Lianke Qin

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Education

Shanghai Jiao Tong University, Shanghai, China   2015.9 – 2019.7(expected)
Bachelor of Engineering in Software Engineering

Hong Kong University of Science and Technology, Hong Kong, China   2017.9 – 2017.12
Exchange in Computer Science and Engineering

Publication

- **Lianke Qin**, Yifan Gong, Tianqi Tang, Yutian Wang, Jiangming Jin. Training Deep Nets with Progressive Batch Normalization on Multi-GPUs, International Conference on Network and Parallel Computing, 2018

Experience

Alibaba Group OceanBase Team(distributed relational database system)   2019.2-2019.8(expected)
Research Intern

- Explore and summarize database systems implemented with Log-Structured Merge tree like LevelDB, RocksDB and Kudu. Work on the optimization of query processing and data compaction for OceanBase based on LSM tree.

Tsinghua University Future Lab, Affective Computing Group   2018.8-2018.9
Research Assistant   Supervisor : Prof. Yingqing Xu

- Focus on reducing emotional loss during Voice-to-Text process. Design an algorithm to analyze sentiment of the voice record and autonomously add corresponding Emojis into text to express more accurate emotion(Valence / Arousal). Also conduct a user experiment to test its improvement over pure text.

TuSimple(An Autonomous Truck Startup in China and USA) HPC Team   2017.12 – 2018.8
Research Intern   Mentor : Dr. Jiangming Jin

- Optimize Batch Normalization Operator for MXNet, an open source machine learning model training framework, to improve Multi-GPU deep neural network training under small mini batch size by synchronizing key data among GPUs. Semantic Segmentation with DeepLab model on Visual Object Class Challenge 2012 dataset validation IoU score can improve up to 18.4%. Main features have been merged into MXNet master branch with the help from AWS AI team Dr. Hang Zhang. You can use **SyncBatchNormalization** operator in MXNet now.
- Learning from Kubeflow which combines Tensorflow and Kubenetes, try to deploy deep neural network training workflow based on MXNet on Kubernetes which eliminates many of the manual processes involved in deploying and scaling containerized applications.
- Write automated test script to help Hardware Group do GPU/CPU stress test, memory bandwidth test, disk I/O test and so on. And save all the results into Excel file.

Projects and Course Work

A distributed key-value store in Go

- Phase1 : Implement simple MapReduce mechanism in Go.
- Phase2 : Implement Raft, a replicated state machine protocol, to achieve fault tolerance and replica consistency.
- Phase3 : Build a fault-tolerant key-value storage service using Raft library with snapshots features to achieve log compaction. This service supports Put(key, value), Append(key, arg) and Get(key).

- Phase4 : Keep the keys over a set of replica groups. This sharding technique can improve total throughput performance by processing queries in parallel and balancing workloads among shards.

A compiler for Tiger language

- Phase1 : Implement a lexical analyzer and parser for Tiger language.
- Phase2 : Add a module which type-checks an abstract syntax tree and produces any appropriate error messages about mismatching types or undeclared identifiers.
- Phase3 : Generate assembly files for each input prog.tig and link them with runtime.o to produce an executable file

A naive file system implementation based on YFS

- Phase1 : Implement basic file system API like GET, PUT, REMOVE, CREATE, LOOKUP, MKDIR, LINK and UNLINK at inode level utilizing disk block manipulating API provided by YFS.
- Phase2 : Implement a simple lock server for clients to require/release when operating this file system
- Phase3 : Add a lock cache module in client side in order to reduce the workload on the lock server and improve client performance.
- Phase4 : Extend YFS file system to distributed one using HDFS interface to achieve fault tolerance and replicating data.

JOS

- Phase1 : Implement a physical memory and virtual memory manager to help kernel allocate/free memory and map virtual address to physical memory.
- Phase2 : Implement basic kernel facilities to get a protected user-mode environment process running and handle system calls and exceptions.
- Phase3 : Implement preemptive multitasking mechanism(Round-Robin scheduling) among multiple simultaneously active user-mode environments.
- Phase4 : Implement a simple disk-based file system

A DNA simulator based on HTC Vive

- Build your DNA based on the principle of complementary base pairing freely(with automated completion)
- Demonstrate how DNA helix is constructed ,its reverse process, and DNA transcription process.
- Use restriction endonuclease to cut DNA helix at specific location
- Persistently save DNA information and restore it when needed

A naive key-value store based on B+ tree

This naive key-value store supports basic CRUD. The index of database is constructed into a B+ tree to speed up CRUD. Get the location and length of value corresponding to key and read it from data file. Garbage collection is implemented to reduce disk fragmentation due to frequent updating. Besides, a cache module is included to speedup CRUD using LRU replacement policy(implemented with a doubly linkedlist and a hashmap). Fault tolerance with logging scheme and transaction mechanism are not supported yet.

