**Peter Hanping Chen**

[peter.hp.chen@gmail.com](mailto:peter.hp.chen@gmail.com) | (408) 858-7657

Sunnyvale, CA 94089

[github.com/peterhchen](https://github.com/peterhchen) |

[linkedin.com/in/peter-chen-91b6a87/](https://www.linkedin.com/in/peter-chen-91b6a87/)

**Areas of Expertise**

* Python/tkinter GUI/Cython
* C/C++20(STL: Vector, Set, Map)/Cuda/Vulkan
* C++/Qt GUI: UI Creator (QML)
* SystemC/Verilator/Vera/Verilog
* Scikit-learn/PySpark/Spark-UI/Databricks
* TensorFlow/PyTorch/Keras/Tensorboard
* Git/GitHub/GitLab/gitlab-runner CI/CD
* Machine Learning: NLP Recommender System, Reinforcement Learning
* ML Algorithm: K-Mean, KNN, Decision Tree, Random Forest, Gradient Descent, AdaBoost, Gradient Boost, SVM, XGBoost, CNN, RNN
* Tensorflow/Keras architecture: VGG16, MobileNet, ResNet
* Reinforcement Learning: Q-Table, Q-Leaning, DQN
* Django/Flask/NodeJS/PHP
* HTML 5/CSS3/JavaScript/React/Angular/ jQuery
* MongoDB/MySQL/OracleDB/Postgres
* PySpark/Kafka
* Numerical Analysis/Data Modeling/Optimization
* Multi-Thread Programming

**Professional Experience**

**FUTUREWEI, SANTA CLARA, CA**

**Sr. Staff Software Engineer, IC Lab 06/2021 – 09/02/2022**

* Developed DSE (Design Space Exploration) for CPU design exploration (Architecture, Power, and area optimization) modeling with Kubernetes/docker-compose/docker container.
* VPN data center with deployed Kubernetes with load-balance control with dashboard for docker container.
* Feature selection/reduction by mlxtend (Machine Learning Extension) and sci-kit learn by Bi-Direction/Random Forest.
* Modeled/Integrated sklearn PCA (Principal Component Analysis) for Model dimensionality reductions.
* Benchmark Hypermapper and OpenTuner for 20-features/64-feature vectors for converge rate and accuracy.
* Integrated Machine Learning tool Hypermapper for 20+ features (categorical, ordinal, integer, and real) for multi-objective optimization (with maximum performance, and minimum area/power) with Gem5/Aladdin Send-to-End SoC Simulation docker image for workloads with accelerated functions.
* Integrated PPO (Proximal Policy Optimization), MAB (Multi-Armed Bandit), Gem5-aladdin image simulation and for CPU design exploration.
* Developed the Memory Model for Cache/Load Queue/Store Queue by C/C++ for application program.
* Developer DSE Dataset by Gem5-Aladdin Simulator and SystemC with Docker Image/Container communication with passing parameter and Volume, PyTorch, Run Manger, and cartesian product.
* Developed Parameterized Dataset/Characterization Generation.
* Ingenerated OpenAI, PPO (Proximal Policy Optimization), MAB (Multi-Armed Bandit), integration of Gem5-Aladdin image container simulator (X-86 Architecture generation, container application compilation, docker build, docker run, docker volume, docker environment parameter passing between containers, Kubernetes container management).
* Related tools: unittest/pytest, GUI (tkinter), numpy and panda, and Scikit-Learn/PyTorch, Matplotlib and Seaborn, Kubernetes, Git, GitHub, GitLab, gitlab-runner CI/CD

