David J. Watkins-Valls

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Education

Columbia University | Fu Foundation of Applied Science
Ph.D. in Computer Science in Computational Robotics | Proposed completion 2021
M.S. in Computer Science with Computer Systems Track | Class of 2017 | CA Fellow | 4.0 GPA
B.S. in Computer Science with Computer Systems Track | Class of 2016 | 3.6 GPA | 3.7 GPA in Major
Coursework: Humanoid Robotics, GPU Computing, Proramming Languages and Translators, Analysis of Algorithms, Embedded Systems, Computer Graphics, Operating Systems, Database Systems Implementation, Tech Entrepreneurship

Marian High School | Class of 2012 | Salutatorian | 4.0 GPA | Class President

Professional History

Goldman Sachs New York, NY — June 2016-August 2016
- Worked in Margin Technology to prioritize calculations using a graph DBMS and provided an interface to adjust the prioritizations
- Developed in **Java** and **Angular.js** to build both the database queries and the user experience

Goldman Sachs New York, NY — May 2015-August 2015
- Worked in Valuations Technology to rebuild an FVA Gating Tool which allowed Operations Users to give clients info statements
- Developed in **Angular.js** and **Slickgrid** to build a convenient user experience while collaborating with fellow interns

Streakfire LLC Wayland, MA and Dorado, PR — June 2014-September 2014
- Producing an ad campaign in Puerto Rico to promote a technical accelerator to help create jobs for graduated college students
- Coordinating with local government to leverage their expertise in publicity and existing infrastructure

Awards, Honors, and Leadership

International House New York, NY — September 2016-May 2018
- Competitively selected scholars and young professionals from around the world who are challenged to become globally-minded leaders

CA Fellowship Columbia University — September 2016-December 2016
- MS students who have proven themselves to be exceptional and included $23,232 for tuition and a $3,000 stipend

Goldman Sachs Code Golf Champion New York, NY — August 2016
- Awarded for shortest possible source code that implements a certain algorithm

Dean's List Columbia University — Spring 2013, Spring 2015, Spring 2016
- A list of students recognized for academic achievement during a semester by the dean of the college they attend

Residential Incubator Fellow Columbia University — September 2012-May 2014
- Students interested in entrepreneurship participating in a student incubator

Volunteer Work

Multisensory Reading Centers of Puerto Rico San Juan, PR — September 2017-Present
- Over 50 hours of volunteer service by performing IT help to provide access to effective literacy instruction for struggling readers

Pine St. Inn Boston, MA — December 2010-May 2012
- Over 25 hours of volunteer service at a soup kitchen for the homeless

Sisters of St. Joseph Cambridge, MA — December 2010-May 2012
- Over 25 hours of volunteer service through entertaining and assisting retired nuns

Professional Memberships

ACM — 2016-Present

IEEE — 2016-Present

Publications

[1] Jacob Varley, **David Watkins-Valls**, and Peter Allen. “Multi-Modal Geometric Learning for Grasping and Manipulation (Poster)”. In: Columbia Data Science Day (2018). http://davidwatkinsvalls.com/files/2018-spring-mmglfgam.pdf

[2] Varley, J., **Watkins-Valls, D.**, & Allen, P. (2018). Multi-Modal Geometric Learning for Grasping and Manipulation. arXiv preprint arXiv:1803.07671. https://arxiv.org/abs/1803.07671

[3] Jacob Varley, **David Watkins**, and Peter Allen. “Visual-Tactile Geometric Reasoning (Abstract and Poster)”. In: Data-Driven Manipulation workshop, Robotics: Science and Systems (2017). https://ddm2017.mit.edu/sites/default/files/documents/3.pdf

[4] **David Watkins-Valls**, Chaiwen Chou, Caroline Weinberg, Jacob Varley, Lynne Weber, Adam Blanchard, Peter Allen, Joel Stein "Human Robot Interface for Assistive Grasping (Poster)". In: New England Manipulation Symposium (2017). http://davidwatkinsvalls.com/files/2017_summer_hrifagp.pdf

