Fan-Keng **Sun**

MACHINE LEARNING FOR ELECTRONIC DESIGN AUTOMATION RESEARCHER

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Education

National Taiwan University (NTU)   *Taipei, Taiwan*
B.S. MAJOR IN ELECTRICAL ENGINEERING, MINOR IN COMPUTER SCIENCE   *Sept. 2014 - PRESENT*
- Average GPA: 4.17 / 4.3, top 5 %
- **Algorithm Courses**: Data Structures and Algorithms, Algorithm Design and Analysis, ACM-ICPC, Graph Theory
- **Machine Learning Courses**: Machine Learning, Machine Learning and Having It Deep and Structured, Advanced Deep Learning, Mathematical Principles of Machine Learning
- **Electronics Design Automation Courses**: Physical Design for Nanometer ICs, Switching Circuit and Logic Design

Experience

Speech Processing and Machine Learning Lab   *Taipei, Taiwan*
RESEARCH ASSISTANT, SUPERVISED BY PROF. HUNG-YI LEE   *Sept. 2016 - PRESENT*
- Proposed the temporal pattern attention for multivariate time series forecasting.
- Trained a chat-bot on the Cornell movie dialog corpus.

Speech Processing Lab   *Taipei, Taiwan*
UNDERGRADUATE RESEARCHER, SUPERVISED BY PROF. LIN-SHAN LEE   *Sept. 2017 - Sept. 2018*
- Trained a Slither.io agent by Asynchronous Advantage Actor Critic (A3C).
- Proposed a single-channel multi-speaker speech separation model.

Electronic Design Automation Lab   *Taipei, Taiwan*
UNDERGRADUATE RESEARCHER, SUPERVISED BY PROF. YAO-WEN CHANG   *Feb. 2016 - PRESENT*
- Proposed a gradient-based wirelength model for global placement that is better and faster.
- Implemented a bus routing engine.
- Implemented a multithreaded detailed routing tool that considers global routing guides. [**ICCAD 18**]

Synopsys, Inc.   *Hsinchu, Taiwan*
SUMMER INTERNSHIP   *Jul. 2016 - Aug. 2016*
- Implemented a single layer global routing algorithm based on mixture of previous literature and own thoughts.
- The algorithm successfully routed many real industrial cases.

Publications

1. **Fan-Keng Sun**, Yao-Wen Chang "Anonymous Title", submitting to DAC, 2019

2. Chen-Hao Hsu, Hao Chen, Shao-Chun Hung, **Fan-Keng Sun**, Yao-Wen Chang "Anonymous Title", submitting to DAC, 2019

3. Shun-Yao Shih*, **Fan-Keng Sun***, Hung-yi Lee, "Anonymous Title", submitting to ECML/PKDD, 2019 (* indicates equal contribution)

4. **Fan-Keng Sun**, Hao Chen, Ching-Yu Chen, Chen-Hao Hsu, Yao-Wen Chang "A Multithreaded Initial Detailed Routing Algorithm Considering Global Routing Guides", ICCAD, 2018

Teaching

Algorithm Design and Analysis   *Taipei, Taiwan*
TEACHING ASSISTANT, SUPERVISED BY PROF. YUN-NUNG CHEN AND PROF. HSU-CHUN HSIAO   *Sept. 2018 - PRESENT*
- Assign homework about graph theory.

Machine Learning and Having It Deep and Structured   *Taipei, Taiwan*
TEACHING ASSISTANT, SUPERVISED BY PROF. HUNG-YI LEE   *Feb. 2018 - Jul. 2018*
- Designed a new assignment about the mathematical complexity of deep learning models.
- Designed a new assignment to observe the optimization process and convergence of deep learning models.

Machine Learning   *Taipei, Taiwan*
TEACHING ASSISTANT, SUPERVISED BY PROF. HUNG-YI LEE   *Sept. 2018 - Jan. 2018*
- Designed a new assignment about principal component analysis of colored images.

Honors & Awards

Semifinalist, Formosa Speech Grand Challenge - Talk to AI — *Ongoing*
Top 3, Problem A at ICCAD CAD contest — *2018*
Top 10, Problem B at ICCAD CAD contest — *2018*
3rd Place (first pure-undergraduate team in top 3 in 14 years), ISPD Contest — *2018*
Top 12, Formosa Speech Grand Challenge - Talk to AI (Warm-Up Match) — *2017*
CITI Technology and Science Scholarship — *2017*
3rd Place (2 times), NTU ACM ICPC Ranking — *2016, 2017*
3rd Place, ACM ICPC Regional Contest — *2017*
1st Place, ACM ICPC Regional Contest — *2016*
1st Place, Calculus World Cup — *2016*
6th Place, Data Structure and Programming Final Project Contest — *2016*
2nd Place, Newcomers for ACM-ICPC Taiwan Online Programming Contest — *2016*
Silver Medal, International Geography Olympiad — *2012*

Extracurricular Activity

NTU Electrical Engineering Student Association — *Taipei, Taiwan*
COORDINATOR OF ACADEMIC AFFAIR — *Sept. 2016 - Jun. 2017*
- Co-organized the largest student Makathon in Taiwan with 200 participants and 10+ corporate sponsorship.
- Provided academic service for undergraduate student in EE, such as talks, course selection, and workshops.

Skills

Natural Languages: Chinese (native), English (TOEFL 109, GRE 326/3.5)
Programming Languages: Python, C/C++, Shell, Javascript, Matlab, LaTeX
Operating System: Linux (Arch Linux & Ubuntu), Windows
Deep Learning Libraries: Tensorflow, PyTorch, Keras