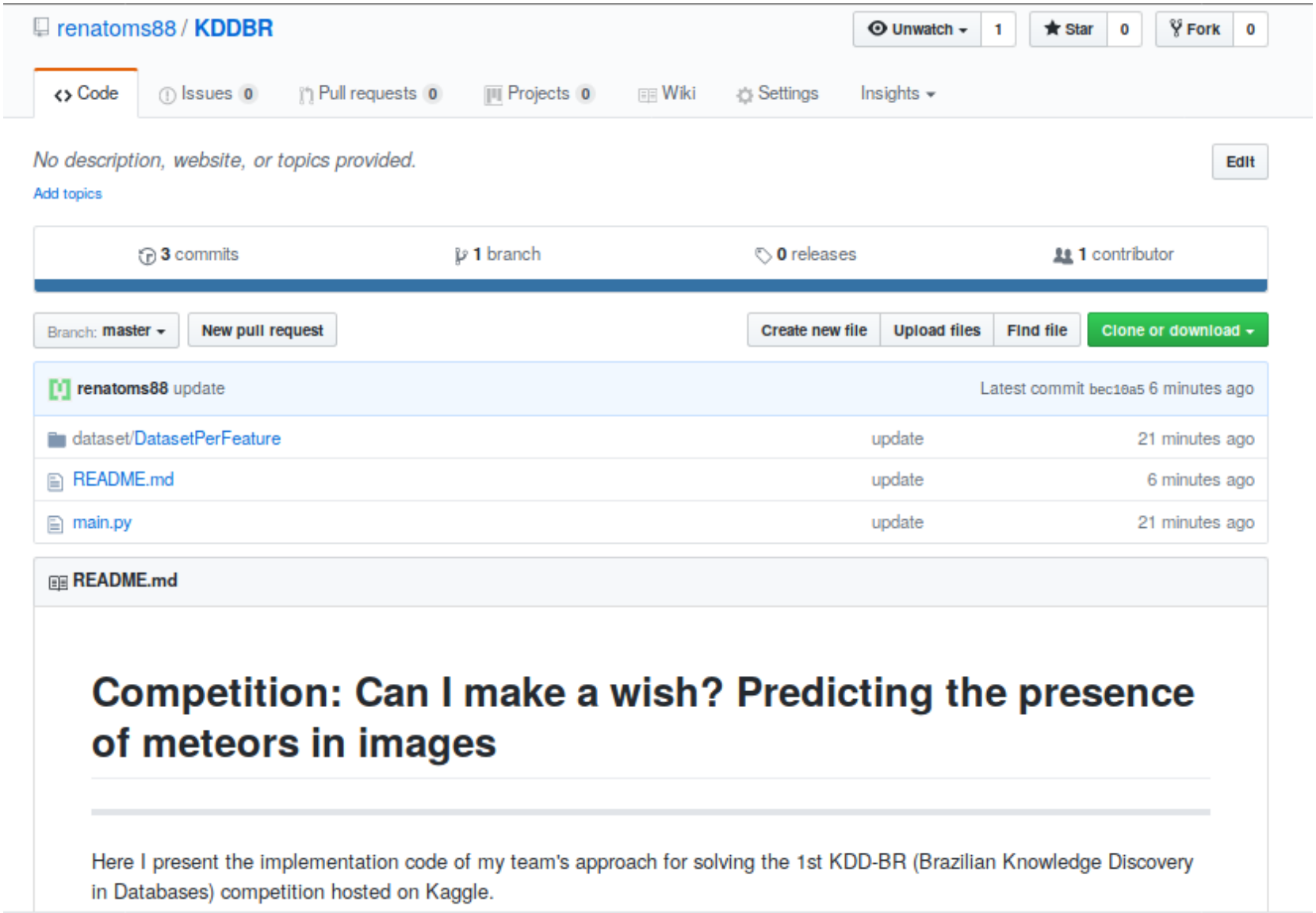


Programming language and libraries

- Python 3.5
- Logistic Regression: `scikit-learn` library
- Polynomial features: `scikit-learn` library
- SMOTE: `imbalanced-learn` library

Source code

- URL: `https://github.com/renatoms88/KDDBR`



Competition: Can I make a wish? Predicting the presence of meteors in images

Dr. Renato M. Silva, Prof. Dr. Tiago A. Almeida
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