## **Perceptron Data and Task**

What kind of data and tasks can Perceptron process

1. Perceptron can also take real inputs

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **phone1** | **phone2** | **phone3** | **phone4** | **phone 5** | **phone 6** | **phone 7** | **phone8** | **phone9** |
| **Launch (within 6 months) x1** | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| **Weight (g) x2** | 151 | 180 | 160 | 205 | 162 | 182 | 138 | 185 | 170 |
| **Screen Size (< 5.9in) x3** | 5.8 | 6.18 | 5.84 | 6.2 | 5.9 | 6.26 | 4.7 | 6.41 | 5.5 |
| **Dual sim x4** | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| **Internal mem(>= 64gb, 4gb ram) x5** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **NFC x6** | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| **Radio x7** | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| **Battery (mAh) x8** | 3060 | 3500 | 3060 | 5000 | 3000 | 4000 | 1960 | 3700 | 3260 |
| **Price? (k) x9** | 15k | 32k | 25k | 18k | 14k | 12k | 35k | 42k | 44k |
| **Liked (y)** | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |

1. Apply feature scaling to standardize real input values x’ = (x-min)/(max-min)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Weight (g) x2** | 0.19 | 0.63 | 0.33 | 1.00 | 0.36 | 0.66 | 0.00 | 0.70 | 0.48 |
| **Screen Size (< 5.9in) x3** | 0.64 | 0.87 | 0.67 | 0.88 | 0.70 | 0.91 | 0.00 | 1.00 | 0.47 |
| **Battery (mAh) x8** | 0.36 | 0.51 | 0.36 | 1.00 | 0.34 | 0.67 | 0.00 | 0.57 | 0.43 |
| **Price? (k) x9** | 0.09 | 0.63 | 0.41 | 0.19 | 0.06 | 0.00 | 0.72 | 0.94 | 1.00 |