Talks

ROS Tutorial Columbia University — January 28th, 2018

- An introductory tutorial on ROS and use of robotics in the Columbia Robotics Lab to aspiring roboticists

Providing Context to Startup Culture Columbia University — May 12th, 2016

- An analysis on the effectiveness of a startup based on the type of culture it maintains as well as effects on profit/loss

Professional Activities

Paper Reviews

- International Conference on Intelligent Robots and Systems (IROS) 2018

Research Experience

Research in Bit Width Resolution New York, NY — January 2016-December 2016

- Worked with Professor Stephen Edwards at Columbia University to add **Z3**’s SMT framework to an existing compiler project in order to resolve variable bit widths at compile time
- A comprehensive report of the research can be found at: **http://davidwa.tkins.me/files/2016_spring_PCSS.pdf**

Research in Shape Completion New York, NY — September 2016-May 2017

- Worked with Professor Peter Allen in the CURG lab at Columbia University to optimize an existing platform utilizing **CUDA**
- Evaluated the ability to utilize a semantic pre-processor to identify objects in a scene to be completed using the existing tool
- A comprehensive report of the research can be found at: **http://davidwa.tkins.me/files/2016_fall_OSCP.pdf**

Research in Data Visualization New York, NY — September 2015-December 2015

- Worked with Professor John Kender at Columbia University to provide visualization of the correlation between visual and textual memes in online video data and provided an analysis on the most effective ways of visualizing co-clustered data
- A comprehensive report of the research can be found at: **http://davidwa.tkins.me/files/2015_fall_VCCM.pdf**

Research in the Production of Litecoin ASICs New York, NY — January 2014-May 2014

- Cooperated with Professor Simha Sethumadhavan on the feasibility of producing Litecoin Mining ASICs
- Independently designed all of the ASIC schematics, performed cost-benefit analysis of the ASIC and maintained knowledge on which crypto-currencies were most profitable at any time. The report can be found at: **http://davidwa.tkins.me/files/2014_spring_SMWA.pdf**

LIRSM New York, New York — September 2014-January 2015

- Responsible for developing web application in **Node.js** and **Mongo** to easily add and retrieve information from csv files
- Participated in IT work and assisted with sessions in informing individuals on using **UNIX**
- Developed strategies to acquire study data more efficiently and help audit costs on services

Teaching Experience

Humanoid Robotics (COMSW6731) Teaching Assistant | Graduate level — Spring 2018

Computational Aspects of Robotics (COMSW4733) Teaching Assistant | Graduate level — Fall 2017

Programming Languages and Translators (COMSW4115) Teaching Assistant | Graduate level — Fall 2016

Object Oriented Programming and Design in Java (COMS1007) Teaching Assistant | Undergraduate level — Fall 2016

Programming Languages and Translators (COMSW4115) Teaching Assistant | Graduate level — Spring 2016

Object Oriented Programming and Design in Java (COMS1007) Teaching Assistant | Undergraduate level — Fall 2014

Fundamentals of Computer Systems (CSEE3827) Teaching Assistant | Undergraduate level — Spring 2014

Object Oriented Programming and Design in Java (COMS1007) Teaching Assistant | Undergraduate level — Fall 2013

Technical Skills

Proficient with: ROS, Python, C++ (CUDA), Javascript (Node.js, AngularJS), HTML5, Java, MySQL, Bash, SystemVerilog, OCaml, PHP, Matlab
Software familiarity: Gazebo, Graspit!, Moveit!, OpenCV, Caffe, Blender, Bullet, Tensorflow, Jupyter Notebooks, Google Docs/Microsoft Office, Davinci Resolve, Windows, Ubuntu 14/16/18, Jetbrains IDEs, Jekyll, Git

References

Peter Allen Professor, Computer Science at Columbia University | allen@cs.columbia.edu

Jacob Varley Ph.D. Graduate, Robotics at Google Research | jakevarley@gmail.com

John Kender Professor, Computer Science at Columbia University | jrk@columbia.edu