

# Huaipan Jiang

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The Pennsylvania State University  
State College, PA, 16802, USA

## EDUCATION

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- **The Pennsylvania State University** State College, USA  
*Ph.D in Computer Science and Engineering; GPA: 3.80* Jan. 2016 – present
- **University of Science and Technology of China** Hefei, China  
*Bachelor of Engineering in Computer Science and Technology; GPA: 3.34* Aug. 2011 – July. 2015

## WORKING EXPERIENCE

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- **Facebook** Menlo Park, USA  
*Software Engineering Intern* Jun. 2020 - Aug. 2020  
Design and implement the pruning strategies in the Pytext. Our pruning approach can reduce the amount of computation while maintain the acceptable accuracy. Pytext is an open source machine learning framework for natural language processing based on Pytorch.
- **Google** New York, USA  
*Software Engineering Intern* May. 2019 - Aug. 2019  
Use Google internal machine learning tools to design and implement a crystal lattice regression model. This model is used to select the authority page for a local business on Google Map. I also train a tensorflow model to evaluate the performance between the DNN model and regression model.  
*Software Engineering Intern* May. 2018 - Aug. 2018  
Design and implement a tensorflow model to predict the click through rate of the ads proposed by DoubleClick Bid Manager. Use Google internal tools to write the script to transit customers click signals from online datasets into tensorflow input data structure. This tensorflow framework contains both regression model and DNN model, and analyze the importance for each signals.
- **Microsoft Research Asia** Beijing, China  
*IT Assistant* July. 2014 - Aug. 2014  
Design and implement a DBLINQ web-based database application in C# to manage the assets and employee information for Microsoft Research Asia.
- **Rong Data** Hefei, China  
*Software Engineer* Nov. 2013 - July 2014
  - **Iflytek Education Project:**  
Implemented a web crawler to download web sites' data for analysis. Iflytek is a company that develops software to help middle school and high school students achieve better grade.
  - **Financial System for Commissioners Office of Treasury Department in Anhui Province:**  
This project aims to help companies submit financial information and the department officers better manage the information. Implemented the functionalities for creating database tables and excel table printing

## RESEARCH EXPERIENCE

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- **Machine Learning based Acceleration** Dec. 2016 - present  
**Image Processing:** Using approximate computing strategies to speedup exist CNN applications. Those applications are mainly designed for semantic image segmentation. The optimized application achieves higher speedup while maintain the same level of accuracy.  
**Drug Discovery:** Apply the 3D-CNN methodologies to the protein-ligand docking problems. Employing machine learning approaches to improve the performance of traditional energy based docking applications.
- **GPU Architecture** Feb. 2016 - Feb. 2017  
We design new architectures for GPU dynamic parallelism. Write the GPU parallel applications to test the benefits of memory access and execution time when scheduling the tasks on our new architecture.

- **Bioinformatics**

May. 2014 - Dec. 2016

Design and implement a parallel algorithm to improved some exist all-mapper sequence alignment algorithms in National High Performance Computing Centre. I also work in the Bioinformatic group in Penn State University and accelerate the exist algorithms on Multiprocessor system like GPU and Intel Xeon Phi and modify the algorithms code into Multiprocessor friendly version.

- **Wireless Sensor Network**

Sept. 2013 - Jan. 2016

Participated in a research project which proposed an algorithm for using mobile sensors to fortify the barrier of static wireless sensors.

## HONORS AND AWARDS

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- Outstanding Undergraduate Scholarship (2011, 2012, 2014)
- First prize of National Olympiad in Informatics in Provinces (NOIP2008, NOIP2009, NOIP2010)

## PROGRAMMING SKILLS

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- **Languages:** C++, C, Python, Matlab, CUDA, PHP, C#, SQL,
- **Technologies:** Linux, CAFFE, Gem5, GPGPU-sim, Tensorflow, Keras, Pytorch

