

# Ensemble classification for constraint solver configuration

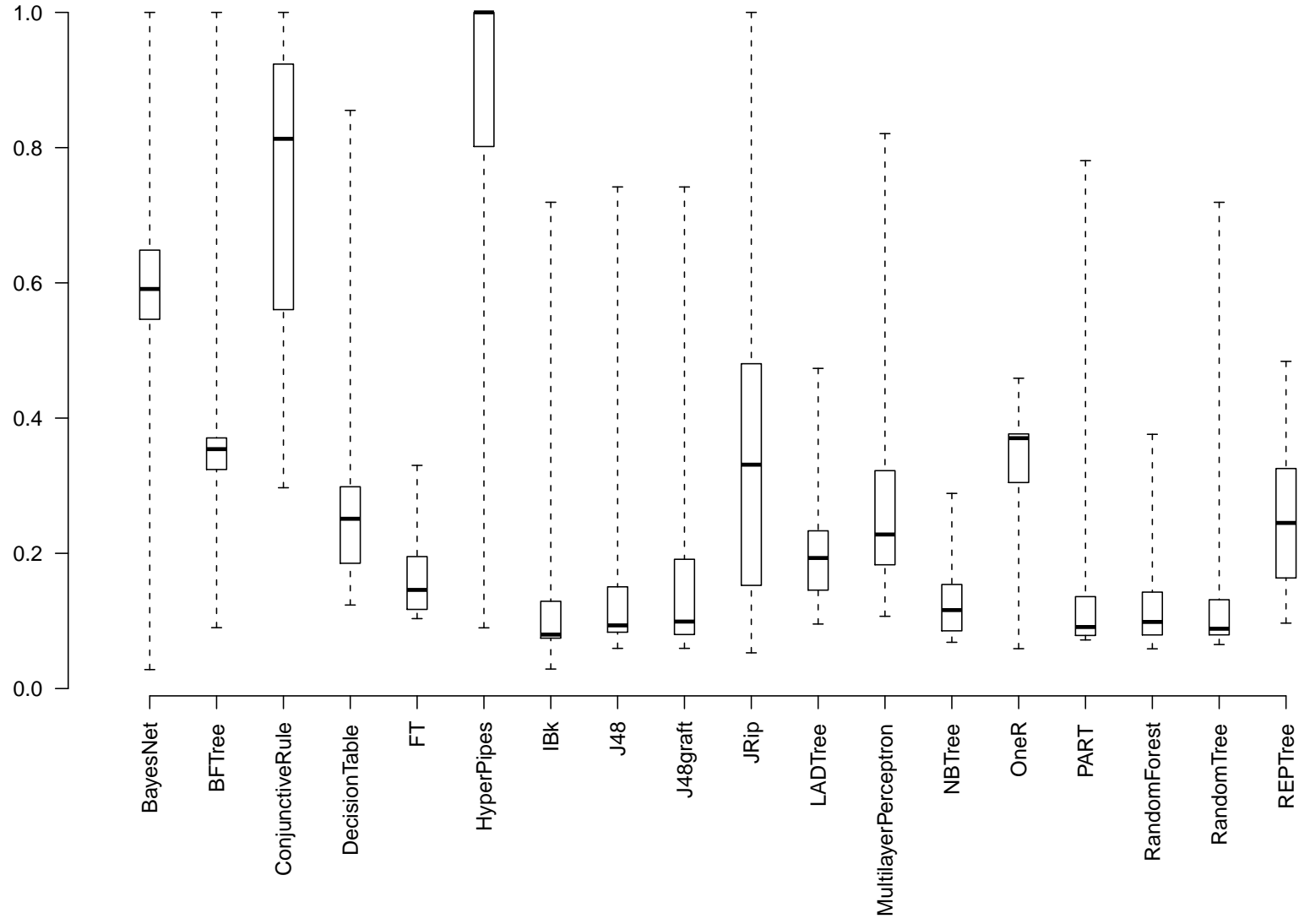
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University of St Andrews