**SILICON VALLEY UNIVERSITY, SAN JOSE, CA 04/2020 - Present**

**Sr. AI Engineer/Adjunct Professor (Volunteer), CS Department**

* Deployed Minikube for single node and Kubernetes on multiple nodes (kubeadm, kubelet, kubectl, api-server, dashboard/control manager/load-balance) for Master/Salve (hostname and netplan for static IP dhcp4/6) for cluster docker container orchestration on VPN and AWS. Created Bootable Ubuntu with Rufus. Replaced Windows into Dual-boot Windows/Linux and Linux only.
* Deployed Apache ecosystems: Setup Realtime-time log data analysis (Kafka, Spark, and Flume) and batch-mode data collection (Sqoop and HDFS).
* Developing SVU web page by ReactJS, NodeJS, mongoDB, and MySQL.
* Developed 4-G/5-G massive-MIMO networks, Antenna Data Model, Beamforming, Magnitude, Phase angle control by OpenAI, PyTorch, Cuda/C++ with NVIDIA GeForce RTX 3050 Graphics Card, GUI with Qt Creator, and plot with 2D/3D shader with Google Vulkan library.
* Data Science: Data Structure with C/C++ (STL), Python (Numpy, Pandas, Matplotlib, pytest), Docker programming, GitLab/gitlab-runner CI/CD, Machine Learning with scikit-learn, Fundamental Deep Leaning with PyTorch, Deep Learning with Tensorflow/Kera, Reinforcement Learning, and Full Stack Development with ReactJS and Angular.
* Developed Face Count/Recognition: dLib/Dectectron2, face\_recognition library, self-driving object detection.
* Developed consumer-based features and applications using Python, Django, JSON, ReactJS and Test-Driven Development (TDD).
* Developed Class Registration System: React, Hooks, Redux, Django, MySQL, ApolloClient/graphQL.

**QUALCOMM, SAN DIEGO, CA 4/2013 - 03/2020**

**Sr. Full Stack Developer/Verification Engineer**

**Camera Performance:**

* Deployed multiple microservice apps on Kubernetes with load-balance control on dashboard and realtime execution on Apache Flume, Kafka, Spark based on batch mode modeling.
* Deployed Model by Flask server on AWS: Developed Camera chip performance simulation Model for maximum bandwidth and minimum latency time for ISP (Image Signal Process) with Synopsys Static Timing analysis.
* Specify department for AWS Kubernetes with YAML key-value, array, and dictionary.
* Developed the Memory Model for Cache/Load Queue/Store Queue by C/C++ for application program.
* Frontend GUI (HTML, CSS, ES6, React, AXIOS/AJAX API): SSO (Single Sign On), Flask RESTful API, Dashboard, Frequency Sweep, Simulation panel (Row/Column Multiple Selector/Filter by selcet2, breadcrumb Navigation, Hierarchical Chip Browser, d3, goJS, JsTree structure, localStorage (Cookie), and refresh all client pages. Utilized ReactJS Life Cycle Hooks.
* Developed tools using Python, Shell scripting, XML to automate some of the menial tasks. Interfacing with supervisors, artists, systems administrators.
* Backend: login authentication with LDAP, Excel/YAML file parsing, tree-like chip folder, YML/JSON conversion, JSON tree string.
* Developed natural language processing and text mining models using Python.
* Frontend: ReactJS for Paycheck, electronic signature, Spinner by ES6 (ECMA Script) with VS Code.
* Pattern classification of quality control data by TensorFlow.
* Defect classification based on features vectors (corners of process, voltage, and temperature) and text message of customer feedback.
* Docker programming: Docker build, Docker run, Docker volume, environment passing, CI/CD Jenkins.

**QA Verification:**

* Qualcomm Quality Verification Dashboard: Developed customer realtime phone call/text message by speech recognition and log file Flume/Kafka, Spark, and NLP Modeling with load-balance dashboard on AWS.
* Front end: ReactJS, SSO (Single Sign On) Page, Node JS RESTful API, Asynchronous concatenation and parallel, data structure sort by Date/time, State Machine, Chip Quality PKI, and ng Grid spreadsheet.
* Back end: NodeJS/MongoDB, classified defect and failure.

