Fan-Keng Sun

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Education

Massachusetts Institute of Technology (MIT)   *Cambridge, MA*
Ph.D. in Electrical Engineering and Computer Science   *09/2019 - PRESENT*
National Taiwan University (NTU)   *Taipei, Taiwan*
B.S. in Electrical Engineering (major) and Computer Science (minor)   *09/2014 - 06/2019*
- GPA: 3.96/4.00, Major GPA: 3.99/4.00

Research Experience

***Research Assistant*, Statistical Metrology Group**, Prof. Duane Boning   *09/2019 - PRESENT*
Machine Learning for Time Series in Manufacturing

***Research Assistant*, Speech Processing and Machine Learning Lab**, Prof. Hung-yi Lee   *09/2016 - 08/2019*
*Natural Language Processing [**Under submission**]*
- Proposed a method that train a <u>GPT-2 model with both question-answering and language model objectives</u> to tackle the lifelong language learning problem.
- Outperformed previous methods by a large margin yet being simple and extensible.

*Multivariate Time Series (MTS) Forecasting [**Journal track of the ECML/PKDD-19**]*
- Proposed the <u>temporal pattern attention for MTS forecasting</u>, which use CNNs to extract <u>temporal patterns across multiple time steps</u> instead of a single time step as in traditional attention mechanisms.
- Achieved state-of-the-art performance on a wide range of MTS datasets, including polyphonic music notes.

Reviewed paper for ICASSP 2019 and TASLP 2019

***Research Assistant*, Electronic Design Automation Lab**, Prof. Yao-Wen Chang   *02/2016 - 12/2018*
*Bivariate Gradient-based Wirelength Model [**DAC-19**]*
*Topology-Matching Bus Routing [**DAC-19**]*
*Initial Detailed Routing [**ICCAD-18**]*

***Undergraduate Researcher*, Speech Processing Lab**, Prof. Lin-shan Lee   *09/2017 - 09/2018*
Reinforcing Reinforcement Learning by Rule-based Teacher

***Software Engineering Intern*, Synopsys, Inc.**   *07/2016 - 08/2016*
Single-Layer Global Routing

Publications   (* indicates equal contribution)

1. **Fan-Keng Sun***, Cheng-Hao Ho*, Hung-yi Lee, "LAMAL: LAnguage Modeling Is All You Need for Lifelong Language Learning", Under submission

2. Shun-Yao Shih*, **Fan-Keng Sun***, Hung-yi Lee, "Temporal Pattern Attention for Multivariate Time Series Forecasting", Journal track of the *European Conference on Machine Learning & Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD-19)*

3. **Fan-Keng Sun**, Yao-Wen Chang, "BiG: A Bivariate Gradient-Based Wirelength Model for Analytical Circuit Placement", in *Proc. of ACM/IEEE Design Automation Conference (DAC-19)*

4. Chen-Hao Hsu, Shao-Chun Hung, Hao Chen, **Fan-Keng Sun**, Yao-Wen Chang, "A DAG-Based Algorithm for Obstacle-Aware Topology-Matching On-Track Bus Routing", in *Proc. of ACM/IEEE Design Automation Conference (DAC-19)*

5. **Fan-Keng Sun**, Hao Chen, Ching-Yu Chen, Chen-Hao Hsu, Yao-Wen Chang, "A Multithreaded Initial Detailed Routing Algorithm Considering Global Routing Guides", in *Proc. of IEEE/ACM International Conference on Computer-Aided Design (ICCAD-18)*

Teaching

***Teaching Assistant*, Algorithm Design and Analysis (Fall 2018)**, Prof. Yun-Nung Chen & Hsu-Chun Hsiao   *09/2018 - 01/2019*
***Teaching Assistant*, Machine Learning and Having It Deep and Structured (Spring 2018)**, Prof. Hung-yi Lee   *02/2018 - 06/2018*
***Teaching Assistant*, Machine Learning (Fall 2017)**, Prof. Hung-yi Lee   *09/2017 - 01/2018*

Honors & Awards

2018   **Outstanding Performance Scholarship**, National Taiwan University
2018   **3rd Place (first pure-undergraduate team in top 3 in 14 years)**, ISPD Contest
2016   **1st Place**, ACM ICPC Regional Contest
2016   **1st Place out of 2000 participants from 45 countries**, Calculus World Cup

Skills

Programming Languages	Python, C/C++, Shell, Javascript, Matlab, R, LaTeX, Git
Deep Learning Libraries	Tensorflow, PyTorch, Keras