10 September 2010

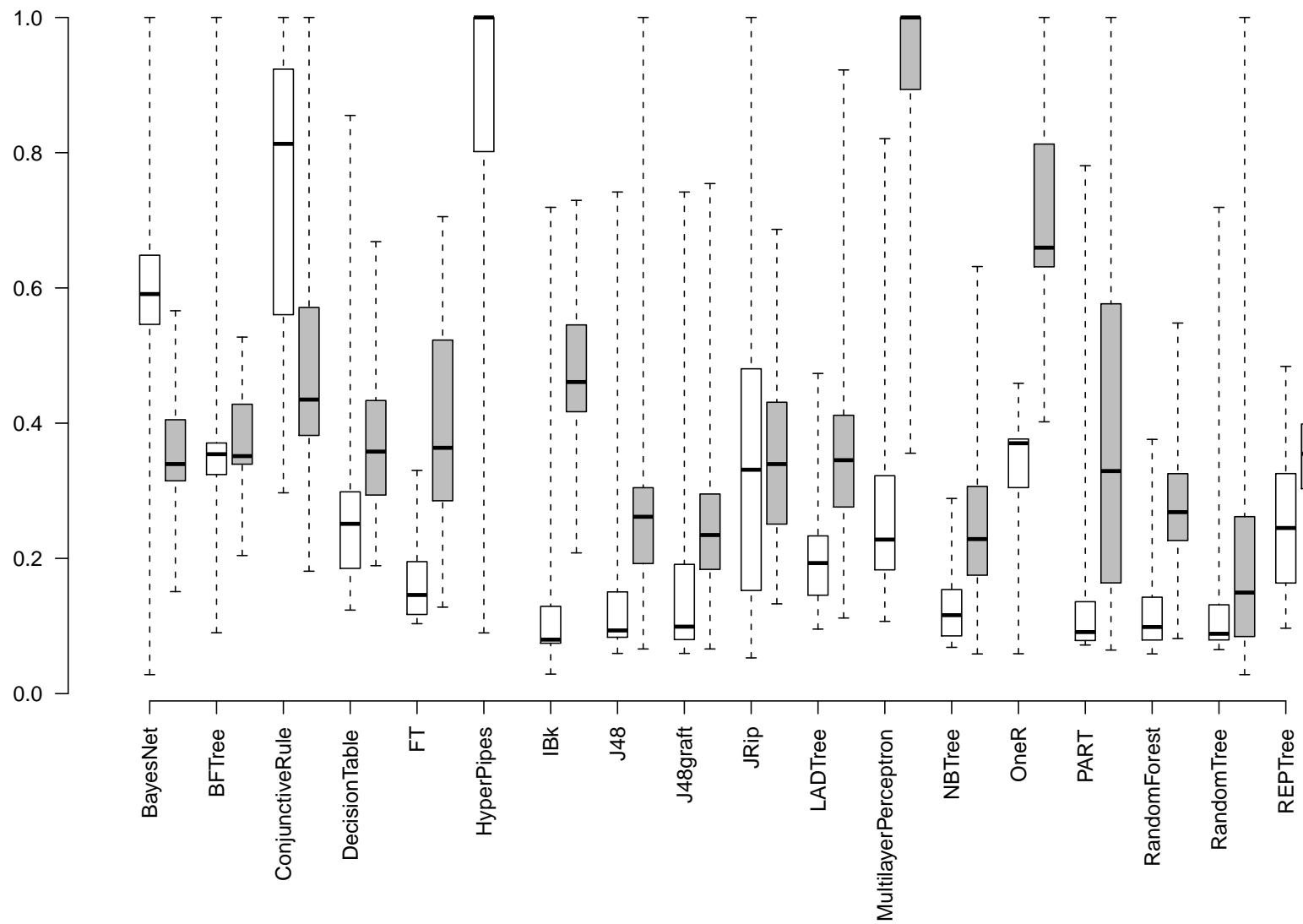
# Motivation

AODE	ADD Esr	Bayesian Logistic Regression	Bayes Net	Complement Naive Bayes	DMN Btext	HNB	Naive Bayes	Naive Bayes Multinomial	Naive Bayes Multinomial Updateable	Naive Bayes Simple	Naive Bayes Updateable	
Simple Linear Regression	Simple Logistic	SMO	SM Oreg	Voted Perceptron	Winnow	IB1	IBk	KStar	LBR	LWL	Ada Boost M1	
Grid Search	Logit Boost	Meta Cost	Multi Boost AB	Multi Class Classifier	Multi Scheme	Class Balanced ND	Data Near Balanced ND	ND	Ordinal Class Classifier	Raced Incremental Logit Boost	Random Committee	Random SubSpace
M1 NND	M1 Optimal Ball	M1 SMO	M1 SVM	M1 Wrapper	Simple M1	TLD	TLD Simple	FLR	Hyper Pipes	Serialized Classifier	VFI	Conjunctive Rule
JRip	M5 Rules	NNGe	OneR	PART	Prism	Ridor	ZeroR	AD Tree	BF Tree	DEC STUMP	FT	Id3
J48	J48graft	LAD Tree	LMT	M5P	NB Tree	Random Forest	Random Tree	REP Tree	Simple Cart	User Classifier	Jython Classifier	
WA ODE	Gaussian Processes	Isotonic Regression	Least MedSq	LibL INEAR	Lib SVM	Linear Regression	Logistic	Multilayer Perceptron	Pace Regression	PLS Classifier	RBF Network	
Decision Table	DTNB	JRip	M5 Rules	NNGe	OneR	PART	Prism	Ridor	ZeroR	AD Tree	BF Tree	
Regression By Discretization	Rotation Forest	Stacking	Stacking C	Threshold Selector	Vote	Citation KNN	MDD	M1 Boost	MIDD	MIE MDD	MILR	
Additive Regression	Attribute Selected Classifier	Bagging	Classification Via Clustering	Classification Via Regression	Cost Sensitive Classifier	CV Parameter Selection	Dagging	Decorate	END	Ensemble Selection	Filtered Classifier	Grading

