

CST 生存指南

JNU 15 CST Geno
JNU 15 SE littleredhat1997

March 2, 2019

版本 0.0 (构建次数 279)

Contents

1	数学基础	1
1.1	记数系统	1
1.2	算术	1
1.3	布尔代数	1
1.4	公理和定理	1
2	数据结构	3
2.1	整数的表达	3
2.2	小数的表达	3
2.3	字符编码	3
2.4	数据的组织形式	3
3	数据交互	5
3.1	进程间通信	5
4	硬件执行	7
4.1	逻辑门	7
4.2	门电路	7
4.3	CPU 执行	7
4.4	执行流的修改	7
5	编译原理	9
5.1	Chomsky 范式	9
5.2	自动机理论	9
5.3	代码生成	9
5.4	程序优化	9
6	Deep Learning	11
6.1	Classification	11
6.2	Object Detection	14
6.3	Semantic Segmentation	16

CONTENTS

6.4	Instance Segmentation	19
6.5	Mobile	21
6.6	Search Network	22
7	真实开发	25
7.1	健康小贴士	25
8	情感生活	27
8.1	·	27

Chapter 1

数学基础

数学是计算机的核心。小到计算器，大到超级电脑，从简单的算术运算到大型的天文、生物仿真，计算机的一个目标就是更快的运算速度；或者说，数学就是一个计算机的毕生任务。

1.1 记数系统

记数系统就是一套表达数字的系统。数字有很多“种”，对于不同“种”数字，它们有不同的特点，需要不同的记数系统来表达。即使对于同一“种”数字，也可能会因为不同场合（上下文）而需要表达为不同的“形态”。这一节主要讲述

1.2 算术

1.3 布尔代数

1.4 公理和定理

Chapter 2

数据结构

2.1 整数的表达

2.2 小数的表达

2.3 字符编码

2.4 数据的组织形式

Chapter 3

数据交互

3.1 进程间通信

Chapter 4

硬件执行

4.1 逻辑门

4.2 门电路

4.3 CPU 执行

4.4 执行流的修改

Chapter 5

编译原理

5.1 Chomsky 范式

5.2 自动机理论

5.3 代码生成

5.4 程序优化

Chapter 6

Deep Learning

6.1 Classification

Paper	Network	Release	Conference	Top-5(5.1%)
ImageNet Classification with Deep Convolutional Neural Networks	AlexNet	-	NIPS 2012	16.4%
Visualizing and Understanding Convolutional Networks	ZFNet	2013.11.12	ECCV 2014	11.7%
OverFeat: Integrated Recognition, Localization and Detection using Convolutional Networks	OverFeat	2013.12.21	ICLR 2014	-
Network In Network	NIN	2013.12.16	ICLR 2014	-

Paper	Network	Release	Conference	Top-5(5.1%)
Very Deep Convolutional Networks for Large-Scale Image Recognition	VGG	2014.9.4	ICLR 2015	7.3%
Going Deeper With Convolutions	GoogLeNet(Inception-v1)	2014.9-17	CVPR 2015	6.7%
Batch Normalization: Accelerating Deep Network Training by Reducing Internal Covariate Shift	Inception-v2*	2015.2.11	ICML 2015	4.8%
Rethinking the Inception Architecture for Computer Vision	Inception-v3*	2015.12.2	CVPR 2016	3.5%
Inception-v4, Inception-ResNet and the Impact of Residual Connections on Learning	Inception-v4, Inception-ResNet-v1, Inception-ResNet-v2	2016.2.23	AAAI 2016	3.08%
Highway Networks	Highway	2015.5.3	ICML 2015	-

