

# SHIH-HAO TSENG

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## EDUCATION

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**Cornell University (CU)**, Ithaca, NY, U.S.A. Aug. 2013 - Present  
*PhD in Electrical and Computer Engineering (Advisor: Dr. Kevin Tang)*

- Relevant Coursework:  
Practicum in Operating Systems, Advanced Computer Networking, Approximation Algorithm, Convex Analysis, Functional Analysis, Statistical Inference and Decision, Stochastic Systems: Estimation and Control.

## RESEARCH INTERESTS

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**Software-Defined Networking**  
• Centralized control, congestion-free routing and high-frequency network updating.

**Communication System**  
• Network dynamic model, optimization theory and algorithm.

## PUBLICATIONS

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**S.-H. Tseng**, A. Tang, G. Choudhury, and S. Tse,  
"Routing Stability in Hybrid Software-Defined Networks," in *IEEE/ACM Trans. Netw.*, 2019.

J. Cheng, **S.-H. Tseng**, and A. Tang,  
"Worst-Case Latency Performance of Load Balancing Through Distributed Waterfilling Algorithm," in *Proc. CISS*, 2019.

N. Wu, **S.-H. Tseng**, and A. Tang,  
"Accurate Rate-Aware Flow-Level Traffic Splitting," in *Proc. Allerton*, 2018.

**S.-H. Tseng** and A. Tang,  
"Coflow Deadline Scheduling via Network-Aware Optimization," in *Proc. Allerton*, 2018.

**S.-H. Tseng**, B. Bai, and J. C. S. Lui,  
"Hybrid Circuit/Packet Network Scheduling with Multiple Composite Paths," in *Proc. IEEE INFOCOM*, 2018.

**S.-H. Tseng** and A. Tang,  
"A Local Search Algorithm for the Witsenhausen's Counterexample," in *Proc. IEEE CDC*, 2017.

**S.-H. Tseng**, E. Bitar, and A. Tang,  
"Random Convex Approximations of Ambiguous Chance Constrained Programs," in *Proc. IEEE CDC*, 2016.

A. Gushchin, **S.-H. Tseng**, and A. Tang,  
"Optimization-Based Network Flow Deadline Scheduling," in *Proc. IEEE ICNP*, 2016.

**S.-H. Tseng**, C. L. Lim, N. Wu, and A. Tang,  
"Time-Aware Congestion-Free Routing Reconfiguration," in *Proc. IFIP Networking*, 2016.

**S.-H. Tseng**, S. Agarwal, R. Agarwal, H. Ballani, and A. Tang,  
"Inter-Datacenter Bulk Transfers with CodedBulk," submitted for review.

**S.-H. Tseng**,  
"A Generic Solver for Unconstrained Control Problems," submitted for review.

**S.-H. Tseng**,  
"Network-Calculus-Based Upper Bounds on Age of Information," in preparation.

## EXPERIENCE

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**California Institute of Technology**, Pasadena, CA, U.S.A. Oct. 2018 - Present  
*Postdoctoral Scholar*

- Lead layered network control projects.

**Cornell University**, Ithaca, NY, U.S.A. Aug. 2014 - Aug. 2018  
*Graduate Research Assistant/Teaching Assistant*

- Developed a virtual SDN test framework to verify congestion-free updating properties.
- Simulated optimization-based flow deadline scheduling policies under SDN in NS-3.
- Helped teach Introduction to Probability and Inference for Random Signals and Systems.

**The Chinese University of Hong Kong**, Shatin, NT, Hong Kong June 2017 - Aug. 2017  
*Research Assistant*

- Developed efficient scheduling algorithms for hybrid packet/circuit networks.

**AT&T**, Middletown, NJ, U.S.A. June 2016 - Aug. 2016  
*Student Intern - Technical II*

- Developed models and designed algorithms for hybrid software-defined networks.

## SKILLS

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**Programming Languages:** Proficient in C++, Python and Verilog; working knowledge of ActionScript, C, Basic, HTML, Java, JavaScript, MySQL, and PHP.

**Programming Skills:** Working knowledge of linux based C++ socket and multithreaded programming.

**Simulation Tools:** Proficient in PSpice, MATLAB, and NS-3.

**Languages:** Fluent in English; native in Mandarin Chinese and Taiwanese Hokkien; basic understanding of Cantonese, French, German, Spanish, and Japanese.

## HONORS AND AWARDS

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<b>Winner of the AT&amp;T SDN Network Design Challenge</b>	2016
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- Awarded to the top team providing the most efficient and cost effective routing method.

<b>Jacobs Fellowship (CU)</b>	2014
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<b>Studying Abroad Scholarship (Ministry of Education, Taiwan(R.O.C.))</b>	2013
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<b>Honorary Member of the Phi Tau Phi Scholastic Honor Society</b>	2012
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- Presented to seniors from each college in Taiwan ranking within top 1% of their department.

<b>President's Awards (NTU)</b>	2009, 2010, 2011, 2012
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- Four-time recipient; awarded to students ranking within top 5% of their department.

<b>Outstanding Project Award</b>	2011
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- Awarded to the top 10 teams of Cross-Strait Finals of 2011 Innovate Asia Competition (FPGA design).

<b>Freshman Chinese Writing Award (NTU)</b>	2009
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