**Lembar Jawaban Kalkulasi Neural Network**

**Pada lembar jawaban ini, kamu dapat menuliskan cara mengkalkulasikan nilai-nilai yang diminta pada arsitektur neural network sesuai soal beserta hasilnya, ya, semangat!😄**

Pertama, masukkan dulu nilai initial value dan initial randomnya ya …

**Initial Value**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **x1** | **x2** | **x3** | **α** | **Threshold** | **Yd,6** |
| 0.7 | 0.8 | 0.9 | 0.1 | -1 | 0 |

**Initial Random**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **W14** | **W15** | **W24** | **W25** | **W34** | **W35** | **W46** | **W56** | **θ4** | **θ5** | **θ6** |
| 0.5 | 0.6 | 0.3 | 1.1 | -1 | 0.1 | -1.1 | -0.7 | 0.2 | 0.3 | 0.4 |

Jika sudah selesai, kita akan masuk ke langkah-langkah kalkulasi, sebagai berikut:

**Forward Pass**

Forward Pass merupakan hasil dari langkah 1 pada proses kalkulasi di challenge deck. Oleh karena itu kamu tuliskan langkah kalkulasi yang kamu lakukan untuk mencari nilai-nilai di bawah ini, ya🙌

**Langkah 1: Menghitung output Neuron 4 (y4), Neuron 5 (y5), Neuron 6 (y6), dan Error menggunakan sigmoid function**

|  |  |
| --- | --- |
| Y4 | = |
|  | = |
|  | = 0.432907095 |
| Y5 | = |
|  | = |
|  | = 0.748381722 |
| Y6 | = |
|  | = |
|  | = 0.197805796 |
| e | = |
|  | = |
|  | = |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |
| --- | --- | --- | --- |
| **Y4** | **Y5** | **Y6** | **e** |
| 0.432907095 | 0.748381722 | 0.197805796 |  |

**Backward Pass**

Sementara itu, nilai-nilai dari backward pass didapatkan dengan menjalankan langkah 2, 3, dan 4. Jangan lupa tuliskan proses dan hasil kalkulasinya pada tempat yang telah disediakan di bawah, ya👍

**Langkah 2: Hitung error gradient untuk Neuron 6 di Output Layer dan weight corrections**

|  |  |
| --- | --- |
| δ6 | = |
|  | = |
|  | = -0.031387559 |
| ∇46 | = |
|  | = |
|  | = -0.00135879 |
| ∇56 | = |
|  | = |
|  | = -0.002348988 |
| ∇θ6 | = |
|  | = |
|  | = 0.003138756 |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |
| --- | --- | --- | --- |
| **δ6** | **∇46** | **∇56** | **∇θ6** |
| -0.031387559 | -0.00135879 | -0.002348988 | 0.003138756 |

**Langkah 3: Hitung error gradients untuk Neuron 4 dan Neuron 5 di Middle Layer/Hidden Layer**

|  |  |
| --- | --- |
| δ4 | = |
|  | = |
|  | = 0.00847616 |
| δ5 | = |
|  | = |
|  | = 0.004137337 |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |
| --- | --- |
| **δ4** | **δ5** |
| 0.00847616 | 0.004137337 |

**Langkah 4: Hitung weight corrections**

|  |  |
| --- | --- |
| ∇w14 | = |
|  | = |
|  | = 0.000593331 |
| ∇w24 | = |
|  | = |
|  | = 0.000678093 |
| ∇w34 | = |
|  | = |
|  | = 0.000762854 |
| ∇θ4 | = |
|  | = |
|  | = -0.000847616 |
| ∇w15 | = |
|  | = |
|  | = 0.000289614 |
| ∇w25 | = |
|  | = |
|  | = 0.000330987 |
| ∇w35 | = |
|  | = |
|  | = 0.00037236 |
| ∇θ5 | = |
|  | = |
|  | = -0.000413734 |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **∇w14** | **∇w24** | **∇w34** | **∇θ4** | **∇w15** | **∇w25** | **∇w35** | **∇θ5** |
| 0.00059333 | 0.00067809 | 0.00076285 | -0.0008476 | 0.00028961 | 0.00033098 | 0.00037236 | -0.0004137 |

**Backward Pass**

Last but not least, adalah nilai-nilai dari updated weight didapatkan dengan menjalankan langkah nomor 5. Seperti biasa, tuliskan proses dan hasil kalkulasinya pada tempat yang telah disediakan di bawah, ya👌

**Langkah 5: Hitung semua weights dan theta pada arsitektur yang telah diperbarui**

|  |  |
| --- | --- |
| w14 | = |
|  | = |
|  | = 0.500593331 |
| w15 | = |
|  | = |
|  | = 0.600289614 |
| w24 | = |
|  | = |
|  | = 0.300678093 |
| w25 | = |
|  | = |
|  | = 1.100330987 |
| w34 | = |
|  | = = |
|  | = -0.999237146 |
| w35 | = |
|  | = = |
|  | = 0.10037236 |
| θ4 | = |
|  | = = |
|  | = 0.199152384 |
| θ5 | = |
|  | = = |
|  | = 0.299586266 |
| θ6 | = |
|  | = = |
|  | = 0.403138756 |

Lalu isi rangkuman hasilnya di tabel ini ya …

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **w14** | **w15** | **w24** | **w25** | **w34** | **w35** | **θ3** | **θ4** | **θ5** |
| 0.500593 | 0.600289 | 0.300678 | 1.100330 | -0.99923 | 0.100372 | 0.199152 | 0.299586 | 0.403138 |

**Hore, kamu sudah menyelesaikan satu dari tiga proyek challenge platinum! Semoga mendapatkan hasil yang maksimal dan selamat bersenang-senang~**