

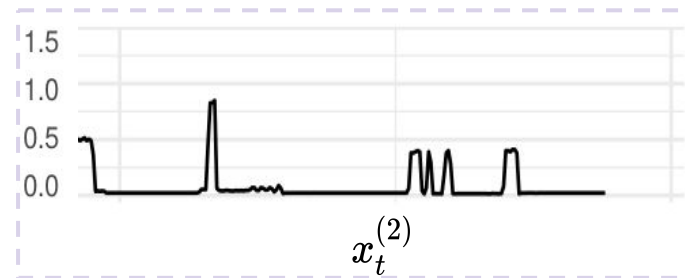
x_1	x_2	x_3	x_{t1}	x_{t2}	\dots	x_{t365}
4.5	1.3	65	0.8	1.1	\dots	2.1
3	2.0	83	0.5	0.4	\dots	0.0
5	1.5	89	0.7	0.7	\dots	2.2
2	1.3	45	1.2	1.8	\dots	4.3



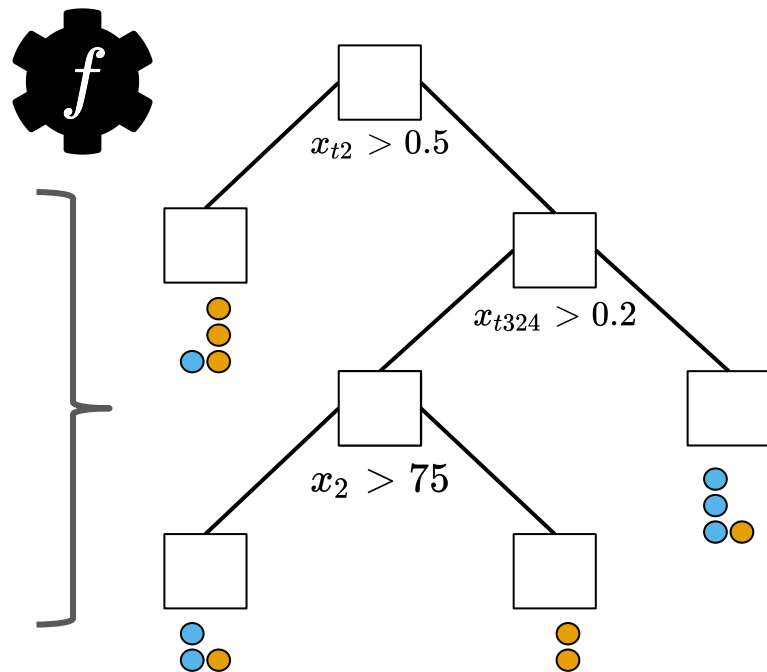
Regular features



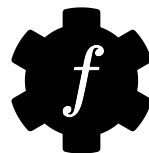
Functional features
e.g. "days in year"



x_1	x_2	x_3	x_{t1}	x_{t2}	\dots	x_{t365}
4.5	1.3	65	0.8	1.1	\dots	2.1
3	2.0	83	0.5	0.4	\dots	0.0
5	1.5	89	0.7	0.7	\dots	2.2
2	1.3	45	1.2	1.8	\dots	4.3



x_1	x_2	x_3	x_{t1}	x_{t2}	\dots	x_{t365}
4.5	1.3	65	0.8	1.1	\dots	2.1
3	2.0	83	0.5	0.4	\dots	0.0
5	1.5	89	0.7	0.7	\dots	2.2
2	1.3	45	1.2	1.8	\dots	4.3



