Randomly allocate the N patients into 5 subsets $\mathcal{L}_1$, $\mathcal{L}_2$, $\mathcal{L}_3$, $\mathcal{L}_4$ and $\mathcal{L}_5$ of (approximately) equal size.

Select $\mathcal{L}_1$ to be the *test set*, and the remaining four subsets $\mathcal{L}_2$, $\mathcal{L}_3$, $\mathcal{L}_4$ and $\mathcal{L}_5$ become the *training set*.

If required, perform **feature selection** (select m of the total M features) using each of the L patients in the *training set*.

	P_{Train1}	P_{Train2}	$\cdots$	P_{TrainL}
feature 1	$v_{1,1}$	$v_{1,2}$	$\cdots$	$v_{1,L}$
feature 2	$v_{2,1}$	$v_{2,2}$	$\cdots$	$v_{2,L}$
$\vdots$	$\vdots$	$\vdots$		$\vdots$
feature M	$v_{M,1}$	$v_{M,2}$	$\cdots$	$v_{M,L}$

$\downarrow$ some feature selection method $\downarrow$

selected features $=$ [feature* 1   feature* 2   ...   feature* m]

Build the classifier (RF, SVM or DLDA) using the *training set*. That is, define a function $\delta \ : \ \mathbb{R}^m \ \rightarrow \ \{PP, GP\}$.

For each of the J patients in the *test set*, use the classification function δ defined in the previous step to **predict** the class in which the patient belongs.

	P_{Test1}	P_{Test2}	$\cdots$	P_{TestJ}
feature* 1	$v_{1,1}$	$v_{1,2}$	$\cdots$	$v_{1,J}$
feature* 2	$v_{2,1}$	$v_{2,2}$	$\cdots$	$v_{2,J}$
$\vdots$	$\vdots$	$\vdots$		$\vdots$
feature* m	$v_{m,1}$	$v_{m,2}$	$\cdots$	$v_{m,J}$

$\downarrow \delta$

$(\delta(v_{1,i}, v_{2,i}, \ldots, v_{m,i}))_{i=1,\ldots,J} \ = \ (PP, \ GP, \ldots, \ GP)$

Determine the first **fold error** $(FError_1)$:

$$FError_1 = \frac{\#\text{patients in } \textit{test set} \text{ misclassified}}{J}$$

Repeat using all other *test*/*training* set combinations:

$$[\mathcal{L}_2 | \mathcal{L}_1, \mathcal{L}_3, \mathcal{L}_4, \mathcal{L}_5], \qquad [\mathcal{L}_3 | \mathcal{L}_1, \mathcal{L}_2, \mathcal{L}_4, \mathcal{L}_5],$$

$$[\mathcal{L}_4 | \mathcal{L}_1, \mathcal{L}_2, \mathcal{L}_3, \mathcal{L}_5]], \qquad [\mathcal{L}_5 | \mathcal{L}_1, \mathcal{L}_2, \mathcal{L}_3, \mathcal{L}_4]$$

to obtain a total of 5 fold errors.

The **cross validation** error is

$$\text{CV error} = \frac{\sum_{i=1}^{5} FError_i}{5}$$