

LIST OF FIGURES

| | | |
|------|--|----|
| 2.1 | Research Gap. | 9 |
| 2.2 | EEG montages. | 10 |
| 2.3 | ERP waveform and P300 amplitude. | 12 |
| 2.4 | Single-point crossover. | 14 |
| 2.5 | Illustration of position movement in PSO. | 16 |
| 2.6 | ACO concept. | 18 |
| 2.7 | Position updating in the grey wolf optimization (GWO). | 20 |
| 2.8 | WOA illustration (a)Bubble-net feeding behavior of humpback whales and (b) Spiral updating position. | 22 |
| 2.9 | Soft voting classifier. | 27 |
| 3.1 | Research Flow. | 28 |
| 3.2 | Contec KT-88. | 30 |
| 3.3 | (a) Cap and (b) Electrodes. | 30 |
| 3.4 | The flowchart of GNAT process. | 32 |
| 3.5 | GNAT website view. | 32 |
| 3.6 | Illustration of the EEG signal recording | 34 |
| 3.7 | Illustration of the EEG signal recording. | 35 |
| 3.8 | The process of EEG signal recording. | 35 |
| 3.9 | Signal recording result. | 36 |
| 3.10 | Signal component comparison (a) before ICA and (b) after ICA. | 37 |
| 3.11 | Signal comparison (a) before filter and (b) after filter. | 38 |