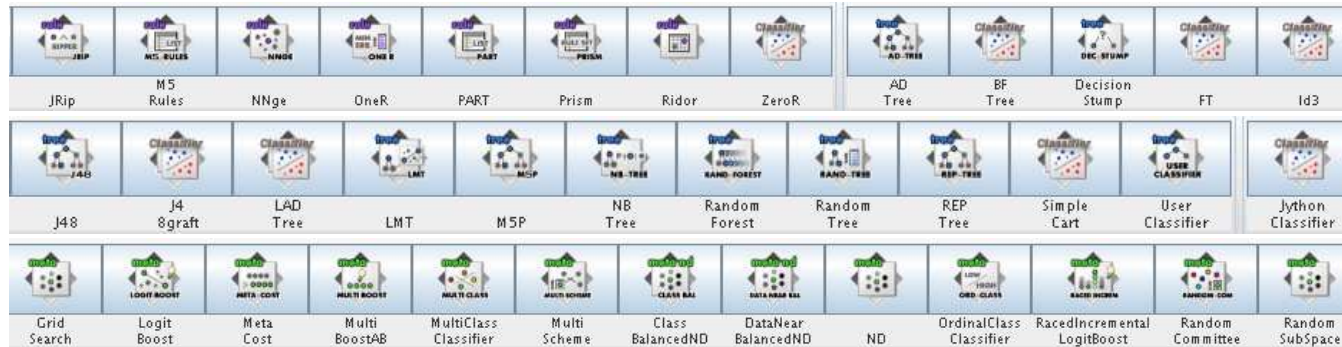
# Motivation



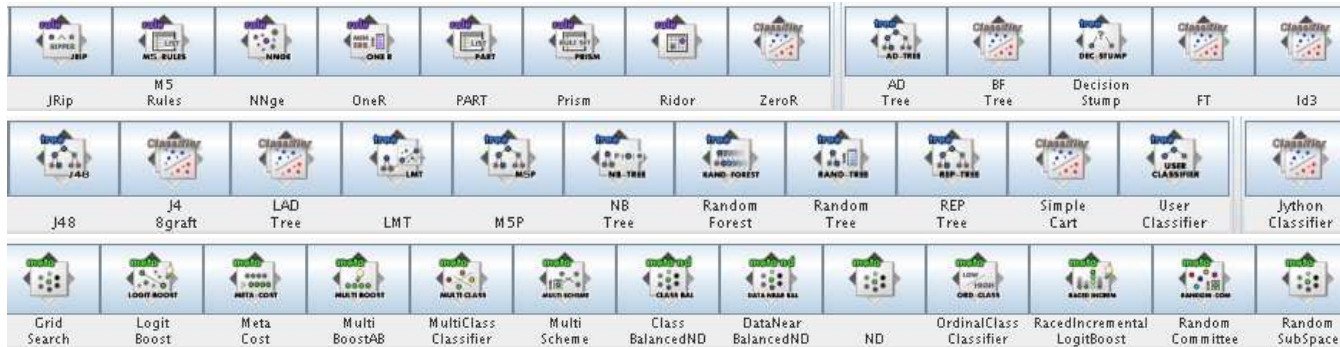
# Motivation



# Ensemble classification



# Ensemble classification



true: 13  