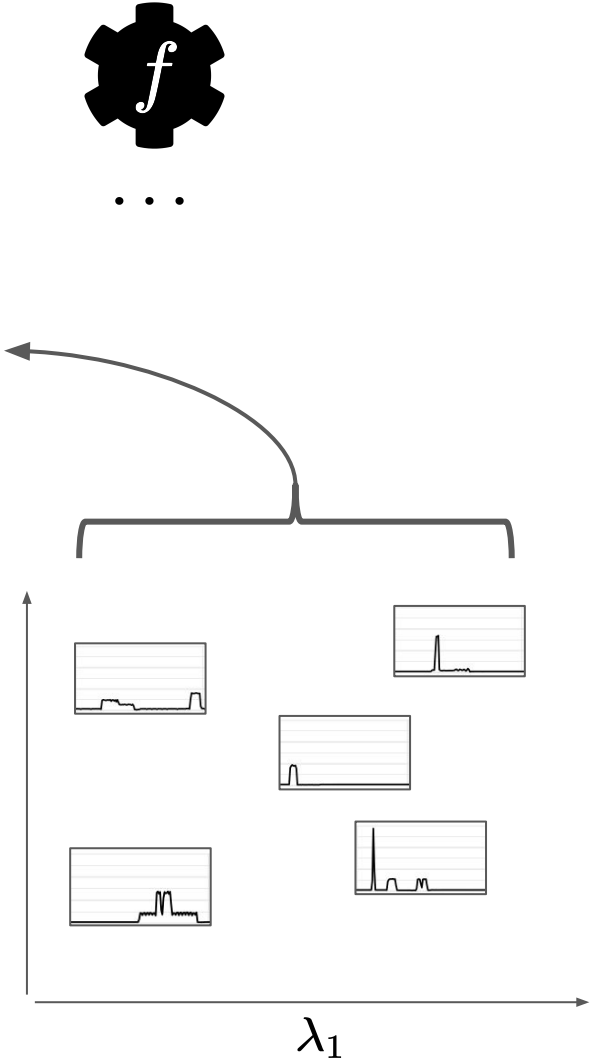
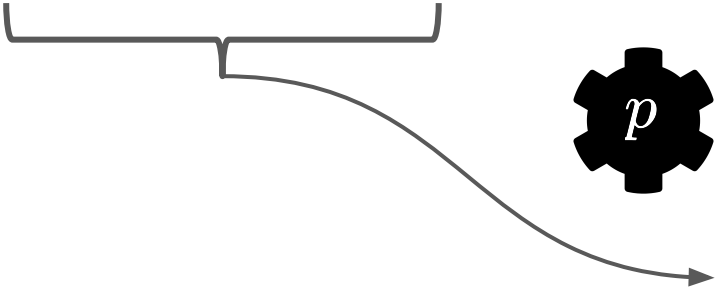
$$\hat{f}(4.5, 1.3, 65, \text{[spectrum plot]}) = \text{yellow circle}$$

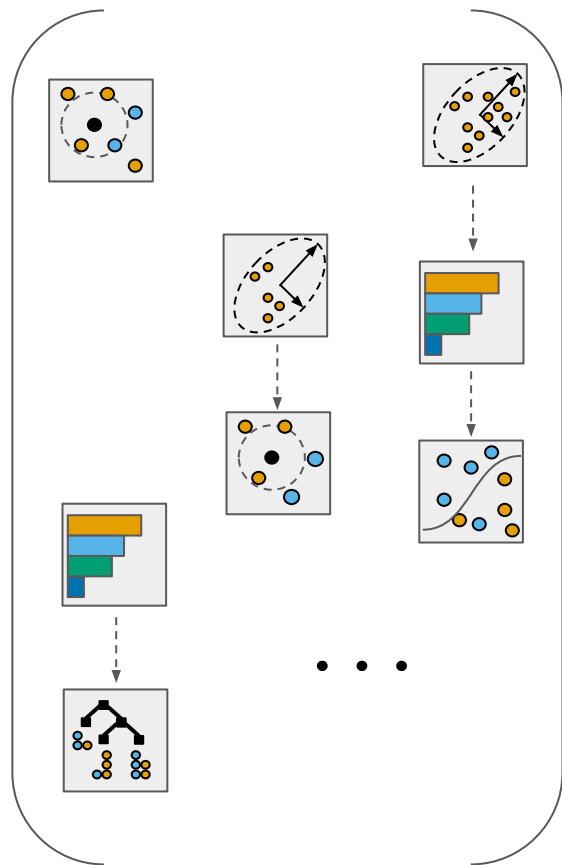
$$\hat{f}(3, 2.0, 83, \text{[spectrum plot]}) = \text{yellow circle}$$

$$\hat{f}(5, 1.5, 89, \text{[spectrum plot]}) = \text{blue circle}$$

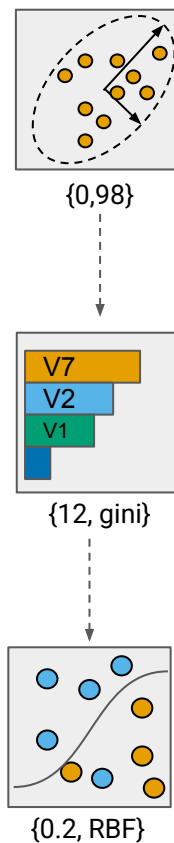
$$\hat{f}(2, 1.3, 45, \text{[spectrum plot]}) = \text{yellow circle}$$

