

## PROFILE

Senior Principal Software Engineer with 10+ years of research and programming experience. Proficient in C++ and previous experience in Python. Solid background in developing features and enhancing performance of software products through algorithm design, implementation, testing and customer support. Top-tier expert in VLSI placement research using numerical methodology for large-scale nonlinear optimization.

## EDUCATION

<b>Ph.D.</b> in Computer Science at <i>University of California, San Diego</i> , GPA 3.79	09/2010 - 12/2014
<b>M.Phil.</b> in Electronic and Information Engineering at <i>The Hong Kong Polytechnic University</i> , GPA 4.00	02/2008 - 02/2010
<b>B.S.</b> in Information Engineering at <i>Zhejiang University</i> , GPA 3.87	10/2002 - 06/2006

## EMPLOYMENT & PROJECTS

**Senior Principal Software Engineer** at *Cadence Design Systems, Inc.* 01/2014 - Present

- Tech lead in group project to improve software efficiency: (1) developed infrastructure and application for distributed and multi-thread computation (2) reformed object-oriented design structure to ensure coherent implementation between sequential, multi-thread and distributed frameworks for optimal coding management (3) proposed a new methodology to ensure consistent performance between parallel and non-parallel computation modes.
- Developed a new scheduling strategy to improve software performance. Conducted thorough theoretical analysis of the physical nature of numerical components and classified into different scaling groups. Quality of results were significantly improved by up to 50% with negligible runtime overhead.
- Invented a novel optimization framework by restructuring the hierarchical flow into single-level and updating interfaces accordingly. Improved the overall convergence rate by 3× with comparable performance achieved.
- Developed a unified scan-line based algorithm to generate rectangle intersection, maximum rectangle and polygon contours simultaneously for coding restructure and runtime reduction.

**Machine Learning Projects** (Stanford online coursework at coursera.org) 02/2018 - 05/2018

- Studied a wide range of supervised and non-supervised machine learning models: linear regression, logistic regression, neural network, support vector machine, K-means, principal component analysis, anomaly detection, etc.
- Mastered deep understanding in the mathematical theory of various classical machine learning models, especially on the fundamentals of numerical analysis and nonlinear optimization. Experienced in Octave implementation and testing of miscellaneous models.

**Analytic VLSI Placement** (PhD dissertation) 09/2012 - 04/2015

- Developed an algorithm for large-scale [standard-cell placement](#), [mixed-size placement](#) and [3D-IC placement](#): (1) created a novel density cost function using electrostatic analogy to achieve global smoothness (2) schemed a flat placement framework with fine-grained simulation of electrostatic field to approach the best quality of results.
- Achieved avg. 5% quality surge and 3× shorter runtime v.s. state-of-the-art research work in history. Remained the best placement algorithm in academia since 2014 with broad recognitions, applications and extensions.

## PUBLICATIONS & AWARDS

Published 14 research papers with 230+ citations and completed 50+ peer review of academic articles. Received three first-authored best paper awards/nominations from top-tier international technical conferences.

Best paper award at <i>ISQED 2013</i> (3 out of 114 papers, top 2.6%)	03/2013
Nominated for best paper award at <i>DAC 2014</i> (12 out of 174 papers, 787 submissions, top 1.5%)	06/2014
Nominated for best paper award at <i>ASP-DAC 2010</i> (13 out of 115 papers, 340 submissions, top 3.8%)	01/2010
ScienceDirect Top 25 Hottest Article of <i>Integration, the VLSI Journal</i> in 2012 (ranked 12 <sup>th</sup> )	09/2013
Prestigious Jacobs fellowship at <i>University of California, San Diego</i>	09/2010 - 06/2013