

PROJECT REPORT

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Course : ECE 469 Artificial Intelligence

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Description

An implementation of Artificial Neural Network using C++.

Dependency

- CMAKE 3.0
- MAKE

Usage

```
./ANN_train  
Follow the Prompt  
./ANN_test  
Follow the Prompt
```

Build

```
cd ANN_code/  
mkdir build && cd build  
cmake .. && make
```

Clear Build

```
cd ANN_code/  
rm -rf build
```

Database Description

- Filename: robot_dataset
- Title: Wall-Following navigation task with mobile robot SCITOS-G5
- Reasonable parameter:
 1. learning rate : 0.05
 2. Epoch(iterations) : 100
 3. Number of hidden nodes: 5
- Filename for trained/untrained/result:
 1. untrained: init_weight
 2. trained: sample.out.05.100.trained
 3. result: sample.out.05.100.results
- Initial weights are generated through script : init_weight.py
- Database are modified using script : formattoadata.py [take 1 parameter as the percentage of the training set to be partitioned from the dataset, e.g. 0.8]
 1. Dropped incomplete data
 2. Encoded the classification to binary classification of four nodes
 3. Drop out irrelevant feature (no correlation to classification task)
 4. Partition the data to test (20 % of original sets) and train (80% of original sets)
- Full description of the dataset can be found at Wall-following.names in the folder, dataset found on UCI machine learning dataset repository