Paper	Network	Release	Conference	Top-5(5.1%)
Deep Residual Learning for Image Recognition	ResNet-v1	2015.12.10	CVPR 2016	3.57%
Identity Mappings in Deep Residual Networks	ResNet-v2	2016.3.16	ECCV 2016	-
Wide Residual Networks	WideResNet	2016.5.23	BMVC 2016	-
FractalNet: Ultra-Deep Neural Networks without Residuals	FractalNet	2016.5.24	ICLR 2017	-
Densely Connected Convolutional Networks	DenseNet	2016.8.25	CVPR 2017	-
Aggregated Residual Transformations for Deep Neural Networks	ResNeXt	2016.11.16	CVPR 2017	3.03%
PolyNet: A Pursuit of Structural Diversity in Very Deep Networks	PolyNet	2016.11.17	CVPR 2017	-
Dual Path Networks	DPN	2017.7.6	NIPS 2017	-

Paper	Network	Release	Conference	Top-5(5.1%)
Squeeze-and-Excitation Networks	SENet	2017.9.5	CVPR 2018	2.25%

- 按照 Inception 系列四篇论文中的第三篇论文的划分，类似于 Inception v3 的一个网络称之为 v2，但是按照第四篇论文的划分，BN-Inception 称之为v2，这里采用第四篇论文的划分，Inception v2 指 BN-Inception。

6.2 Object Detection

Paper	Network	Release	Conference
Spatial Pyramid Pooling in Deep Convolutional Networks for Visual Recognition	SPPNet	2014.6.18	ECCV 2014
Rich feature hierarchies for accurate object detection and semantic segmentation	R-CNN	2013.11.11	CVPR 2014
Fast R-CNN	Fast R-CNN	2015.4.30	ICCV 2015
Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks	Fast R-CNN	2015.6.4	NIPS 2015

Paper	Network	Release	Conference
You Only Look Once: Unified, Real-Time Object Detection	YOLO-v1	2015.6.8	CVPR 2016
YOLO9000: Better, Faster, Stronger	YOLO-v2, YOLO-9000	2015.12.25	CVPR 2017
YOLOv3: An Incremental Improvement	YOLO-v3	2018.4.8	-
SSD: Single Shot MultiBox Detector	SSD	2015.12.8	ECCV 2016
Inside-Outside Net: Detecting Objects in Context with Skip Pooling and Recurrent Neural Networks	ION	2015.12.14	CVPR 2016
HyperNet: Towards Accurate Region Proposal Generation and Joint Object Detection	HyperNet	2016.4.3	CVPR 2016
R-FCN: Object Detection via Region-based Fully Convolutional Networks	R-FCN	2016.5.20	NIPS 2016

Paper	Network	Release	Conference
A Unified Multi-scale Deep Convolutional Neural Network for Fast Object Detection	MS-CNN	2016.7.25	ECCV 2016
Feature Pyramid Networks for Object Detection	FPN	2016.12.9	CVPR 2017
Deformable Convolutional Networks	DeformableNet	2017.3.17	ICCV 2017
Focal Loss for Dense Object Detection	RetinaNet	2017.8.7	ICCV 2017

6.3 Semantic Segmentation

Paper	Network	Release	Conference
Fully Convolutional Networks for Semantic Segmentation	FCN	2014.11.14	CVPR 2015
Learning Deconvolution Network for Semantic Segmentation	DeconvNet	2015.5.17	ICCV 2015

Paper	Network	Release	Conference
U-Net: Convolutional Networks for Biomedical Image Segmentation	U-Net	2015.5.18	MICCAI 2015
SegNet: A Deep Convolutional Encoder- Decoder Architecture for Image Segmentation	SegNet	2015.11.2	TPAMI 2016
Laplacian Pyramid Reconstruction and Refinement for Semantic Segmentation	LRR	2016.5.8	ECCV 2016
ENet: A Deep Neural Network Architecture for Real-Time Semantic Segmentation	ENet	2016.6.7	ICLR 2017(Reject)
RefineNet: Multi-Path Refinement Networks for High-Resolution Semantic Segmentation	RefineNet	2016.11.20	CVPR 2017
Pyramid Scene Parsing Network	PSPNet	2016.12.4	CVPR 2017