false: 25

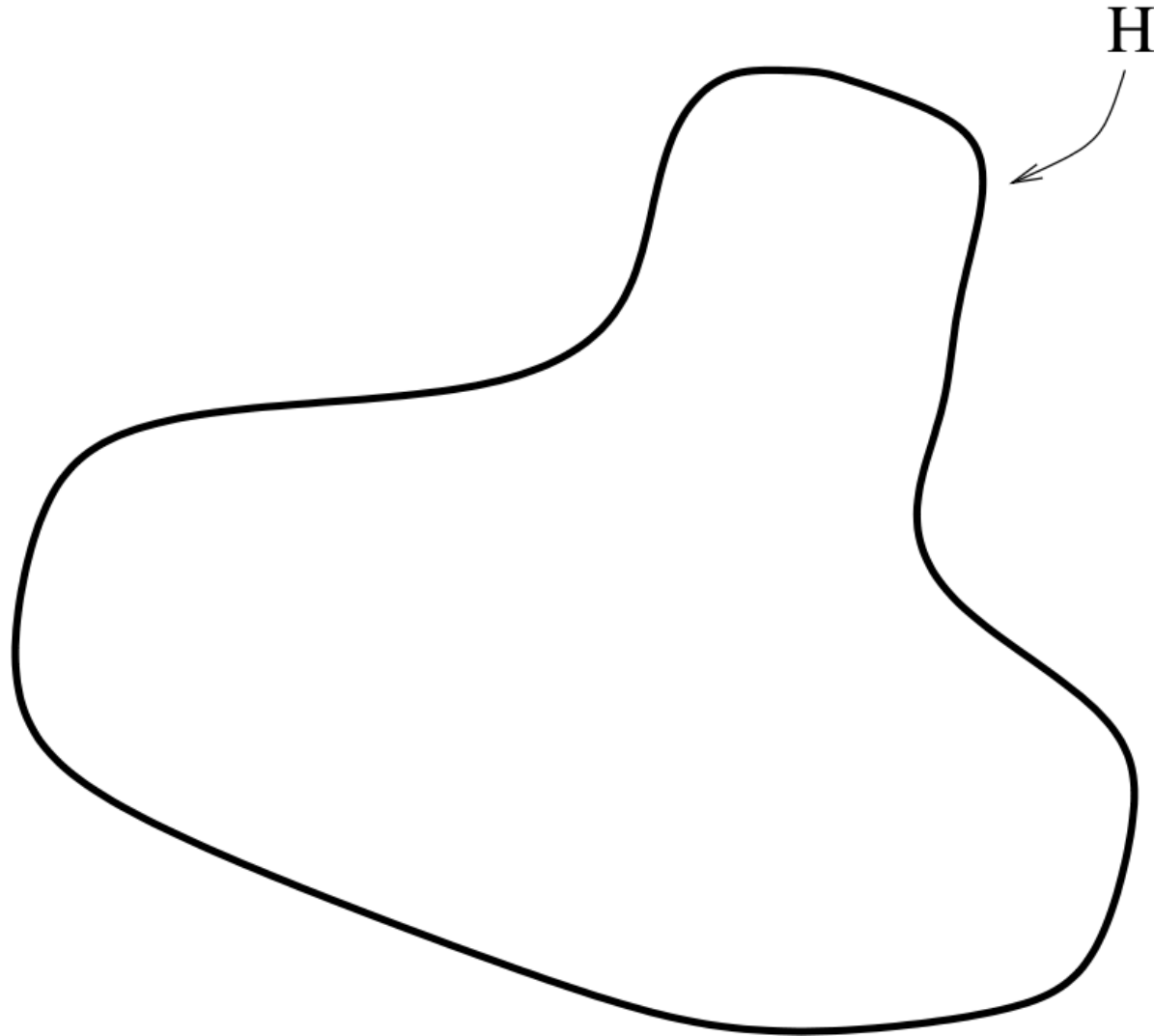
# Ensemble classification



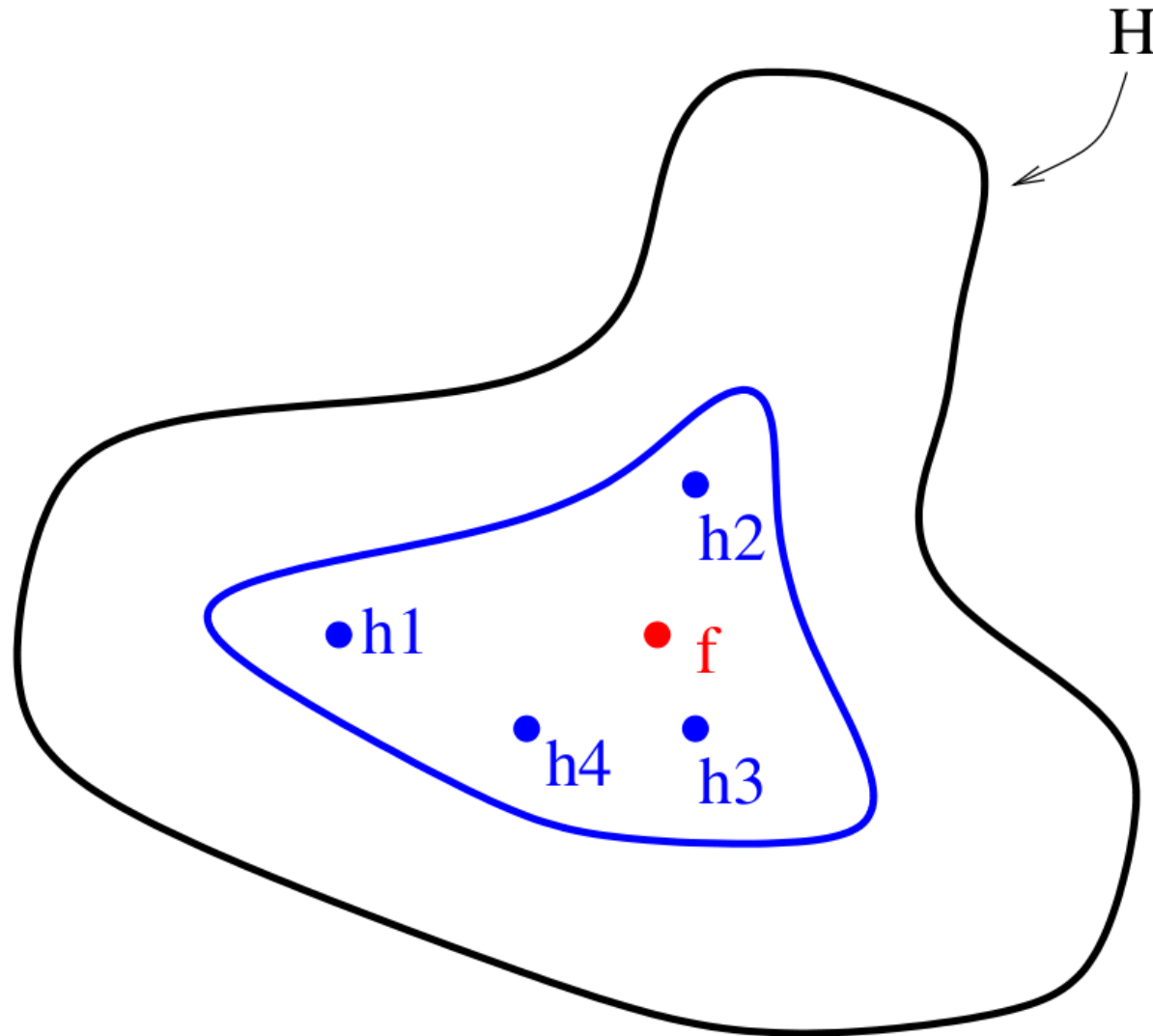
true: 13  
false: 25