Positive Time : An Android APP

This app aims to record app usage info so that it can provide data visualization and help users quit mobile phone addiction by Pomodoro Technique. Focus on back end server development including database design,recommendation system. Use K-means algorithm to divide users into several groups according to their app usage pattern. Then push new apps users may love using user-based collaborative filtering.

A simple path-tracking car

Computer analyses picture(black path in white background) taken by a fixed camera using OpenCV and extracts the path from it. Control the car go ahead, back or change direction using Arduino while constantly monitoring its moving progress. But it is not adaptively tolerant to surrounding noise.

ACTIVITIES AND AWARDS

Shanghai Jiao Tong University Merit Student	2016.9
Shanghai Jiao Tong University Academic Progress Award	2017.9

上海交通大学　RECORDS FOR UNDERGRADUATE

School of Electronic Information and Electrical Engineering　　STUID: 515010910102　　CLASS: F1503014
MAJOR: Software Engineering　　NAME: Qin Lianke

ACADEMIC YEAR: 2015-2016　SEMESTER ONE / ACADEMIC YEAR: 2015-2016　SEMESTER TWO

CODE	COURSES	CREDIT	SCORE	CODE	COURSES	CREDIT	SCORE
EN025	University English I	3	75	BI905	Life on the Earth	2	89
MA077	Linear Algebra	3	67	BI917	Brain and Everyday Behaviors	2	85
MA080	Calculus I	6	71	EI228	Science and Technology Innovation (Part 2-B)	2	92
ME001	Engineering Drafting I	2	76	EM151	Theoretical Mechanics	4	67
PE001	Physical Education I	1	92	EN026	University English II	3	77
SO936	Career Development and Planning	2	96	IO005	System Modeling and Application	2	92
SP159	Decision making under uncertainty	2	73	MA016	Mathematics Lab.	2	86
TH009	Circumstance and Policy	1	A-	MA081	Calculus II	4	77
TH021	Modern Chinese History	2	72	MA905	Stochastic Simulation Methods and Its Applications	3	94
				PE002	Physical Education II	1	97
				PE901	Sport Culture	1	86
				PH001	Physics I	4	81
				PH028	Physics Lab. I	1	81
				SO078	Excellence in Leadership: the Way to Success	2	80
				TH000	Cultivation of Ethics and Fundamentals of Law	3	91
				TH004	Military Theory	1	60
				TH009	Circumstance and Policy	1	B+
				TH010	Military Training	3	P
				XP000	General Education Practice	2	P

ACADEMIC YEAR: 2016-2017　SEMESTER ONE / ACADEMIC YEAR: 2016-2017　SEMESTER TWO

CODE	COURSES	CREDIT	SCORE	CODE	COURSES	CREDIT	SCORE
CS902	Thinking and Approach of Programming	3	82	ED903	The Mission & Culture of University	2	84
EI235	Synthesis of Circuits Systems	3	88	PE004	Physical Education IV	1	93
EI901	Science and Technology Innovation (Part 1)	2	89	PS907	Positive Psychology	3	92
MA115	Discrete Mathematics	2	86	SE102	Curriculum Design of Programming	4	94
PE005	Physical Education V	1	93	SE111	Introduction to Computer Systems II	4	82
PH002	Physics II	4	66	SE112	Software Engineering Professional Competency	1	88
PH029	Physics Lab. II	1	83	SE117	Programming and Data Structures I	5	92
SE100	Foundation of Innovation Practice in Software Engineering	2	84	SE223	Principle and Technology of Database	3	82
SE101	Introduction to Computer Systems I	5	74	SE228	Technology for Web Developing	2	69
SE222	Algorithm	3	85	SE230	Software Engineering	3	80
TH007	Basic Theory of Marxism	3	78	SE231	Course Exercise of Project Management and Software Development	4	88
TH009	Circumstance and Policy	1	A-	SO902	Cultural Charm	2	80
				TH009	Circumstance and Policy	1	A
				TH012	Introduction to Mao Zedong's Thoughts and Theoretical System of Socialism with Chinese Characteristics	6	85

