

# Edward Oakes

Madison, WI  
Phone: (262) 853-7016  
Email: [ed.nmi.oakes@gmail.com](mailto:ed.nmi.oakes@gmail.com)

## Research Interests

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Big Data Systems; Distributed Systems; Networking; Operating Systems

## Education

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### University of Wisconsin-Madison

Madison, WI

*University of Wisconsin-Madison*

*May 2017*

- Bachelor of Science, Computer Sciences
- Certificate (Minor) in Mathematics
- Major GPA: 3.83/4.00

## Experience

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### comScore, Inc.

Madison, WI

*Data Scientist*

*Aug 2017 – Present*

- Implemented machine learning capabilities in Apache Spark to classify user behavior in large volumes of internet traffic data into customer-specified categories
- Designing a scalable and reliable data processing model to improve data cleanliness and ease of analysis
- Leveraging comScore's extremely wide data collection footprint to further the understanding of internet properties and user behavior

### ZeroStack, Inc.

Mountain View, CA

*Software Engineering Intern*

*May 2017 – Aug 2017*

- Augmented the distributed control plane to enable highly available virtual machines and improve system monitoring and alerting
- Built a highly scalable metric-based alerting system which processes high volume streams of data and evaluates customer-specified rules to generate and manage alerts
- Integrated PagerDuty events into the SaaS platform to support customers in responding to events in their private cloud

### Wisconsin Advanced Systems Laboratory/Microsoft Jim Gray Systems Lab

Madison, WI

*Research Assistant*

*May 2016 – May 2017*

- Designed, wrote, and tested rigorous Golang code for the core of OpenLambda including applications in networking, database management, and Linux containers
- Performed analysis on over 1,000,000 GitHub Python repositories as well as the PyPI repository to inform the design of integrated package support in OpenLambda
- Designed, built, and evaluated a secure package caching mechanism to enable sharing packages between customers in OpenLambda
- Created serverless-optimized containers which reduce latency by 10x and total throughput by 20x in OpenLambda

### Wisconsin Human-Computer Interaction Laboratory

Madison, WI

*Research Assistant*

*Sept 2015 – Sept 2016*

- Designed and implemented a route planning algorithm to support subjective driver goals
- Built a route planning web application using Flask to run an in-person study, evaluating the effectiveness and usability of our route planner

- Analyzed customer building automation data to eliminate inefficiencies, reducing energy and labor costs
- Performed text analysis on written reports using machine learning techniques to predict hardware failures before they occur

## Publications

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- (SUBMITTED) Edward Oakes, Jeff Kline, Keith Funkhouser, Aaron Cahn, Enis Ceyhun Alp, and Paul Barford, "A Residential Client-side Perspective on SSL Certificates," *27th USENIX Security Symposium*, Baltimore, MD, 2018
- (SUBMITTED) Edward Oakes, Leon Yang, Dennis Zhou, Kevin Houck, Tyler Harter, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau, "SOCK: Serverless-Optimized Containers," *2018 USENIX Annual Technical Conference*, Boston, MA, 2018
- Edward Oakes, Leon Yang, Kevin Houck, Tyler Harter, Andrea C. Arpaci-Dusseau and Remzi H. Arpaci-Dusseau, "Pipsqueak: Lean Lambdas with Large Libraries," *2017 IEEE 37th International Conference on Distributed Computing Systems Workshops (ICDCSW)*, Atlanta, GA, 2017
- Scott Hendrickson, Stephen Sturdevant, Edward Oakes, Tyler Harter, Venkateshwaran Venkataramani, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau, "Serverless Computation with OpenLambda," *login: The USENIX Magazine*, Winter 2016, Vol. 41, No. 4

## Talks & Presentations

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- "Pipsqueak: Lean Lambdas with Large Libraries"
  - *First International Workshop on Serverless Computing*, Atlanta, GA
  - *SCI Labs Research Meeting*, Madison, WI
- "Serverless Computation with OpenLambda"
  - *Wisconsin Advanced Systems Lab Research Meeting*, Madison, WI
- "Supporting Subjective Driver Goals in Route Planning"
  - *Wisconsin Human-Computer Interaction Lab Research Meeting*, Madison, WI
  - *Toyota Collaborative Research Safety Center Visiting Scientist Presentation*, Madison, WI

## Awards & Honors

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- Wisconsin Academic Excellence Scholarship
- Dean's List: Fall 2014, Fall 2015, Fall 2016

## Memberships

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- Kappa Eta Kappa Professional Fraternity