RBF Hw

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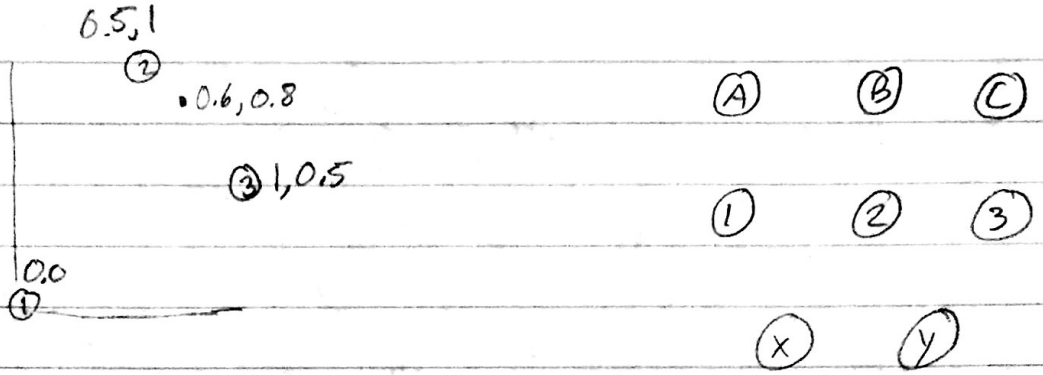
cs 478



Initial weights

1, 2, 3 —0.6→ A LR = 0.1

1, 2, 3 —-0.4→ B

1, 2, 3 —0→ C Input = 0.6, 0.8

Manhattan 1 = 1.4 $a_{t+1} = \max(0, -0.4) = 0$

Manhattan 2 = 0.3 $a_{t+2} = \max(0, 0.7) = 0.7$

Manhattan 3 = 0.7 $a_{t+3} = \max(0, 0.3) = 0.3$

$A = 0.6 \cdot 0 + 0.6 \cdot 0.7 + 0.6 \cdot 0.3$
$= 0.6$

$B = -0.4 \cdot 0 + -0.4 \cdot 0.7 + -0.4 \cdot 0.3$
$= -0.4$

$C = 0 \cdot 0 + 0 \cdot 0.7 + 0 \cdot 0.3$
$= 0$

winner: A

Final weights

$W_{1,A} = 0.6$ $W_{2,A} = 0.558$ $W_{3A} = 0.582$

$W_{1,B} = -0.4$ $W_{2B} = -0.302$ $W_{3B} = -0.358$

$W_{1,C} = 0$ $W_{2,C} = 0$ $W_{3C} = 0$

$\Delta W_{1,2,3 \to A} = 0.1(0 - 0.6) \cdot (0, 0.7, 0.3)$
$= -0.06 \cdot (0, 0.7, 0.3)$
$= (0, -0.042, -0.018)$

$\Delta W_{1,2,3 \to B} = 0.1(1 + 0.4) \cdot (0, 0.7, 0.3)$
$= 0.14 \cdot (0, 0.7, 0.3)$
$= (0, 0.098, 0.042)$

$\Delta W_{1,2,3 \to C} = 0.1(0 - 0) \cdot (0, 0.7, 0.3)$
$= (0, 0, 0)$