

# CURRICULUM VITAE

Sung Yoon (James) Whang

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## EDUCATION

### Northwestern University

Robert R. McCormick School of Engineering and Applied Sciences

*Master of Science in Computer Science*

Thesis Advisor: Peter A. Dinda

Evanston, IL

2016 – 2017 (Expected)

### Northwestern University

Robert R. McCormick School of Engineering and Applied Sciences

*Bachelor of Science in Computer Science* (Concentration: Computer systems and security)

Cumulative GPA: 3.7/4.00

Selected Courseworks: Intro to Computer Systems, Operating Systems, Computer Networks, Programming Languages, Compiler Construction, Distributed Systems, Machine Learning, Resource Virtualization, Network Penetration and Security, Kernel and Other Low-Level Systems Programming, Graduate Algorithms

Evanston, IL

2013 – 2017 (Expected)

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## RESEARCH EXPERIENCE

**Research Interests:** Operating systems, Virtualization, Compilers, Embedded Computer Vision, and bioinformatics

### Image Processing Lab, Northwestern University

Advisor: Aggelos Katzagelos, Electrical Engineering and Computer Science

- Simultaneous Localization And Mapping (SLAM) for Micro Aerial Vehicles project
- In charge of programming the embedded on-board system for image processing

Evanston, IL

2016 – Present

### Choi Lab, Northwestern University

Advisor: Jaehyuk Choi, Feinberg School of Medicine

- Participated in the use of next-generation DNA sequencing to find the pathogenesis of cutaneous T-cell lymphoma (CTCL) and a noble therapeutic targets
- Aiming for the discovery/implementation of a faster, more efficient algorithmic approach for whole genome sequence (WGS) analysis

Chicago, IL

2015 – Present

### Prescience Lab, Northwestern University

Advisor: Peter A. Dinda, Electrical Engineering and Computer Science

- Research interests lie in the wide area of computer systems, such as but not limited to: Operating systems, virtual machine monitors, kernel and other low-level systems software
- Contributed to the Palacios hypervisor (<http://www.v3vee.org/palacios>) and Nautilus aerokernel (<http://nautilus.halek.co>)

Evanston, IL

2015 – present

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## TEACHING EXPERIENCE

### Undergraduate Teaching Assistant

*EECS 111 (Fundamentals of Computer Programming I), Northwestern University*

Supervisor: Professor Jesse Tov, Electrical Engineering and Computer Science

- Introductory level class for computer science majors
- Concepts include basic computational concepts such as functional programming, iterative and recursive methods, binary search, trees, and testing

Spring 2016

### Undergraduate Teaching Assistant

*EECS 213 (Intro to Computer Systems), Northwestern University*

Supervisor: Professor Peter A. Dinda, Electrical Engineering and Computer Science

- Taught 2 hour weekly recitation sessions to students, covering a wide range of introductory computer systems materials such as x86 ISA Assembly, memory hierarchy and virtual memory, POSIX standard thread implementation.
- Graded exams and assignments submitted by ~70 students
- Held weekly office hours for students

Spring 2015

### Undergraduate Teaching Assistant

*EECS 213 (Intro to Computer Systems), Northwestern University*

Supervisor: Professor Nikos Hardavellas, Electrical Engineering and Computer Science

- Graded homework, exams, and assignments submitted by ~140 students
- Monitored and answered questions on online Q&A platform
- Held weekly office hours for students

Fall 2014

### Personal Tutor

- Taught 2 Northwestern University students through object oriented programming, functional programming, discrete math, and data structures

2014 – Present

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## WORK EXPERIENCE

<b>Uber Technologies</b> <i>Software Engineer Intern, Backend</i> <ul style="list-style-type: none"><li>Starting from June 2016</li></ul>	<b>San Francisco, CA</b> 2016
<b>CityKey</b> <i>Software Engineer Intern</i> <ul style="list-style-type: none"><li>Full-stack web development at a startup in the hospitality industry</li><li>Website redesign implementations, API Integrations, Filtering system implementation</li></ul>	<b>Evanston, IL</b> 2016 – Current
<b>Shmoop</b> <i>Software Engineer Intern</i> <ul style="list-style-type: none"><li>Full-stack web development at one of top 400 sites in the U.S., mainly using PHP and JavaScript</li><li>Designed and implemented numerous projects into production, including the Shmoop book reader</li><li>Won company hackathon with Shmoop Translator, which is now deployed onto production</li><li>Developed an automated QA tool for ElasticSearch module on Shmoop contents in Python</li><li>Worked on improving existing codebase, including bug fixes and refactoring</li></ul>	<b>Mountain View, CA</b> 2014 – 2015
<b>Northwestern University Information Technology (NUIT)</b> <i>Associate Consultant</i> <ul style="list-style-type: none"><li>Assisted Northwestern University community members for using the IT infrastructure at Northwestern University through online and offline means</li></ul>	<b>Evanston, IL</b> 2013 – 2014
<b>TIDE Institute Korea</b> <i>Intern</i> <ul style="list-style-type: none"><li>In charge of industry relations, communicated with early stage startups for arranging seminars, lectures, and participation into VC startup contests</li></ul>	<b>Seoul, South Korea</b> 2012
<b>National Assembly of Republic of Korea</b> <i>Intern</i> <ul style="list-style-type: none"><li>Translation between Korean and Indonesian tasks, summarizing technical documents collected from inspection on government-owned companies. Details on non-disclosure agreement.</li></ul>	<b>Seoul, South Korea</b> 2010

