**Figure 1: Prior Probabilities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Prior Probability Type** | **P(Gender=0)** | **P(Weight=0|Gender=0)** | **P(Weight=0|Gender=1)** | **P(Height=0|Gender=0)** | **P(Height=0|Gender=1)** |
| G:Provided by Professor | 0.7 | 0.8 | 0.4 | 0.7 | 0.3 |
| T1: Randomly Generated | 0.383271 | 0.511622 | 0.027045 | 0.456521 | 0.96269 |
| T2: Randomly Generated | 0.527978 | 0.816105 | 0.256124 | 0.931043 | 0.141905 |
| T3: Lower extremity | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| T4: Higher extremity | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| T5: Probability 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |

**Figure 2: Number of Iterations of EM Algorithm for Given case and 5 Test Cases described in Figure 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 10% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **Iterations** | 5 | 5 | 5 | 6 | 5 | 6 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 30% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **Iterations** | 4 | 5 | 4 | 4 | 6 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 50% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **Iterations** | 30 | 32 | 29 | 35 | 27 | 33 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 70% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **Iterations** | 65 | 9 | 80 | 82 | 22 | 75 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 100% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **Iterations** | 8 | 20 | 7 | 2 | 2 | 2 |

**Figure 3: Final Probability Gender Table**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 10% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **P(Gender=0)** | 0.726477 | 0.726481 | 0.726472 | 0.726475 | 0.726481 | 0.726476 |
| **P(Gender=1)** | 0.273523 | 0.273519 | 0.273528 | 0.273525 | 0.273519 | 0.273524 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 30% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **P(Gender=0)** | 0.555546 | 0.555563 | 0.555383 | 0.555503 | 0.555464 | 0.555512 |
| **P(Gender=1)** | 0.444454 | 0.444437 | 0.444617 | 0.444497 | 0.444536 | 0.444488 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 50% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **P(Gender=0)** | 0.704226 | 0.704211 | 0.704219 | 0.704215 | 0.704222 | 0.704217 |
| **P(Gender=1)** | 0.295774 | 0.295789 | 0.295781 | 0.295785 | 0.295778 | 0.295783 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 70% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **P(Gender=0)** | 0.573436 | 0.576313 | 0.573502 | 0.573483 | 0.573507 | 0.573511 |
| **P(Gender=1)** | 0.426564 | 0.423687 | 0.426498 | 0.426517 | 0.426493 | 0.426489 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 100% Missing | **G** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **P(Gender=0)** | 0.720806 | 0.766678 | 0.62245 | 0.1 | 0.9 | 0.5 |
| **P(Gender=1)** | 0.279194 | 0.233322 | 0.37755 | 0.9 | 0.1 | 0.5 |

**Figure 4: Weight|Gender Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **10% Missing** | **P(Weight=0|Gender=0)** | **P(Weight=1|Gender=0)** | **P(Weight=0|Gender=1)** | **P(Weight=1|Gender=1)** |
| **G** | **0.862349** | **0.137651** | **0.634399** | **0.365601** |
| **T1** | **0.86235** | **0.13765** | **0.634394** | **0.365606** |
| **T2** | **0.862348** | **0.137652** | **0.634407** | **0.365593** |
| **T3** | **0.862349** | **0.137651** | **0.634403** | **0.365597** |
| **T4** | **0.86235** | **0.13765** | **0.634395** | **0.365605** |
| **T5** | **0.862349** | **0.137651** | **0.634402** | **0.365598** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **30% Missing** | **P(Weight=0|Gender=0)** | **P(Weight=1|Gender=0)** | **P(Weight=0|Gender=1)** | **P(Weight=1|Gender=1)** |
| **G** | **0.892362** | **0.107638** | **0.234562** | **0.765438** |
| **T1** | **0.892328** | **0.107672** | **0.234579** | **0.765421** |
| **T2** | **0.892667** | **0.107333** | **0.234423** | **0.765577** |
| **T3** | **0.892397** | **0.107603** | **0.234582** | **0.765418** |
| **T4** | **0.892513** | **0.107487** | **0.234494** | **0.765506** |
| **T5** | **0.892423** | **0.107577** | **0.234537** | **0.765463** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **50% Missing** | **P(Weight=0|Gender=0)** | **P(Weight=1|Gender=0)** | **P(Weight=0|Gender=1)** | **P(Weight=1|Gender=1)** |
| **G** | 0.69528 | 0.30472 | 0.373143 | 0.626857 |
| **T1** | 0.695288 | 0.304712 | 0.373139 | 0.626861 |
| **T2** | 0.695284 | 0.304716 | 0.373141 | 0.626859 |
| **T3** | 0.695286 | 0.304714 | 0.37314 | 0.62686 |
| **T4** | 0.695282 | 0.304718 | 0.373142 | 0.626858 |
| **T5** | 0.695285 | 0.304715 | 0.373141 | 0.626859 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **70% Missing** | **P(Weight=0|Gender=0)** | **P(Weight=1|Gender=0)** | **P(Weight=0|Gender=1)** | **P(Weight=1|Gender=1)** |
| **G** | 0.502635 | 0.497365 | 0.027595 | 0.972405 |
| **T1** | 0.504201 | 0.495799 | 0.02224 | 0.97776 |
| **T2** | 0.502683 | 0.497317 | 0.027457 | 0.972543 |
| **T3** | 0.502668 | 0.497332 | 0.027498 | 0.972502 |
| **T4** | 0.502686 | 0.497314 | 0.027448 | 0.972552 |
| **T5** | 0.502689 | 0.497311 | 0.027439 | 0.972561 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **100% Missing** | **P(Weight=0|Gender=0)** | **P(Weight=1|Gender=0)** | **P(Weight=0|Gender=1)** | **P(Weight=1|Gender=1)** |
| **G** | 0.831221 | 0.168779 | 0.361221 | 0.638779 |
| **T1** | 0.823473 | 0.176527 | 0.294277 | 0.705723 |
| **T2** | 0.80374 | 0.19626 | 0.528968 | 0.471032 |
| **T3** | 0.7 | 0.3 | 0.7 | 0.3 |
| **T4** | 0.7 | 0.3 | 0.7 | 0.3 |
| **T5** | 0.7 | 0.3 | 0.7 | 0.3 |