## PUBLICATIONS

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- [1] **Huaipan Jiang**, Haibo Zhang, Xulong Tang, Vineetha Govindaraj, Jack Sampson, Mahmut Taylan Kandemir, and Danfeng Zhang. Fluid: a framework for approximate concurrency via controlled dependency relaxation. In *Proceedings of the 42nd ACM SIGPLAN International Conference on Programming Language Design and Implementation*, pages 252–267, 2021.
- [2] **Huaipan Jiang**, Anup Sarma, Mengran Fan, Jihyun Ryoo, Meenakshi Arunachalam, Sharada Naveen, and Mahmut T Kandemir. Morphable convolutional neural network for biomedical image segmentation. In *2021 Design, Automation & Test in Europe Conference & Exhibition (DATE)*, pages 1522–1525. IEEE, 2021.
- [3] Mengran Fan, Jian Wang, **Huaipan Jiang**, Yilin Feng, Mehrdad Mahdavi, Kamesh Madduri, Mahmut T. Kandemir, and Nikolay V. Dokholyan. Gpu-accelerated flexible molecular docking. *The Journal of Physical Chemistry B*, 125(4):1049–1060, 2021. PMID: 33497567.
- [4] **Huaipan Jiang**, Mengran Fan, Jian Wang, Anup Sarma, Shruti Mohanty, Nikolay V Dokholyan, Mehrdad Mahdavi, and Mahmut T Kandemir. Guiding conventional protein–ligand docking software with convolutional neural networks. *Journal of Chemical Information and Modeling*, 2020.
- [5] Jihyun Ryoo, Mengran Fan, Xulong Tang, **Huaipan Jiang**, Meena Arunachalam, Sharada Naveen, and Mahmut T Kandemir. Architecture-centric bottleneck analysis for deep neural network applications. In *2019 IEEE 26th International Conference on High Performance Computing, Data, and Analytics (HiPC)*, pages 205–214. IEEE, 2019.
- [6] Anup Sarma, **Huaipan Jiang**, Ashutosh Pattnaik, Jagadish Kotra, Mahmut Taylan Kandemir, and Chita R Das. Cash: compiler assisted hardware design for improving dram energy efficiency in cnn inference. In *Proceedings of the International Symposium on Memory Systems*, pages 396–407. ACM, 2019.
- [7] **Huaipan Jiang**, Anup Sarma, Jihyun Ryoo, Jagadish B Kotra, Meena Arunachalam, Chita R Das, and Mahmut T Kandemir. A learning-guided hierarchical approach for biomedical image segmentation. In *2018 31st IEEE International System-on-Chip Conference (SOCC)*, pages 227–232, Sep. 2018.
- [8] Sumitha George, Minli Julie Liao, **Huaipan Jiang**, Jagadish B Kotra, Mahmut Kandemir, Jack Sampson, and Vijaykrishnan Narayanan. Mdacache: Caching for multi-dimensional-access memories. In *51st Annual IEEE/ACM International Symposium on Microarchitecture, MICRO 2018*, pages 841–854. IEEE Computer Society, 2018.

- [9] Xulong Tang, Ashutosh Pattnaik, **Huaipan Jiang**, Onur Kayiran, Adwait Jog, Sreepathi Pai, Mohamed Ibrahim, Mahmut T Kandemir, and Chita R Das. Controlled kernel launch for dynamic parallelism in gpus. In *High Performance Computer Architecture (HPCA), 2017 IEEE International Symposium on*, pages 649–660. IEEE, 2017.
- [10] Biaofei Xu, Yuqing Zhu, Donghyun Kim, Deying Li, **Huaipan Jiang**, and Alade O Tokuta. Strengthening barrier-coverage of static sensor network with mobile sensor nodes. *Wireless Networks*, 22(1):1–10, 2016.
- [11] Haoyu Cheng, **Huaipan Jiang**, Jiaoyun Yang, Yun Xu, and Yi Shang. Bitmapper: an efficient all-mapper based on bit-vector computing. *BMC bioinformatics*, 16(1):192, 2015.
- [12] Biaofei Xu, Donghyun Kim, Deying Li, Joonglyul Lee, **Huaipan Jiang**, and Alade O Tokuta. Fortifying barrier-coverage of wireless sensor network with mobile sensor nodes. In *International Conference on Wireless Algorithms, Systems, and Applications*, pages 368–377. Springer, 2014.