

Tsubasa Koyama

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Curriculum Vitae

Employment History

- Sep. 2023 – **Software Engineer II, Pegasus Verification System, Cadence Design Systems, Inc., Taiwan**
present
- Layout Versus Schematic (LVS) RC-mode
 - Mainly address issues associated with hierarchical coordinates.
 - Implement newly netlist comparison algorithm (~6x speedup, ~80% memory reduction)

Education


- Sep. 2021 – **MSc, Computer Science, National Tsing Hua University, Taiwan**
Aug. 2023
- Tsing Hua Emerging Technology Automation (THETA) Lab
 - Advisor: **Prof. Tsung-Yi Ho**
 - Research Focus: Electronic Design Automation (EDA), Artificial Intelligence (AI)
 - Master Thesis: *Hybrid Refinement Strategy for Package Substrate Routing*
 - Overall GPA: 3.86/4.30
- Sep. 2017 – **BSc, Computer Science and Information Engineering, Tamkang University, Taiwan**
Jun. 2021
- Independent Study: *TRIP-2-GO ~ A Convenient Platform for Traveler ~*
 - Overall GPA: 3.96/4.00

Selected Publications

- 2024 **Tsubasa Koyama**, Ding-Hsun Lin, Yu-Jen Chen, Keng-Tuan Chang, Chih-Yi Huang, Chen-Chao Wang, and Tsung-Yi Ho. "Hybrid Refinement Strategy for Package Substrate Routing." *The 25th Workshop on Synthesis And System Integration of Mixed Information technologies (SASIMI)*, 2024
- 2023 Peng-Tai Huang, **Tsubasa Koyama**, Keng-Tuan Chang, Chih-Yi Huang, Chen-Chao Wang, and Tsung-Yi Ho. "Deep Learning based Refinement for Package Substrate Routing." *73rd IEEE Electronic Components and Technology Conference (ECTC)*, 2023

Selected Coursework

- 2023 **VLSI Design for Manufacturability, Algorithm Implementation**, 🐙 GitHub repo.
 - The manufacturing-aware physical design are introduced in this course. Some representative research works in this area are studied and a variety of algorithmic techniques for solving these challenging problems efficiently are learnt.
 - Implemented Algorithm: Timing-Aware Fill Insertion (Modified ICCAD'18 CAD Contest Problem C)
- 2022 **FPGA Architecture and CAD, Algorithm Implementation**, 🐙 GitHub repo.
 - This course introduces the characteristics, evolution and usage of field-programmable technologies, and also look into some advanced researches related to FPGA architecture and CAD.
 - Implemented Algorithm: Topology-Driven Partitioning for Multi-FPGA Systems
- 2022 **VLSI System Design, SW & HW Design Implementation**, 🐙 GitHub repo.
 - This course covers modern preesppectives on the digital VLSI system designs including the concepts of system with hardware and software components, and their integration, efficient hardware design and its methodology, and synthesis-based (cell-based) design flow.
 - Implemented Design: Convolutional Neural Network Accelerator for Image Denoising
- 2021 **Advanced Logic Synthesis, Algorithm Implementation**, 🐙 GitHub repo.
 - This course covers various aspects of logic optimization including logic minimization, timing optimization, technology mapping, low power design, synthesis for finite state machines, hardware security.
 - Implemented Algorithm: Two-stage Algorithm for Technology Mapping

- 2021 **VLSI Physical Design Automation**, *Algorithm Implementation*,  GitHub repo.
- This is a course on algorithms for VLSI physical design automation. Topics include partitioning, floor-planning, placement, routing, and other related issues.
 - Implemented Algorithms: Two-way Min-cut Partitioning, Fixed-outline Floorplan Design, Routing with Cell Movement Advanced (ICCAD'21 CAD Contest Problem B)

Areas, Services, and Skills

EDA Areas	Physical Design Automation, Package Substrate Routing Algorithms
AI Areas	Classification, Object Detection, Reinforcement Learning
Other Areas	RTL Design, Synthesis, Automatic Placement & Routing
Tools	Innovus, Allegro, Virtuoso, IC Compiler, Design Compiler, VCS, Formality, PrimeTime, etc.
Programming	C, C++, Python, Verilog, TCL, Shell Script
TA	Introduction of Integrated Circuit Design (CS, 2022)
Languages	Japanese (native; JLPT N1: full score), Mandarin (native), English (vantage; TOEIC: 855)

Extracurricular Activities

- 2022 **Synopsys Purple 100 Program - Fastrack to SoC Design Career** -
Module A: SoC Frontend Design, Module B: Physical Design
- 2017 – 2021 **Teaching Assistant** at Sunny English, Taipei
- 2019 **Web Development Summer Camp** hosted by GSS Corporation & TKU
- 2018 **Vice Captain** of TKU Department Volleyball Team
- Hobbies Playing Sports (Volleyball, Badminton, etc.), Playing Board Games, Going to Karaoke, Listening to Music, Watching Anime, Reading Light Novels