**Figure 5: Height|Gender Table**

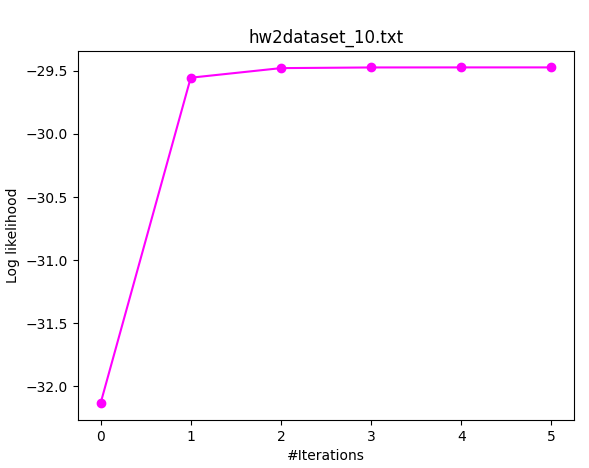
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **10% Missing** | **P(Height=0|Gender=0)** | **P(Height=1|Gender=0)** | **P(Height=0|Gender=1)** | **P(Height=1|Gender=1)** |
| **G** | 0.688252 | 0.311748 | 4.480958e-07 | 1.0 |
| **T1** | 0.688248 | 0.311752 | 7.822644e-07 | 0.999999 |
| **T2** | 0.688258 | 0.311742 | 2.295968e-07 | 1.0 |
| **T3** | 0.688255 | 0.311745 | 4.158310e-07 | 1.0 |
| **T4** | 0.688249 | 0.311751 | 5.168287e-07 | 0.999999 |
| **T5** | 0.688254 | 0.311746 | 2.123324e-07 | 1.0 |

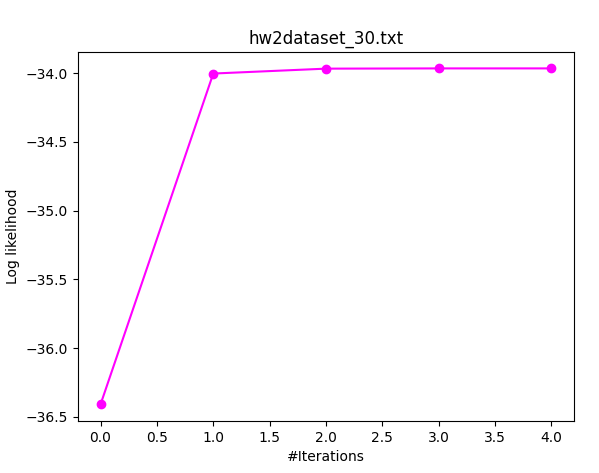
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **30% Missing** | **P(Height=0|Gender=0)** | **P(Height=1|Gender=0)** | **P(Height=0|Gender=1)** | **P(Height=1|Gender=1)** |
| **G** | 0.532355 | 0.467645 | 0.234562 | 0.765438 |
| **T1** | 0.532333 | 0.467667 | 0.234579 | 0.765421 |
| **T2** | 0.532555 | 0.467445 | 0.234423 | 0.765577 |
| **T3** | 0.532363 | 0.467637 | 0.234582 | 0.765418 |
| **T4** | 0.532454 | 0.467546 | 0.234494 | 0.765506 |
| **T5** | 0.532394 | 0.467606 | 0.234537 | 0.765463 |