x_1	x_2	x_3	x_{t1}	x_{t2}	\dots	x_{t365}	λ_1	λ_2
4.5	1.3	65	0.8	1.1	\dots	2.1	0.9	0.1
3	2.0	83	0.5	0.4	\dots	0.0	1.1	0.4
5	1.5	89	0.7	0.7	\dots	2.2	-1	1.9
2	1.3	45	1.2	1.8	\dots	4.3	0.2	-2

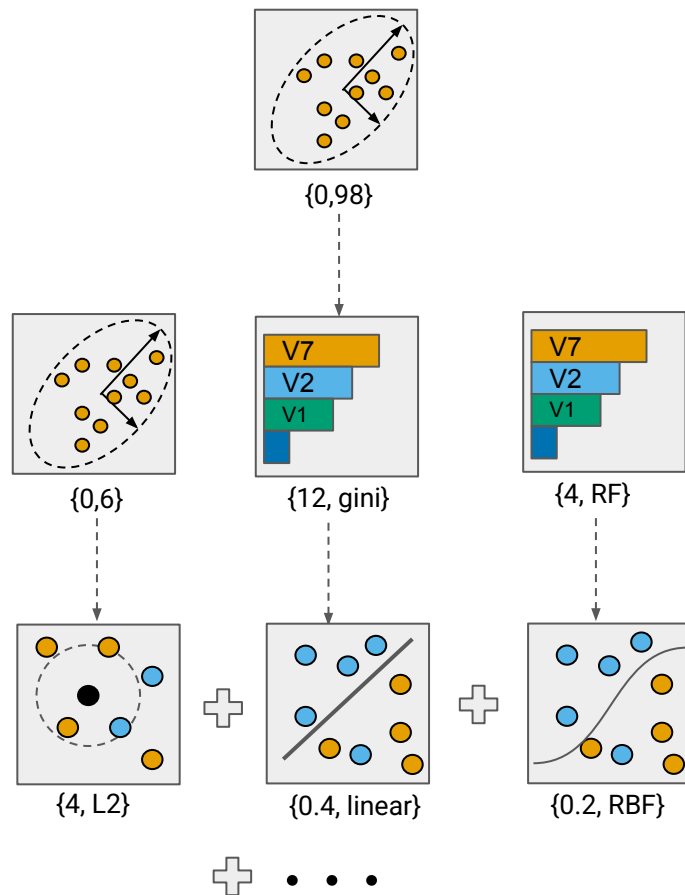




Proposed models and pipelines



