

Yi-Chen Lu

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PROFILE

I'm a **PhD** student majoring in ECE and CS in **Georgia Tech @GTCAD** lab. My research focuses on devising machine learning algorithms to enhance physical (IC) design flow. In the past, I've done research in **Qualcomm** (2019, apply ML to enhance design methodology), **Gatos Vision** (2018, Computer Vision), **IBM** (2017, Natural Language Processing), and **MediaTek** (2016, enhance EDA software).

EDUCATION

Ph.D. in Electrical and Computer Engineering 08/2018 – present
Georgia Institute of Technology, Atlanta, US

Research Topic:

- Netlist-to-PPA Prediction Using Machine Learning
- RTL-to-GDS Tools and Methodologies for Sequential Integration Monolithic 3D ICs

Relevant Coursework: Artificial Intelligence. Algorithms. Data Structure. IC Design. Electrical Design Automation. Machine Learning for Trading.

B.S. in Electrical Engineering and Computer Science 09/2013 – 06/2017
National Taiwan University, Taipei, Taiwan

Graduated with **high honors (GPA: 3.89)**. Conducted research in the field of **Electrical Design Automation (EDA)**, and **Computer Vision (Light Field)**.

WORK EXPERIENCE

Research Intern 05/2019 – 08/2019
Qualcomm Inc., San Diego, USA

Enhanced physical design methodologies through deep learning and reinforcement learning algorithms. Involving projects include **yield prediction**, **power-performance-area (PPA) optimization**, and **congestion mitigation**.

ML Software Engineer 05/2018 – 08/2018
Gatos Vision, San Jose, USA

Devised machine learning algorithms for **video summarization** and **object detection** using Tensorflow and Python.

ML, Cloud Software Engineer 08/2017 – 01/2018
IBM, Taipei, Taiwan

1. Developed **Chinese chatbot** through NLP machine learning algorithms using Python and Node Js.
2. Built a **racket speed sensor**, using Raspberry Pi.

EDA Software Engineer 07/2016 – 04/2017
MediaTek, Taipei, Taiwan

Developed algorithms to enhance **Electronic Design Automation (EDA) software**, using C++ and TCL.

PUBLICATIONS

GAN-CTS: A Generative Adversarial Framework for Clock Tree Synthesis Prediction and Optimization
IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2019

Best Paper Award Nomination. First Author.
Proposed a complete framework to predict and optimize clock tree synthesis (CTS) outcomes using deep learning and reinforcement learning.

PROJECTS

Artificial Intelligence in Abalone Game
<https://youtu.be/NfKx-GLRE9s>

Developed a computer chess AI with "Reinforcement Learning", "Alpha-Beta Pruning with Negascout", and "Genetic Algorithm". Used Python.

Real-Time Table Tennis Match Detector
<https://www.youtube.com/watch?v=6zsH3RYBMbE>

Built an automatic scoring system on FPGA board to detect table tennis matches. Used verilog HDL.

Instant Image Cloning
https://github.com/henryNTUEE/Instant_Image_Cloning

Developed an app to perform instant image cloning by various computer vision algorithms. Used Python.

Travel Search Engine
<https://traveland.herokuapp.com/>

Devised a Travel Searching Engine to search nearby restaurants, hotels, and tourist attractions. Used React Js.

AWARDS

FinTech Hackation 11/2017
Shanghai Commercial and Saving Bank

Topic: Application on Blockchain and Chatbot
Description: Built an app on Android and chatbot for international remittance with Blockchain.
Honorable Mention (NT. 30000), with 89 teams.

NTU Hackathon 07/2017
Ministry of Economic Affairs, Taiwan, R.O.C

Topic: Application on Energy and Economics Data with Machine Learning
Description: Built an ML system to predict the power demand of each county in Taiwan.
First Prize Award (NT. 50000), 200+ competitors.

TECHNICAL SKILLS

Programming Languages and Tools

Python, C/C++, Matlab

Machine Learning Library

Tensorflow, Keras, PyTorch