**false**

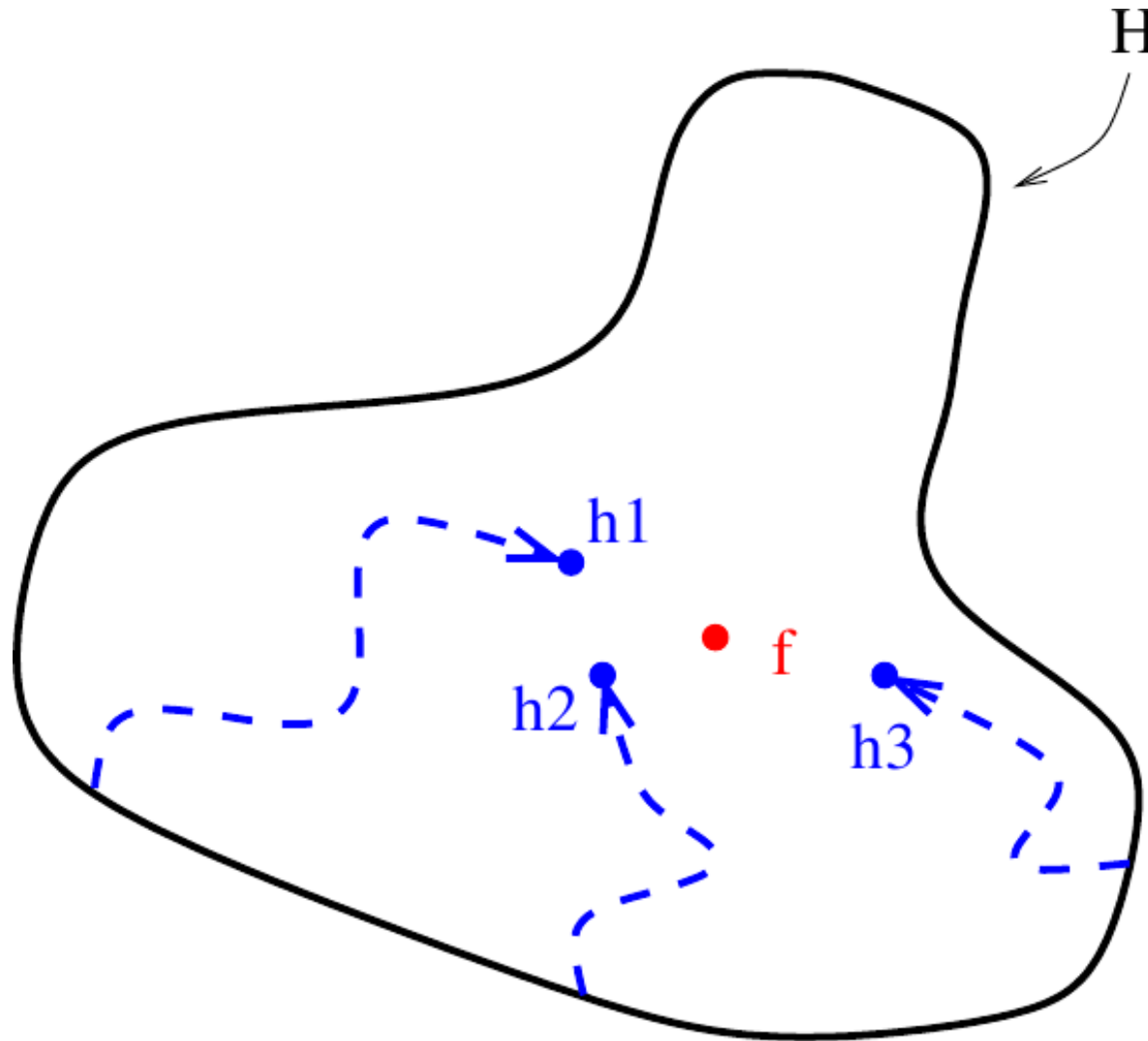
# Ensemble classification



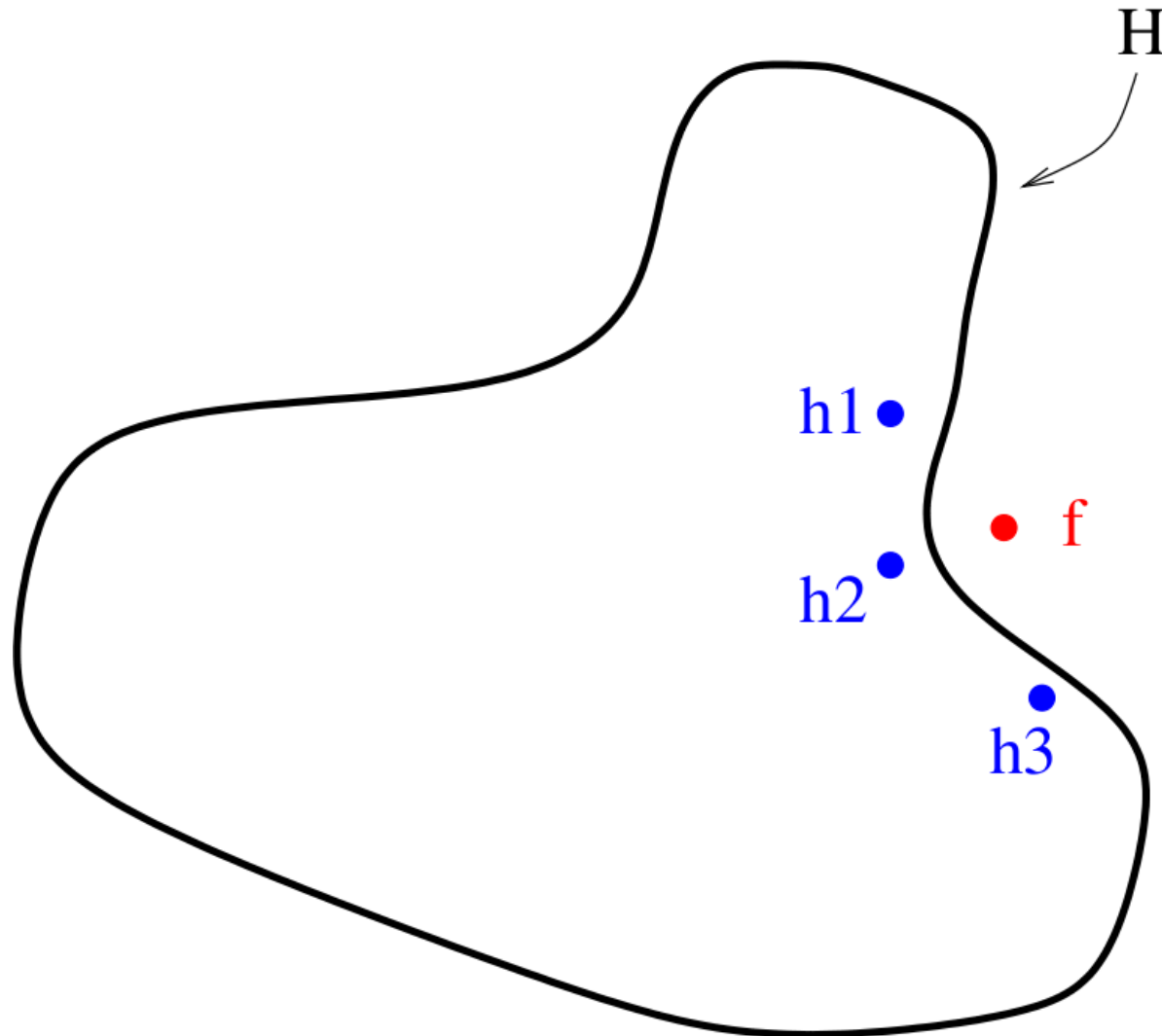
# Ensemble classification



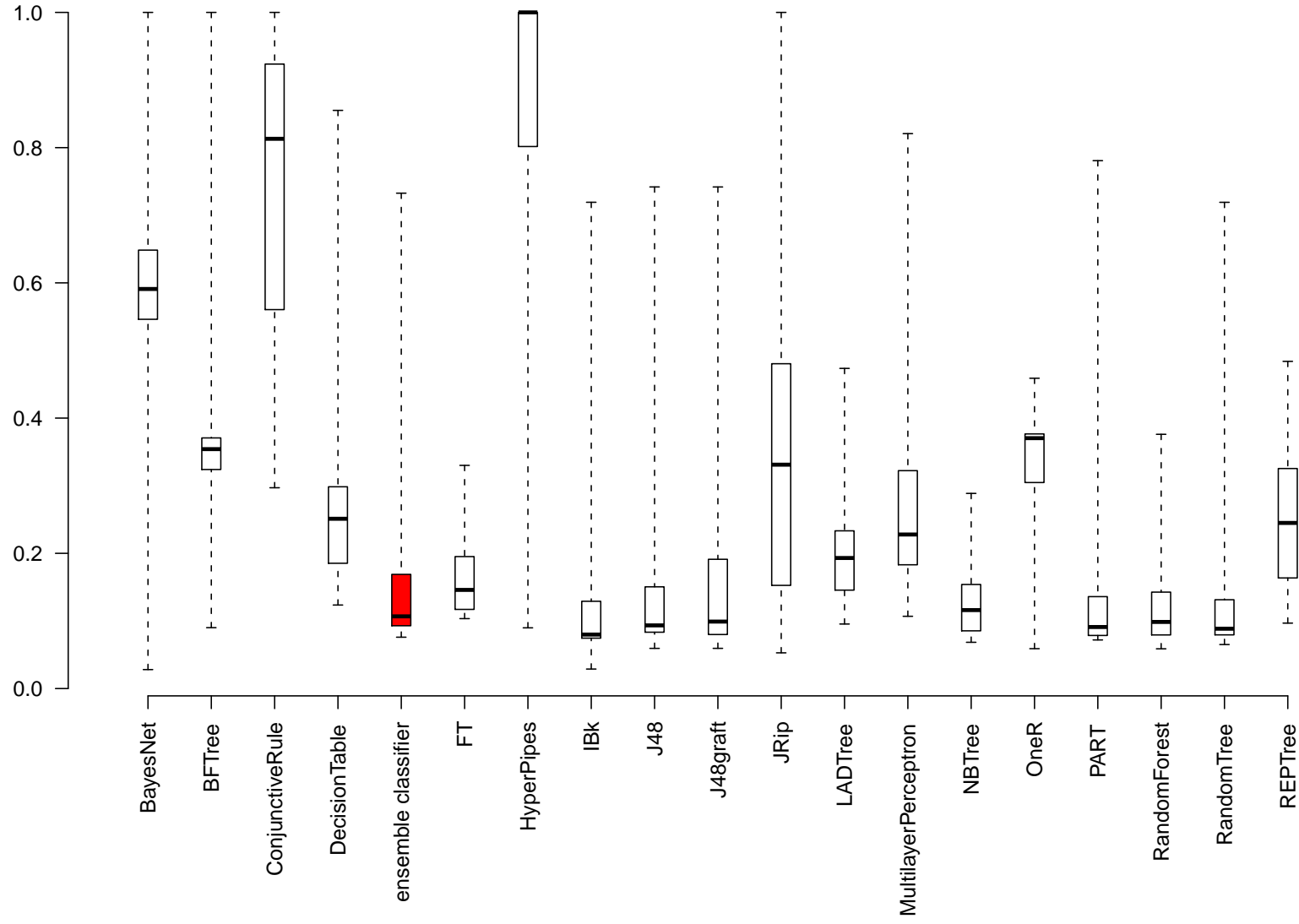