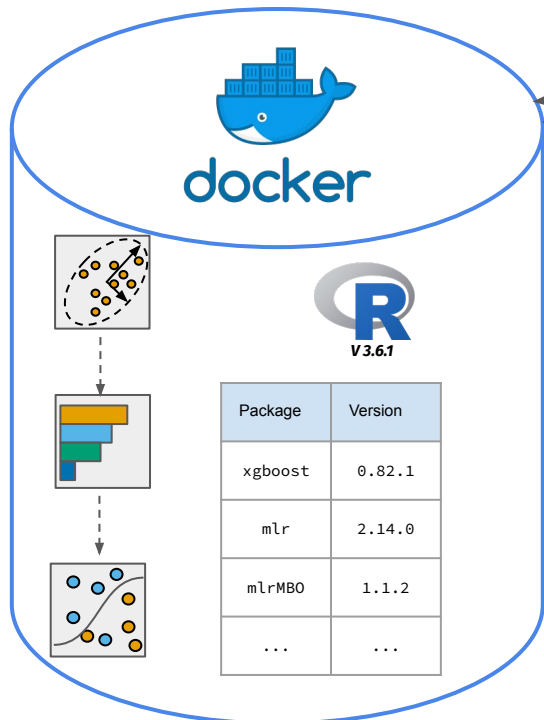
Final pipeline



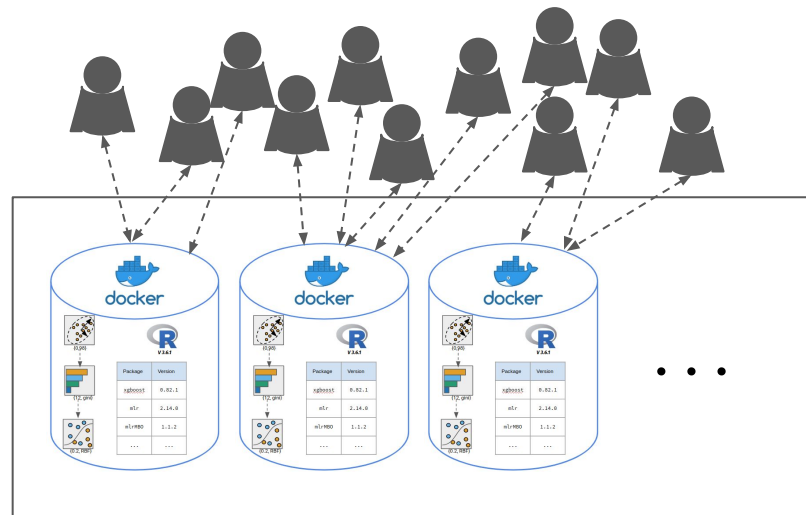
Stacked ensemble

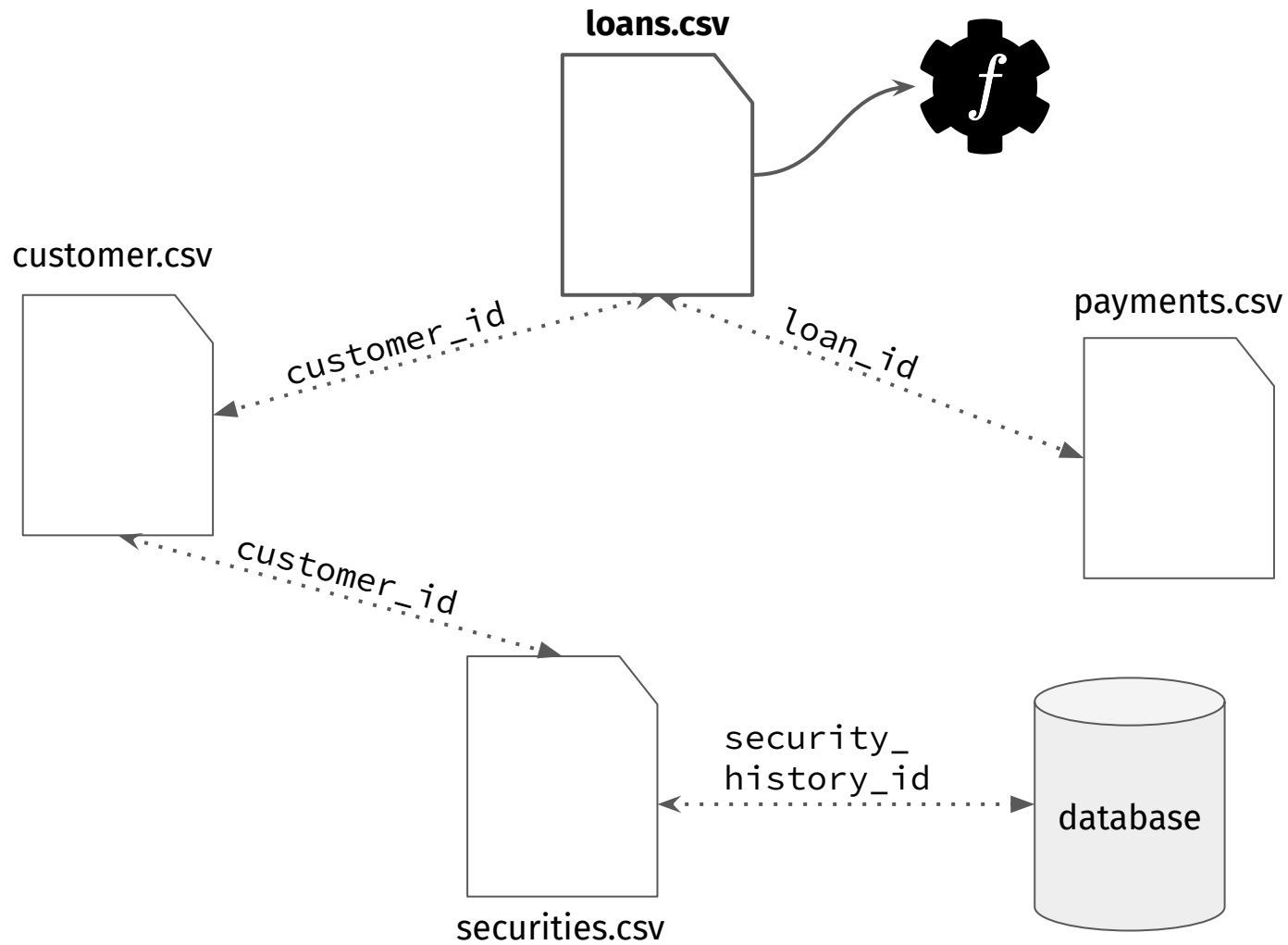
```
curl --data '{"MS_SubClass":"020", "MS_Zoning":"RL", "Lot_Frontage":141, ...}' "remotehost:5762"
```