ACADEMIC YEAR: 2017-2018　SEMESTER ONE / ACADEMIC YEAR: 2017-2018　SEMESTER TWO

CODE	COURSES	CREDIT	SCORE	CODE	COURSES	CREDIT	SCORE
MA119	Probability and Statistics	3	P	SE213	Software Testing	2	84
SE315	Operating Systems	3	P	SE341	Game Designing and Programming	3	81
SE340	Introduction to Human Computer Interaction	3	P	SE417	Software Engineering Economics	1	80
				SE418	Software Product Design and User Experience	1	80
				SE419	Enterprise Software Quality Assurance	1	80
				SE420	Software Intellectual Property Protection	1	80
				SE422	Enterprise Software Process and Management	1	80

2017-2018-1 Hong Kong University of Science & Technology half-year [Exchange]

NOTE1-MARK"Δ"Means the Course Failed　　NOTE2-The sheet should be stamped to be official

Registrar:　　Registrar's Office,Shanghai Jiao Tong University　http://jwc.sjtu.edu.cn　2018/9/20

说　明

学年

每学年开始于九月，结束于次年八月。2011年（含）起，每学年包括两个长学期和一个暑期学期，长学期有16周的规定课程，短学期有4周的规定课程；2011年之前，每学年包括两个学期，每学期有18周规定课程。

考核与记分方式

考核根据课程类别分为考试和考查两类，其中考试课程的记分方式为百分制或等级制，考查课程的记分方式为合格/不合格（Pass/Failure）两级制。详细注释如下：

1、从2005届毕业生起，我校成绩记录不再使用五级记分制（优秀、良好、中、及格、不及格），已计入的成绩参照附表进行折算；2004届（含2004届）以前学生成绩仍按原记分方式执行，同时由学校出具的中英文成绩证明中成绩折算方法也不做调整，具体参照附表；

2、考查课程不计入平均积点，但计入总学分，考查课程总学分达不到培养计划要求不能毕业；

3、自03届毕业生起部分课程为双语或英语授课（双语或英语授课课程不另标注），03届以前所有课程除英语、日语等语言类课程外均采用中文授课；02届以前（含02届）毕业生如果英语从二级开始修读，对应英文成绩单英语提高一级；

4、学时、学分与GPA：2011年（含）起，16学时=1学分；2011年之前，18学时=1学分；GPA=Σ（学分×积点）/Σ学分，教务处不受理GPA公证。

Explanatory Notes

Academic Year

The academic year of the university begins in September and ends in August of the following year.From the year of 2011, it includes two long semesters and one summer semester, each long semester has sixteen weeks of scheduled classes,summer semester has four weeks of scheduled classes;Before the year of 2011, it includes two semesters,each semester has eighteen weeks of scheduled classes.

Score-Transformation Rules For Undergraduate Courses of SJTU

1. For students graduated in 2005 or after, some courses are graded by the " Pass/Failure " grading system,and others are graded by the hundred-mark system. The Chinese five-level score system（优秀excellent.良好good.中fair.及格pass.不及格 failure)is no longer in force.The transformation rules are illustrated in the attached chart. For students graduated in 2004 or before, the transformation rules are unchanged.

2. The grade point average does not include the courses graded by the " Pass/Failure ", but the credits of these courses are added to the total credits. For graduation, students need to accumulate the required credits,as specified for each program.

3. For students graduated in 2003 or after, some courses are taught bilingually or in English; for students graduated in 2002 or before, all the courses were taught in Chinese language only, except for language courses such as English courses, Japanese courses, and so on; For students graduated in 2002 or before, the score of English is improved one level if he or she studies English from Band 2.

4. From the year of 2011, one credit is designated for one lecture hour per week for 16 weeks; Before the year of 2011, one credit is designated for one lecture hour per week for 18 weeks; GPA =Σ (course credit×point)/Σ course credit, Academic Affairs Division does not verify students′ GPA.

附表/Attached Chart

新记分制(2005届起)New Grading System(For Students Graduated in year 2005 or After)						旧记分制 Old Grading System(For Students Graduated in year 2004 or Before)					
考查考核			考试考核			五（四）级考核				百分考核		
中文计分	对应英文		百分制计分	对应英文等级	积点	中文记分	对应英文		中文计分	对应英文等级制	
	百分制	等级制					百分制	等级制			
合格	Pass	Pass	[95,100]	A+	4.3	优+、优、优-	Excellent	A	[85,100]	A	
			[90,95)	A	4.0						
			[85,90)	A-	3.7						
			[80,85)	B+	3.3	良+、良、良-	Good	B	[75,85)	B	
			[75,80)	B	3.0						
			[70,75)	B-	2.7	中+、中、及格	Fair	C	[70,75)	C	
			[67,70)	C+	2.3						
			[65,67)	C	2.0	C+、C、C-			[60,70)		
			[62,65)	C-	1.7						
			[60,62)	D	1.0						
不合格	Failure	Failure	<60	F	0	不及格	Failure	D	<60	D	

缓考（DF）:Deferred Final Examination

EXPLANATORY NOTES

Academic Transcript and Release of Records

The academic transcript provides the full record of a student's academic results and performance. This record may not be released to any other party without the written consent of the student, in accordance with Personal Data (Privacy) Ordinance established in 1996.