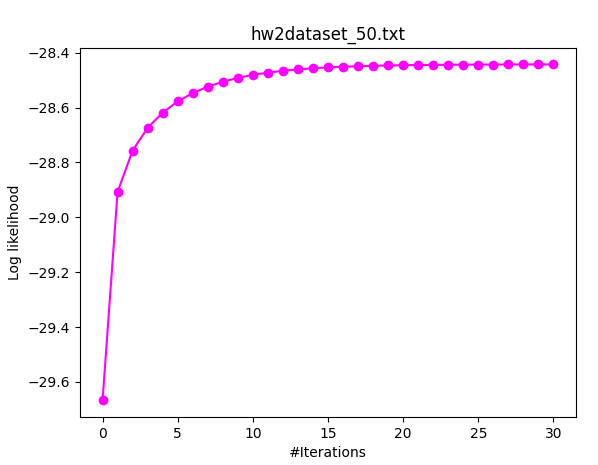
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **50% Missing** | **P(Height=0|Gender=0)** | **P(Height=1|Gender=0)** | **P(Height=0|Gender=1)** | **P(Height=1|Gender=1)** |
| **G** | 0.851907 | 0.148093 | 0.000221 | 0.999779 |
| **T1** | 0.851903 | 0.148097 | 0.00027 | 0.99973 |
| **T2** | 0.851905 | 0.148095 | 0.000243 | 0.999757 |
| **T3** | 0.851904 | 0.148096 | 0.000259 | 0.999741 |
| **T4** | 0.851906 | 0.148094 | 0.000233 | 0.999767 |
| **T5** | 0.851905 | 0.148095 | 0.000249 | 0.999751 |

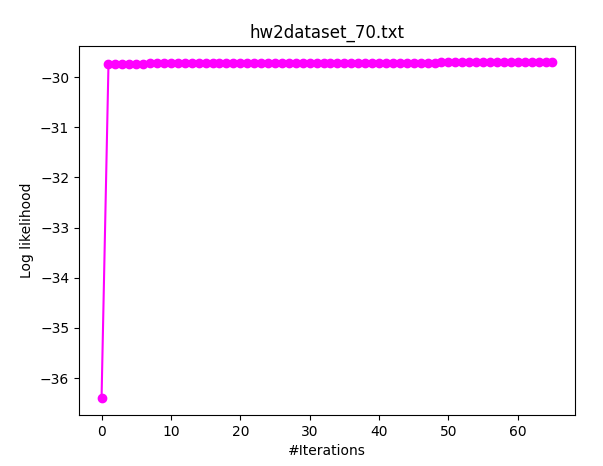
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **70% Missing** | **P(Height=0|Gender=0)** | **P(Height=1|Gender=0)** | **P(Height=0|Gender=1)** | **P(Height=1|Gender=1)** |
| **G** | 0.546578 | 0.453422 | 0.202953 | 0.797047 |
| **T1** | 0.544191 | 0.455809 | 0.203867 | 0.796133 |
| **T2** | 0.546521 | 0.453479 | 0.202977 | 0.797023 |
| **T3** | 0.546538 | 0.453462 | 0.20297 | 0.79703 |
| **T4** | 0.546517 | 0.453483 | 0.202978 | 0.797022 |
| **T5** | 0.546513 | 0.453487 | 0.20298 | 0.79702 |

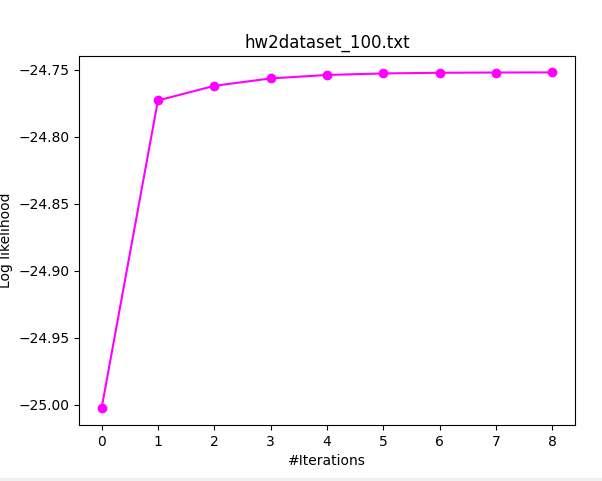
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **100% Missing** | **P(Height=0|Gender=0)** | **P(Height=1|Gender=0)** | **P(Height=0|Gender=1)** | **P(Height=1|Gender=1)** |
| **G** | 0.7813 | 0.2187 | 0.311017 | 0.688983 |
| **T1** | 0.760022 | 0.239978 | 0.288478 | 0.711522 |
| **T2** | 0.914255 | 0.085745 | 0.214335 | 0.785665 |
| **T3** | 0.65 | 0.35 | 0.65 | 0.35 |
| **T4** | 0.65 | 0.35 | 0.65 | 0.35 |
| **T5** | 0.65 | 0.35 | 0.65 | 0.35 |

**Fig 6: Graphs for G test(Given by the Professor)**

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