Robert Charles MacDavid

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Education

Princeton University — Princeton, NJ
Ph.D. Student in Computer Science — *2016 – Present*
Studying Programmable Network Device Applications under adviser Jen Rexford

M.S.E. in Computer Science; GPA:4.0 — *2014 – 2016*
- **Courses:** Advanced Algorithm Design, Theoretical Machine Learning, Advanced Computer Networks, Analytics and Systems of Big Data, Operating Systems
- **Thesis:** Compression of Interdomain SDN Policies at Exchange Points (Advisers: Jen Rexford, Nick Feamster)

Rutgers University — Camden, NJ
B.S. in Computer Science; GPA:3.45 — *2009 – 2014*
- Focus in approximation algorithms for combinatorial and graph problems.

Publications

Concise Encoding of Flow Attributes in SDN Switches — 2017
R.MacDavid, *R.Birkner, O.Rottenstreich, A.Gupta, N.Feamster, J.Rexford*
Symposium on SDN Research (SOSR'17) - Awarded Best Paper

Compression of Interdomain SDN Policies at Exchange Points — 2016
Robert MacDavid - Master's Thesis

An Industrial-Scale Software Defined Internet Exchange Point — 2016
A.Gupta, ***R.MacDavid****, R.Birkner, M.Canini, N.Feamster, J.Rexford, L.Vanbever*
USENIX Symposium on Networked Systems Design and Implementation (NSDI'16)

Approximation Algorithms for Connected Max Cut and Related Problems — 2015
M.T.Hajiaghayi, G.Kortsarz, ***R.MacDavid****, M.Purohit, K.Sarpatwar*
European Symposium on Algorithms (ESA'15)

Work Experience

Microsoft Research — Redmond, WA
Graduate Research Intern — *Summer 2017, Summer 2018*
- **Program:** Mobility and Networking Research, advised by Hongqiang Liu, Behnaz Arzani, Yibo Zhu
- **Contributions:** (2017) Helped deploy an experimental programmable network switch. Created a CLI and API for programming the switch. Worked on experimental customer features for Azure datacenters. Designed a hardware-speed network policy rule caching scheme. (2018) Analyzed trends in network outages and mitigations using a combination of intimate architectural knowledge and basic machine learning techniques.

Princeton University — Princeton, NJ
Assistant Instructor & McGraw Teaching Fellow — *2014 – Current*
- **Courses Taught:** Algorithms & Data Structures (Fall'14, Spring'15), C & Systems Programming (Fall'15), Intro to Computer Science (Spring'16, Spring'18), New Assistant Instructor Orientation (Fall'15, Fall'16, Fall'18, Spring'18, Fall'19)

University of Maryland — College Park, MD
Undergraduate Research Intern — *Summer 2013*
Program: Combinatorics and Algorithms for Real Problems, advised by Samir Khuller
Contributions: Designed and analyzed an 2.5-competitive algorithm for both Makespan and Total Distance minimization of the Multiple Traveling Salesmen Problem.

Awards

- **Best Paper – Symposium on SDN Research – April 2017**
- **First Prize – Comcast & Juniper OpenLab SDN Throwdown – February 2016**
- **Graduate Student Teaching Award - Princeton University - Spring 2015**
- **Honorable Mention - CRA Undergrad Research Award 2014**
- **Dean's Undergraduate Research Prize 2014 - Rutgers University**