# Ensemble classification



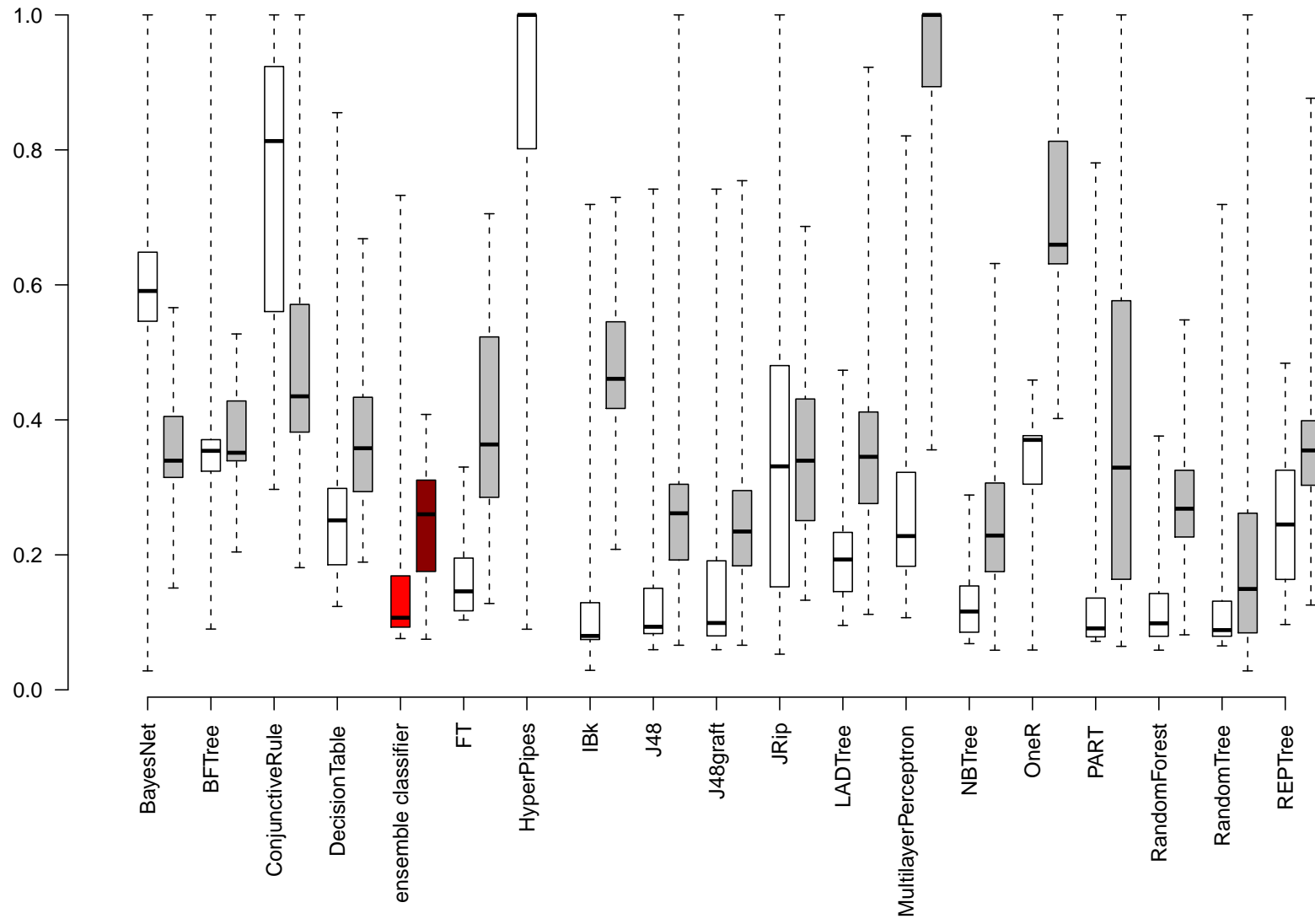
# Ensemble classification



# Comparison



# Comparison



# Overhead

offline:

# Overhead

offline:

don't care

# Overhead

offline:

don't care

online:

# Overhead

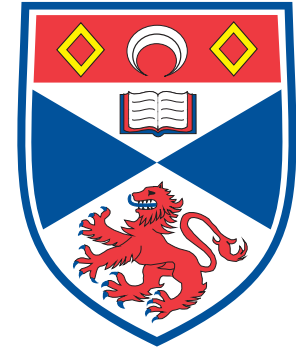
offline:

don't care

online:

$\text{time}(\text{classification}) \ll \text{time}(\text{feature calculation})$

# Questions?



University  
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St Andrews