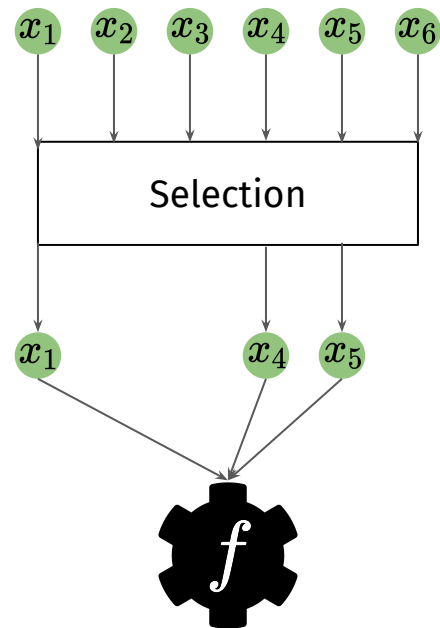
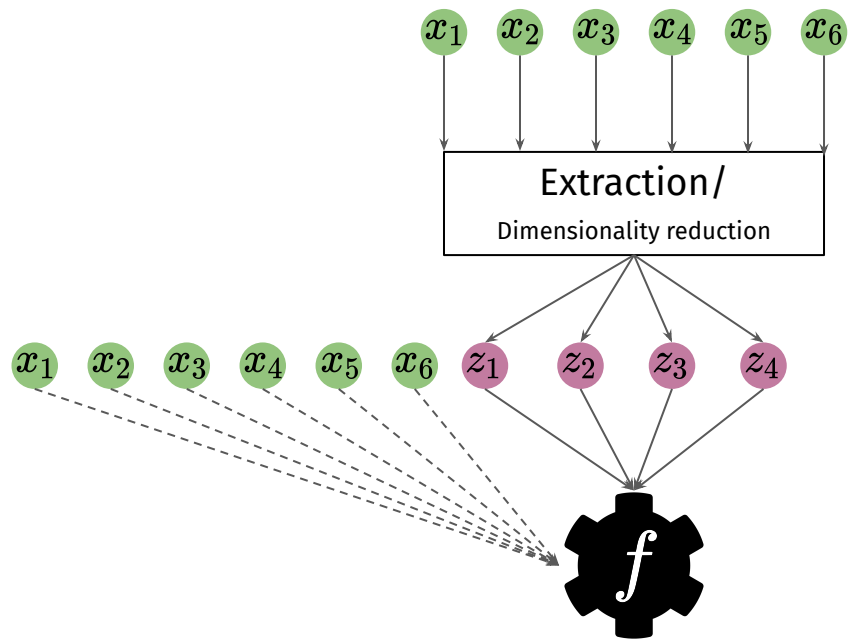
```
{  
  "prediction": 215000,  
  "query_time": "2019-07-11 09:47:28 CEST"  
}
```



on demand
scaling







y	x_1
4	a
3	a
6	b
2	a
8	b

$$\left. \begin{array}{l}
 a : \tilde{x}_1 = \frac{4+3+2}{3} = 3 \\
 b : \tilde{x}_1 = \frac{6+8}{2} = 7
 \end{array} \right\} \begin{array}{l}
 a \longrightarrow 3 \\
 b \longrightarrow 7
 \end{array}$$

y	\tilde{x}_1
4	3
3	3
6	7
2	3
8	7