

Yi-Ching Chiu

(213) 618-2438 • chiuyich@usc.edu • <http://nsl.cs.usc.edu/people/ycchiu>

Research Interests

Internet measurement, Internet routing, content delivery networks, computer networks

Education

Ph.D. in Computer Science, University of Southern California (USC)

Advisors: Ethan Katz-Bassett (Columbia University) and Ramesh Govindan

Los Angeles, CA

08/2014 - 05/2019 (expected)

B.S. in Electrical Engineering, National Taiwan University (NTU)

Overall GPA: 3.91/4.0 *Major GPA:* 3.96/4.0

Taipei, Taiwan

09/2010 - 06/2014

Research Experience

Measuring the Flattening Internet

USC

- The Internet is classically described as having long hierarchical paths; previous approaches to solving longstanding Internet routing problems are built upon such assumptions.
- However, today large content providers are building massive peering with other networks, which means this assumption no longer holds for paths that carry a substantial amount of the Internet traffic.
- Issued traceroutes to measure the AS-path between large cloud/content providers, and end-users, and observed extremely short paths (60% of end-users are in networks that directly peer with Google.)
- Explored how these direct paths can make it easier to solve open Internet problems.

Sibyl: An Internet Routing Oracle

USC

- Traceroute is often used to understand and debug Internet routing, but it is hard to decide the exact vantage point/destination for issuing traceroutes that can reveal important path information.
- Sibyl is a system that allows users to express queries in terms of high-level parameters (locations, autonomous systems, etc.) and then predict and issue traceroutes that may satisfy user queries. These predictions improve efficiency, which is key given that users often have limited measurement budgets.
- Proposed heuristics on how to allocate measurement budget to improve the correctness of path prediction.

Undergraduate Research

NTU

- Surveyed literature about techniques for reducing energy consumption and improving throughput in heterogeneous cellular networks. Identified research problems and combined different requirements into a joint optimization problem.
- Developed applications on mobile devices (Android and iOS), and analyzed the data collected to understand user-behaviors and improve future interactions with mobile devices.

Teaching Experience

Teaching Assistant of CS651 / CS551 (Graduate level class in computer networking)

08/2016 - 12/2016

- Designed a project which required students to configure BGP and OSPF on Quagga software routing suite to implement common routing policies such as no-valley and inbound/outbound traffic engineering.

Teaching Assistant of CS109 (Introductory class in computer science)

01/2016 - 05/2016

- Designed course materials and hosted weekly discussion sections for 30+ undergraduate students.

Industry Experience

Network Engineering Intern (Host: Priya Mahadevan)
Network Architecture, Google

Mountain View, CA
 05/2016 - 08/2016

- Built an RTT analysis pipeline in C++ to characterize network latency for end-user prefixes and detect performance anomalies.
- Conducted analysis to quantify the impact of direct peering on RTT in different metropolitan regions.

Software Engineer Intern (Manager: Niky Riga)
Edge Fabric, Facebook

Menlo Park, CA
 06/2017 - 08/2017

- Built a scalable Thrift service in C++ to provide egress route information for all the Facebook traffic.

Publications

The Record Route Option is an Option!, November 2017

B. Goodchild, Y.-C. Chiu, H. Lu, R. Hansen, M. Calder, D. Choffnes, W. Lloyd, M. Luckie, E. Katz-Bassett, *ACM Internet Measurement Conference (IMC) 2017*, (23% acceptance rate).

Sibyl: A Practical Internet Router Oracle, March 2016

I. Cunha, P. Marchetta, M. Calder, Y.-C. Chiu, B. Schlinker, B. V. A. Machado, A. Pescape, V. Giotsas, H. V. Madhyastha, E. Katz-Bassett, *USENIX Symposium on Networked Systems Design & Implementation (NSDI) 2016*, (20% acceptance rate).

Are We One Hop Away from a Better Internet?, October 2015

Y.-C. Chiu, B. Schlinker, A. B. Radhakrishnan, E. Katz-Bassett, R. Govindan, *ACM Internet Measurement Conference (IMC) 2015*, (26% acceptance rate).

iRotateGrasp: Automatic Screen Rotation based on Grasp of Mobile Devices, April 2013

L.-P. Cheng, M. H. Lee, C.-Y. Wu, F.-I. Hsiao, Y.-T. Liu, H.-S. Liang, Y.-C. Chiu, M.-S. Lee, M. Y. Chen, *ACM Conference on Human Factors in Computing Systems (CHI) 2013*

Recent Honors & Awards

- 2017 Fellowship Finalist (top 5% over more than 800 Ph.D. applicants), *Facebook*
- 2016 Grace Hopper Celebration Travel Grant, *Google*
- 2016 Grad Cohort Travel Grant, *CRA-W*
- 2015 NSF Travel Grant, *ACM SIGCOMM*
- 2014 Graduate Top-off Scholarship, *USC Women in Science and Engineering (WiSE)*
- 2014 Second Place (Team Award), *IEEE Signal Processing Cup at IEEE ICASSP*

Skills

Programming Languages and Tools: C/C++, Python, Scamper, Traceroute Analysis, BGP

Languages: English (fluent), Mandarin Chinese (native)