Peifeng Yu
Curriculum Vitae

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Education and Qualifications

Present	PhD	Computer Science and Engineering	University of Michigan
2017	MS	Computer Science and Engineering	University of Michigan
2015	B.Eng.	Software Engineering	Xi'an Jiaotong University

Publications

Workshop papers

1. Nguyen, L., P. Yu, and M. Chowdhury (2017). No!: Not Another Deep Learning Framework. In: *Proceedings of the 16th Workshop on Hot Topics in Operating Systems*, pp.88–93.

Posters

1. Yu, P. and M. Chowdhury (2018). *Salus: Fine-Grained GPU Sharing Among CNN Applications*. Poster presented at: SysML `https://www.sysml.cc/doc/83.pdf`.

Under Submission

1. Yu, P., Y. Wang, and M. Chowdhury (2019). Salus: Fine-Grained GPU Sharing Primitives for Deep Learning Applications. In: *Proceedings of the 16th USENIX Symposium on Networked Systems Design and Implementation*.

Awards and Scholarships

2014	Google Excellent Scholarship ($1500, only one in Xi'an Jiaotong University)
2014	Meritorious Winner of Interdisciplinary Contest in Modeling
2013	Silver Medal of the ACM-ICPC Asia China Shaanxi Provincial Programming Contest
2013	Fuji Xerox (China) Scholarship (RMB5000, 4 of top 20% student in the major)
2013	Merit Student in Xi'an Jiaotong University
2012	First prize for MCM/ICM of Xi'an Jiaotong University
2012	Third prize for ACM Programming Contest of Xi'an Jiaotong University
2012	Third prize for "Tengfei Cup" Undergraduate Curricular Academic Science and Technology Competition
2011	Excellent Student Cadre in Xi'an Jiaotong University
2011	"Lu Shidi" Scolarship (RMB6000, 2 of top 10% students in the major)

Research Experience

➤ Salus: Fine-Grained GPU Sharing for Deep Learning Applications *From Sep., 2016 to Present*

- Provides missing GPU sharing primitives: fast switching and memory sharing.
- Enforces fine-grained GPU sharing via a framework-independent, consolidated execution service.
- Improves the average completion time of DL training jobs by $3.19\times$
- Improves GPU utilization for hyper-parameter tuning by $2.38\times$, and for DL inference applications by $42\times$ over not sharing the GPU.

➤ Deep Tree: SQL Injection Detection by the Power of Deep Learning *From Sep., 2016 to Mar., 2017*

- Tree-based CNN network for SQL statements classification.

- Compiled new SQL statements dataset of 4161 samples.
- Detect SQL injection attack with high accuracy (94.7%).

➤ System Design of Streaming Video Analysis Application in Storm   *From Apr., 2016 to July, 2016*

- Built Storm topology with several video analysis workload, including classification, captioning and object tracking.
- Analyzed the latency vs throughput on 3 servers with GPU, to understand the relationship between parallelism hint and performance.
- Summer research in Clarity Lab.

➤ Evaluation of Graphical Keyboard User Interface   *From Sep., 2015 to Dec., 2015*

- Evaluated of two GKUI applications completing different tasks. Operating systems were also included as a variable in the experiment.
- The result indicates significant improvements using GKUI in both tasks.
- Course research project for Introduction to HCI Research at University of Michigan.

➤ Neural Network Classifier with Generalized Correntropy Loss   *From Jan., 2015 to May, 2015*

- Bachelor's thesis.
- Implemented a neural network classifier using generalized correntropy loss function.
- Analyzed the classifier's behavior under varied order parameters in generalized correntropy loss function.

➤ Application data separation using SEAndroid in NSKeyLab   *From Nov., 2013 to Nov., 2014*

- Focused on the implementation of multi-domain data separation.
- Ported the SELinux policy compile tool chain to Android.
- Implemented domain management and storage system service in both native user space and Android framework.

➤ Summer Practice in NSKeyLab (the Ministry of Education Key Lab for Intelligent Networks and Network Security on Network Traffic Capture and Analysis)   *From July, 2012 to Sep, 2013*

- Mainly engaged in the application development for local host network traffic capture and analysis, as well as the network traffic reconstruction algorithm.
- Mastered related techniques such as WinPcap, WPF, TCP stream reassembly and HTTP reconstruction.
- Analyzed 5 high speed download traffic samples and tens of HTTP traffic samples.

➤ Graphical Data Quality Management System based on IP-MAP   *From Nov., 2012 to May, 2013*

- Professional graphical software that offers specialized platform for data quality management based on IP-MAP.
- Funded by the national innovation fund project of College Students of Xi'an Jiaotong University.
- Awarded the third prize by Xian Jiaotong University in the "Tengfei Cup" undergraduate curricular academic science and technology competition.
- Participated as team leader and programmer.

Project Experience

➤ LLDB Support for KDevelop (Google Summer of Code) *From May, 2016 to Aug., 2016*

- Extended KDevelop C/C++ debugger architecture to allow choosing between multiple debugger backends.
- Built the LLDB backend for KDevelop that enables it to use LLDB as a backend for C/C++ debugging.
- Successful Google Summer of Code project. Link: `https://summerofcode.withgoogle.com/archive/2016/projects/6014826014834688/`
- Keep contributing to the KDevelop after the GSoC period.

➤ Contribution to open source Mozilla project *From June, 2014 to 2015*

- Fixed several bugs (features) in JavaScript JIT Engine.
- Implemented recover instruction for multiple MIR instructions.
- Got Mozillian membership.

➤ Activities on GitHub *From 2012 to present*

- Side projects including a bencode library, network traffic capture and analyze, torrent list migration between uTorrent and qBittorrent.
- Contributed to several projects: Mono, kmscon, CuteMarkEd, hid-apple-patched, DynamicTextures.

➤ Software Low Power Mode Based on Protean Code *From Sep., 2015 to Dec., 2015*

- A runtime power saving optimization platform based on Protean Code triggered by OS power events.
- Implemented devectorization pass which disables SLP instructions when batteries are running out.
- Course project for Advanced Compiler in University of Michigan, worked in a group of 4.

➤ Pixel Cube Game for LeapMotion *From Nov., 2013 to June, 2014*

- 3D pixel painting using hand gestures, powered by LeapMotion
- Course project for Software Project Management in Xi'an Jiaotong University, worked in a group of 8.

➤ Mouse Control with Kinect *From May, 2012 to July, 2012*

- Developed algorithm to smooth mouse movement by mapping hand movement into a cylinder surface.
- The algorithm can adapt to different body parameters.

Extracurricular Experience

➤ President of Research and Development Department *From Sep, 2012 to Feb, 2013*

- Microsoft Student Technology Club of Xi'an Jiaotong University

➤ Commissary in charge of studies *From Sep, 2012 to June, 2015*

- My class (Software 14) in Xi'an Jiaotong University

➤ Social investigation on the effect of volunteer work around Xi'an *From Feb, 2012 to Jun. 2012*

- First prize (group) for "My College Life" Students Social Investigation