Calendar

The academic year begins on 1 September and ends on 31 August of the following year. There are four terms in each academic year, namely Fall, Winter, Spring and Summer. Fall and Spring are regular terms with thirteen weeks of scheduled classes.

Degree Awarded

The undergraduate programs offered by the University all lead to honors degrees. The University also offers postgraduate programs leading to master degrees, doctoral degrees and graduate diplomas.

Credit Unit

Credit units are earned through the completion of courses and other assessed learning activities. One credit unit generally represents 40-50 hours of student work.

Grading

Students receive a grade in each course in which they are enrolled. Transfer credits and courses graded HP/P/LP/U/Y, AU, CR, DI, DN, I, IP, P, PA, PP, PS or W are omitted from the calculation of grade point averages.

Letter Grade	Definition for Undergraduate Course	Definition for Postgraduate Course
A+, A, A-	Excellent Performance	Excellent Performance
B+, B	Good Performance	Good Performance
B-	Good Performance	Marginal Performance [1]
C+, C	Satisfactory Performance	Marginal Performance
C-	Satisfactory Performance	–
D	Marginal Pass	–
F	Failure	Failure

Other Grade	Definition
AU	Audited
CR	Credit
DI	Distinction
DN	Distinction
I	Incomplete
IP	In Progress [2]
P	Pass, Ungraded
PA	Pass, Graded
PP	Permitted to Proceed
PS	Pass, Graded
T	Transferred
W	Withdrawal without Penalty

HP/P/LP/U/Y Grade (used in Executive Programs)	Definition
HP	High Pass
P	Pass
LP	Low Pass
U	Unsatisfactory
Y	Incomplete

[1] Definition revised from 'Good Performance' from 1999-2000 Fall
[2] Ceased to be used from 1997-98 Fall

Grade Averages

With effect from 2010-11 Spring, the University adopted a 4-point grading system to replace the 12-point system that had been used since 1991-92 in the calculation of grade averages. The following grade averages are calculated:

TGA (Term Grade Average): TGA is calculated across all courses taken in a term.

CGA (Cumulative Grade Average): CGA is calculated for all the courses earning grade points completed since first registration in a program up to the point of calculation.

GGA (Graduation Grade Average): GGA is the student's CGA adjusted by excluding courses from the calculation and adopting a weighting policy under established University rules.

Before 2010-11 Spring, SGA (Semester Grade Average) was used:
SGA (Semester Grade Average) is the combined grade average covering all courses taken in Fall including the following Winter or Spring including the following Summer.

The following table shows the conversion of 12-point and 4-point grading system:

12-point System (1991-92 Fall to 2010-11 Winter)	Letter Grade	4-point System (effective from 2010-11 Spring)
Course Grade Point		Course Grade Point
12	A+	4.3
11	A	4.0
10	A-	3.7
9	B+	3.3
8	B	3.0
7	B-	2.7
6	C+	2.3
5	C	2.0
4	C-	1.7
-	D+	-
2	D	1.0
-	D-	-
0	F	0

Further information about the academic transcript is available at http://transcript.ust.hk. Please email all queries to Academic Records and Registration, Academic Registry of the University at transcript@ust.hk.

716890

Name: QIN, Lianke 秦连柯
Student ID: 20502987
Date of Birth: 28 Aug 1998
Gender: Male

Transcript of Academic Record

Date of Issue: 22 January 2018

Issue To: Shanghai Jiaotong University

Academic Program

Admit Date: 1 September 2017
Program: Non-degree Undergraduate Exchange Program
Completion Date: 19 December 2017

Academic Records

2017-18 Fall (Full-Time)

Course Code	Course Title	Credit Attempted	Credit Earned	Grade
COMP3511	Operating Systems	3.0	3.0	A+
COMP3632	Principles of Cybersecurity	3.0	3.0	B-
COMP4461	Human-Computer Interaction	3.0	3.0	A
MATH2421	Probability	4.0	4.0	A-

TGA: 3.677
CGA: 3.677

Cumulative Credits Earned: 13.0

- End of Transcript -

Academic Registrar