Oscar Hernandez

3499 Tenth St – 92501 Riverside, CA – United States
+1 (646) 961-3715 • 98Hernandez.Oscar@gmail.com

Education

Bard College at Simon's Rock — **Great Barrington, MA**
B.A. Mathematics and Computer Science — *– Spring 2017*
A.A. Liberal Arts and Sciences — *Fall 2013 – Spring 2015*

Experience

ARKS — **ExCITE Incubator**
Co-founder, Automation Engineer — *January 2018 –*

- Designing high-throughput electromechanical systems to automate facilities of the future.
- Serve as the principal author of all software systems, guiding teams of 0-3 software engineers to write embedded software and web applications.

Zap Crunch — **Riverside, CA**
Freelance Full-Stack Web Developer — *February 2018 –*

- Developing+deployed custom Flask.py web application for client in real estate sector, integrating with Twilio and Wordpress via APIs.
- Design, develop, deploy, and maintain websites for clients in non-profit, public, and startup sectors, implementing a Content Management System when necessary.
- Developed+deployed custom Express.js web application for client in e-commerce industry, which syncs inventory quantities from multiple Shopify stores and Brandboom showrooms.

VNenergy — **Los Angeles Cleantech Energy Innovators Program**
Part-time Product Developer — *August 2018 – December 2018*

- Test and design predictive machine learning models.

Success Academy Charter Schools — **Harlem, NY**
5th Grade Associate STEM Teacher — *July 2017 – December 2018*

- Trained to teach 5th Grade Mathematics and Earth Science at a fast-paced public middle school. Taught 5th Grade Humanities, serving as the lead History teacher and assistant ELA teacher.
- Served as the school's sole computer science teacher, designing, implementing, teaching the curricula for grades 5-8 from scratch.

Bard College at Simon's Rock
Summer 2015/2016 Research Intern, Research Assistant, Senior — *May 2015 – June 2017*

- Explored the computational complexity of the turnstile mechanic in classic games [Her+18], proving that its inclusion makes games PSPACE-hard in the general case and NP-hard in several limited cases.
- Construct simple framework [HW17] for creating all maximum-rotating k-ary de Bruijn sequences of length n by constructing a new one-to-one tree isomorphism.
- Published findings on dynamics of neural networks [Has+17], by using self-written simulation

software to predict the behavior of analog neural networks.
- Explored equilibria of trade systems with n traders, and varying distributions of goods, preferences and wealths.
- Published novel algorithms for constructing binary [DHW16] and k-ary [Dra+18] de Bruijn sequences.

Computer Skills

General: Python, JavaScript, SQL, Shell, Haskell, Prolog, Ruby, Java, C, C++;

Design: HTML, CSS, PHP, Markdown, LaTeX, Blender, Maya, Unity3D;

Web: Meteor, React, Angular, Express, Koa, Rails, Django, Flask, Bootstrap, Jekyll, Hugo;

Applications: Git+GitHub, Nginx, Apache, DigitalOcean, Heroku, AWS, GCP, Netlify, Wordpress;

Publications

[Dra+18] Patrick Dragon et al. "Constructing de Bruijn sequences with Co-Lexicographic Order: The k-ary Grandmama Sequence". In: *European Journal of Combinatorics* 72 (Aug. 2018), pp. 1–11. URL: https://www.sciencedirect.com/science/article/pii/S0195669818300696.

[HW17] Oscar Hernandez and Aaron Williams. "Constructing Maximum-Rotating de Bruijn Sequences Using Necklace Trees". thesis. Great Barrington, MA: Bard College at Simon's Rock, May 2017. URL: http://digitalcommons.bard.edu/sr-theses/1120/.

[Has+17] Harold Hastings et al. "Dynamics of Biomimetic Electronic Artificial Neural Networks". In: *Proceedings of the 4th International Conference on Applications in Nonlinear Dynamics*. Ed. by Visarath In, Patrick Longhini, and Antonio Palacios. Vol. 6. Lecture Notes in Networks and Systems. Denver, CO: Springer International Publishing AG, Mar. 2017, pp. 195–207. URL: https://link.springer.com/chapter/10.1007/978-3-319-52621-8_18.

[DHW16] Patrick Dragon, Oscar Hernandez, and Aaron Williams. "The Grandmama de Bruijn Sequence for Binary Strings". In: *LATIN 2016: Theoretical Informatics*. Ed. by Evangelos Kranakis, Gonzalo Navarro, and Edgar Chávez. Vol. 9644. Lecture Notes in Computer Science. Ensenada, Mexico: Springer-Verlag Berlin Heidelberg, Apr. 2016, pp. 347–361. URL: https://link.springer.com/chapter/10.1007/978-3-662-49529-2_26.

Manuscripts

[Her+18] O. Hernandez et al. "Spinning Around and Around: Turnstile Puzzles are PSPACE-Complete". Apr. 2018.

Interests

Current: Robotic Process Automation, Artificial Intelligence, Free Software/Culture, Judaism

Prospective: Perl, Google Apps Script, Native Mobile Apps, Categorical Physics