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## PROJECT EXPERIENCE

<b>The Diary Filesystem</b> <ul style="list-style-type: none"><li>A lightweight versioning file system implemented for the Linux Kernel</li><li>Can be stacked on top of another file system such as ext4, and mounted together on a directory</li><li>Code available at <a href="http://github.com/jameswhang/diaryfs">http://github.com/jameswhang/diaryfs</a></li></ul>	Winter 2016
<b>Boot time minimization of x86 servers via BIOS replacement with kernel and embeddable VMM</b> <ul style="list-style-type: none"><li>Aim to bring down the boot time of x86 architecture servers by replacing the proprietary BIOS with an aerokernel/type 1 hypervisor</li><li>Ported the Palacios hypervisor to run on top of the Nautilus aerokernel</li><li>Extended the Nautilus aerokernel to add more functionalities in the thread implementation and the console/keyboard device driver</li><li>In progress of extending the Coreboot firmware to boot Nautilus without GRUB2 / other external bootloader/BIOS.</li></ul>	Summer – Fall 2015
<b>TCCLK (The Tiny Kernel in the Linux Kernel)</b> <ul style="list-style-type: none"><li>One of main developers of TCCLK, a C compiler ported as a Linux kernel module, capable of executing kernel privilege code in the user level, including symbols across other running kernel modules</li><li>Numerous applications such as kernel development testing, connection of multiple kernel modules, and security exploits</li></ul>	Winter 2015 ~ Current
<b>The Nobel Prize Predictor</b> <ul style="list-style-type: none"><li>Used machine learning approach to predict the winner of next Nobel Prize in Chemistry, reaching an ~80% accuracy, using functional trees and Bayes nets</li><li>Detailed report available on <a href="http://jameswhang.github.com/thenobelprizepredictor/index.html">http://jameswhang.github.com/thenobelprizepredictor/index.html</a></li></ul>	Spring 2015
<b>Hungry Wildcats</b> ( <a href="http://www.hungrywildcats.me">http://www.hungrywildcats.me</a> ) <ul style="list-style-type: none"><li>A web application that randomly chooses menus available for a given budget that are within walkable distance from the Northwestern University campus</li><li>Port to iOS application coming soon</li></ul>	Spring 2015
<b>The Materials Genome Project</b> <i>Client: National Institute of Standards and Technology, QuesTek Innovations LLC</i> <ul style="list-style-type: none"><li>Used machine learning to predict the fatigue strength of steel based on its chemical composition and processing data, creating a model reaching an r-squared value of 0.98</li><li>Demo available on <a href="http://steelpredictor.herokuapp.com">http://steelpredictor.herokuapp.com</a></li></ul>	Spring 2014 – Current
<b>The SmileyDoc Project</b> <i>Client: Lamb's Farm</i>	Fall 2013

- Designed the circuit of the SmileyDoc, a device that keeps track of brushing time for people with developmental disabilities
- Programmed the Arduino microprocessor that controlled the hardware

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#### AWARDS / GRANTS

Undergraduate Research Assistant Program (\$2k)	2015 - 2016
<ul style="list-style-type: none"> <li>• For bioinformatics research at the Jaehyuk Choi Lab</li> </ul>	
Summer Undergraduate Research Grant (\$3k)	6/2015
<ul style="list-style-type: none"> <li>• For “Boot time minimization of x86 servers via BIOS replacement with kernel and embeddable VMM”</li> </ul>	
Murphy Scholar	2013 – 2017
<ul style="list-style-type: none"> <li>• Top 15 entering undergraduates in the School of Engineering at Northwestern University</li> </ul>	
Dean’s List with Honors – all quarters, <i>Northwestern University</i>	2013 – 2015
Valedictorian, <i>Bali International School</i>	2013
Full Academic Scholarship (\$45,000), <i>Bali International School</i>	2010 – 2013
High Distinction, Australian Mathematics Competition	2008 – 2012
Individual Round Award, South East Asian Mathematics Competition	2008

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#### SKILLS

##### **Programming Languages**

Proficient: C, PHP, Python, JavaScript

Familiar: C++, C#, Java, Ruby, Racket, Common Lisp, Swift, MySQL, R, MATLAB

##### **Platforms**

Familiar with the UNIX programming environment, iOS, web development under LAMP/MEAN stack

##### **Tools**

Experience with version control systems (SVN, Git), XCode, Visual Studio

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#### LANGUAGES

Native/Fluent in Korean and English

Working proficiency in Indonesian

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#### REFERENCES

- Peter A. Dinda, Professor of Electrical Engineering and Computer Science, Northwestern University
- Jaehyuk Choi, Assistant Professor of Dermatology, Feinberg School of Medicine, Northwestern University
- David Nguyen, Chief Technology Officer, Shmoop University Inc.
- More available upon request