TECHNIQUE REPORT

**Approach to AI**

referringCNN



*The meaning of life is to give life a meaning …*

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# OVERVIEW

Fix some of the filter weights of classical CNN with classical convolution kernels such as sobel, kirch etc.

Short term targets:

* 实现参考学习的轻量级平台
* 支持脚本进行网络参数匹配
* 测试平台在mnist上的训练速度和分类性能

Long range targets:

* The definition of referring learning and referring CNN
* The relationship between referring learning and transfer learning
* How to evaluating the robustness, stabling and generalization ability of a referring block

Network that can distinguish difficulty levels, easy cases will be trained lightly while difficult cases will be thoutoughly exhausted trained in the network structure.

## Current Work

未来3个月目标：

运行实例，改善实例的load流程，优化实例的输出

level-training algorithm:

* in each level the training algorithm is at different stage with different strategy
* example: dark image vs bright image lead to different next processing stage

增加模板类 头文件：hybrid\_conv\_layer.h，实现：hybrid\_conv\_layer.hpp。

### Mission today

构造 tiny testcase 调试网络的构造流程

构建一个简单的深度网络进行测试

Tiny testcase - mnist

## How to Make AI Distinguish Difficulty Levels

## global working flow

### Image splitting

### Data sampling

### Converting data to LDB

### Computing data mean

### Training

fineTune ( )

### Classifier

### Generative Adversarial Networks

### most important concepts and objects

### Depending Libraries

## Loss functions

## Blob

### 

### Main data members

## Layer

### Data flow process

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### Main data members

## Net

### Main data members

### Important member functions

初

## Solver

## Main Processing Flow

### Steps to generate personal dataset

# PRELIMINARIES

# DATA

The classical flow of machine learning including the following steps:

1. Data source gathering
2. Row data processing
3. Feature fetching
4. Data classification
5. Model training
6. Model verification
7. Model testing
8. Prediction and classification

## The Process of Data Management

### The format of training data

### Data preparation tools

# CODES IMPLEMENTATION

## The Architecture of referringCNN

### Displaying the Debuging Information

### Some Macros

## Main Working Flow

## Reusable Classes

### CInit

# GUI

## Parameters

### net config

## ini

## Message Manager

### progress bar

## Working Thread

### Job

### Job parameters

## Debug

### 

# ARTIFICIAL NEURAL NETWORK

## Toeplitz Matrix

# EXPERIMENTS

## The Architecture of Testing Flow

## Database Creating and Converting

### 将图片集生成为训练用数据库

## Testcases

### Tiny testcase

### mnist