**MENTOR GRAHICS 1/2004 - 4/2013**

**Project Leader/C++ Programmer**

* Implemented/Debug algorithm for Mixed Signal fast-SPICE simulator, IPC by Socket Programming, and distributed computing (VNC, GRID, LSF) by Python PyQt/Qt GUI/C++/STL, GNU Debugger.
* Run-time controls the inventory/bonus of distributed EDA license with public/private cryptography.
* Build up strong knowledge in UML, IBM ClearCase (Global File Management), QA by Coverity/ Purify Code Coverage / Quantify Performance, HSpice/FineSim, OrCAD Capture/PSpice and Mentor Graphics
* Eldo/EldoRF/Signal Integrity (Ethernet, EtherCat, PCIE)/Power Integrity/Thermal Analysis/EM.
* IBM ClearCase and build product release test for monthly, quarterly, 6 months, annual QA.
* Integrated/Distributed Regression Testing by IBM/LSF, Oracle/Grid, VNC, k/t-shell, and Bash Script for daily and weekly QA, automatic Test by Python and PyQt, and bugs categorization.

**NATIONAL SEMICONDUCTOR, SUNNYVALE, CA 7/1987 – 12/2003**

* **CAD Manager**
* HDTV Setup Box: Developed Java GUI by UIMX/UML for Setup Box, Mobile Surveillance system, Server: the MPEG-2 (H263) Video/Audio Digital Encoding system, UDP for emergency file transfer, TCP secure file transfer for setup box by WindRiver/VxWork, HTML, JavaScript GUI.
* Surveillance system: Face Recognition and categorization, TV-MPEG Coding/Decoding/Cryptograph, Control Video Frames Compressing/ Forwarding/ Backwinding/ Rewinding/ Indexing, and FTP for mobile system on Setup Box and Web Browser.
* 2-D Image FFT algorithm, Grayscale histogram, Image Contour, Image Object Bounding box, Convolution, Defect Detection/Classification.
* Familiar with RF Analog/Digit design flow and simulator.
* UIMX/Motif, XRunner/LoadRunner, and Veritas. EDA Flow integration and Testing.
* Developed Placement and Routing algorithm for datapath design.
* Developed/Released front-end/backend tools and technologies for Mixed Signal Design.

**Education**

* EMBA, National Chiao-Tong University, Hsinchu, Taiwan (5/2011-8/2013), Phi-Tau-Phi award
* PhDCS/EE (Certificate), ITU (International Technological University), Santa Clara, CA (1/1995-7/2000)
  + Paper: http://qtec.wtc.net/POMind/PeterHChenCircuitDevicePaper20091002.pdf
  + Paper: https://www.semanticscholar.org/paper/Fixing-antenna-problem-by-dynamic-diode-dropping-Chen-Malkani/ce75dc8d162d8e709ab0b58816563098d9234b0e
* MSCS/EE, USC (University of Southern California), Los Angeles, CA (1886-1987)
* MSBME (Biomedical Engineering) and PhDBME Candidate, USC, Los Angeles, CA (1995-1986)
* MSCS, NCU (National Central University), Taiwan (1979-1981)

### Others

* US citizen
* Part time Instructor of CIS (Computer Information System) Department at Mission College (1997-2003): C/C++, Java Programming, Advanced Java Programming, Linux.
* Adjunct Professor of CS (Computer Science) Department at SVU (Silicon Valley University) (1997-2003, 2015-present): Python, Machin Learning, Deep Learning, Reinforcement Learning, Linux, Java Programming, OS, Compiler Design

**Awards & Distinctions**

* Well-known Antenna Effect patent and solution sold to Synopsys, Inc. in 1997.
* Analog Characterization patents (15+) sold to Faraday Technology, Inc. in 2006.
* Synopsys Best Papers Awards (10+), 2000-2009
* Phi-Tau-Phi Academic Award, for best NCTU/EMBA
* Published Papers (20+), Institute of Electrical and Electronics Engineers and Industrial Conferences
* US Patents (30+), Algorithms/Mathematical Modeling for device and power characterization (https://patents.justia.com/inventor/peter-h-chen)