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| Introduction to Neural Networks | |
| Project #1 | |
| 授課老師 | 王振興 |
| Due date  11/02 | |
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| 系所 | **電機所** |

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| 推導過程 | |
| **RBFN** |  |
| **NN** |  |
| **說明** | **更新次數到第12次可以完成分類 紅色為初始分類線**  **綠色為完成第1次更新的分類線 藍色為訓練過程 橘線為訓練好的分類線** |

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| **學習曲線畫圖** | | |
| Adult DataSet | | |
| **RBFN** | **Gussian** |  |
| inverse multiquadric |  |
| **NN** | **lr=0.0005** |  |
| **lr=0.00025** |  |
| **Activefuncion:softmax** |  |
| **NN** | **Activefuncion:relu** |  |
| **Weight\_change** |  |
| **Bias**  **change** |  |

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| Mnist DataSet | | |
| **RBFN** | **Gussian** |  |
| inverse multiquadric |  |
| **NN** | **lr=0.0005** |  |
| **lr=0.00025** |  |
| **Activefuncion:softmax** |  |
| **NN** | **Activefuncion:relu** |  |
| **Weight\_change** |  |
| **Bias**  **change** |  |

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| Biking DataSet | | |
| **RBFN** | **Gussian** |  |
| inverse multiquadric |  |
| **NN** | **lr=0.0005** |  |
| **lr=0.00025** |  |
| **Activefuncion:softmax** |  |
| **NN** | **Activefuncion:relu** |  |
| **Weight\_change** |  |
| **Bias**  **change** |  |

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| **題號2(a)** |  |
| **解2(a)** |  |

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| **解2(b)** | **update times:0**  **[[ 0. +0.j -1. +0.j]**  **[-0.89442719+0.j 0.4472136 +0.j]**  **[-0.4472136 +0.j 0.89442719+0.j]]**  **update times:1**  **[[ 0. +0.j -1. +0.j]**  **[-0.9472136 +0.j 0.2236068 +0.j]**  **[-0.4472136 +0.j 0.89442719+0.j]]**  **update times:2**  **[[ 0. +0.j -1. +0.j]**  **[-0.9472136+0.j 0.2236068+0.j]**  **[-0.2236068+0.j 0.9472136+0.j]]**  **update times:3**  **[[ 0. +0.j -1. +0.j]**  **[-0.9472136 +0.j 0.2236068 +0.j]**  **[ 0.24174999+0.j 0.82716019+0.j]]**  **update times:4**  **[[ 0. +0.j -1. +0.j]**  **[-0.9736068 +0.j 0.1118034 +0.j]**  **[ 0.24174999+0.j 0.82716019+0.j]]**  **update times:5**  **[[ 0. +0.j -1. +0.j]**  **[-0.9736068 +0.j 0.1118034 +0.j]**  **[ 0.120875 +0.j 0.91358009+0.j]]**  **update times:6**  **[[ 0. +0.j -1. +0.j]**  **[-0.9736068 +0.j 0.1118034 +0.j]**  **[ 0.41399089+0.j 0.81034344+0.j]]** |

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| **題號3** |  |
| **解3(a)** | 1. the old (n) weight from input j to output k 2. the kth element of the output 3. the j th element of the input. |
| **解3(b)** | 1. **weight變動過大** 2. **將 learning rate調小** |
| **解3(c)** | **cycle:1**  **[ 4. -2.125 1. ]**  **cycle:2**  **[ 7. -2.25 3. ]** |