Paper	Network	Release	Conference
ICNet for Real-Time Semantic Segmentation on High-Resolution Images	ICNet	2017.4.27	ECCV 2018
Learning a Discriminative Feature Network for Semantic Segmentation	DFN	2018.4.25	CVPR 2018
Semantic Image Segmentation with Deep Convolutional Nets and Fully Connected CRFs	DeepLab-v1	2014.12.22	ICLR 2015
DeepLab: Semantic Image Segmentation with Deep Convolutional Nets, Atrous Convolution, and Fully Connected CRFs	DeepLab-v2	2016.6.2	TPAMI 2017
Rethinking Atrous Convolution for Semantic Image Segmentation	DeepLab-v3	2017.6.17	-

Paper	Network	Release	Conference
Encoder-Decoder with Atrous Separable Convolution for Semantic Image Segmentation	DeepLab-v3+	2018.2.7	ECCV 2018

6.4 Instance Segmentation

Paper	Network	Release	Conference
Simultaneous Detection and Segmentation	SDS	2014.7.7	ECCV 2014
Hypercolumns for Object Segmentation and Fine-grained Localization	Hypercolumns	2014.11.21	CVPR 2015
Convolutional Feature Masking for Joint Object and Stuff Segmentation	CFM	2014.12.3	CVPR 2015
Learning to Segment Object Candidates	DeepMask	2015.6.20	NIPS 2015
Learning to Refine Object Segments	SharpMask	2016.3.29	ECCV 2016

Paper	Network	Release	Conference
A MultiPath Network for Object Detection	MultiPathNet	2016.4.7	BMVC 2016
Instance-aware Semantic Segmentation via Multi-task Network Cascades	MNC	2015.12.14	CVPR 2016
Instance-sensitive Fully Convolutional Networks	ISFCN	2016.3.29	ECCV 2016
Fully Convolutional Instance-aware Semantic Segmentation	FCIS	2016.11.23	CVPR 2017
BiSeg: Simultaneous Instance Segmentation and Semantic Segmentation with Fully Convolutional Networks	BiSeg	2017.6.7	BMVC 2017
Mask R-CNN	Mask R-CNN	2017.3.20	ICCV 2017

Paper	Network	Release	Conference
Path Aggregation Network for Instance Segmentation	PANet	2018.3.5	CVPR 2018

6.5 Mobile

Paper	Network	Release	Conference
SqueezeNet: AlexNet-level accuracy with 50x fewer parameters and <0.5MB model size	SqueezeNet	2016.2.24	ICLR 2017(Reject)
Xception: Deep Learning with Depthwise Separable Convolutions	Xception	2016.10.7	CVPR 2017
MobileNets: Efficient Convolutional Neural Networks for Mobile Vision Applications	MobileNet-v1	2017.4.17	-

Paper	Network	Release	Conference
MobileNetV2: Inverted Residuals and Linear Bottlenecks	MobileNet-v2	2018.1.13	CVPR 2018
ShuffleNet: An Extremely Efficient Convolutional Neural Network for Mobile Devices	ShuffleNet-v1	2017.7.4	CVPR 2018
ShuffleNet V2: Practical Guidelines for Efficient CNN Architecture Design	ShuffleNet-v2	2018.7.30	ECCV 2018

6.6 Search Network

Paper	Network	Release	Conference
Neural Architecture Search With Reinforcement Learning	NAS	2016.11.5	ICRL 2017
Learning Transferable Architectures for Scalable Image Recognition	NASNet	2017.7.21	CVPR 2018

Paper	Network	Release	Conference
Progressive Neural Architecture Search	PNASNet	2017.12.2	ECCV 2018
Efficient Neural Architecture Search via Parameter Sharing	ENASNet	2018.2.9	-
MnasNet: Platform-Aware Neural Architecture Search for Mobile	MNASNet	2018.7.31	-

Chapter 7

真实开发

7.1 健康小贴士

Section Content.

Chapter 8

情感生活

8.1 .

This page intentionally left blank.