

# Carlos Martinez

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## Education

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### Georgia Institute of Technology

Master of Science  
Electrical & Computer Engineering  
Aug. 2016 – May 2018  
3.6 GPA

### New York University

Bachelor of Science  
Mathematics  
Sept. 2011 – Dec. 2015  
3.7 GPA; Magna Cum Laude  
Minors: Computer Science, Electrical Engineering,  
Nuclear Science & Engineering

## Employment

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### Assistant Research Technician

NYU Langone Medical Center, Cancer Institute  
May 2014 – July 2016; New York, New York

- Researcher acting in a bioinformatic and statistical capacity for the Kirchhoff Lab specializing in cancer genetics
- Implement genomic data processing pipelines for next-generation sequencing using e.g. GATK, SAMtools, BWA, Cufflinks, VEP
- Perform statistical association tests for variant-disease interactions, expression-disease interactions, and survival analyses
- Conduct exploratory analyses with visualizations and descriptive statistics to discover novel trends in high-risk populations
- Utilize a high-performance computing cluster running on Sun Grid Engine to achieve the above computations
- Secondary responsibilities include grant and manuscript preparation, project presentations, and digital data storage

### (Head) Teaching Assistant – Georgia Institute of Technology

Head TA: May 2017 – Dec. 2017; TA: Aug. 2016 – May 2017; Atlanta, Georgia

- Lead MATLAB-based laboratory sections of ECE2026 (intro digital signal processing) and host review sessions
- As head TA: coordinate and train other TAs to conduct labs and grade homework

### Tutor – NYU Tandon School of Engineering, TRIO Scholars Program

September 2013 – December 2015; Brooklyn, New York

- One-on-one and small group tutor for introductory-to-advanced level math and physics courses.
- Prepare individualized review plans per student

## Publications

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M. Vogelsang, **C. N. Martinez**, J. Rendleman, A. Bapodra, K. Malecek, A. Romanchuk, E. Kazlow, R. L. Shapiro, R. S. Berman, M. Krogsgaard, et al., “The expression quantitative trait loci in immune pathways and their effect on cutaneous melanoma prognosis,” *Clinical Cancer Research*, 2016.

R. Ferguson, M. Vogelsang, E. Ucisik-Akkaya, K. Rai, R. Pilarski, **C. N. Martinez**, J. Rendleman, E. Kazlow, K. Nagdimov, I. Osman, et al., “Genetic markers of pigmentation are novel risk loci for uveal melanoma,” *Scientific reports*, vol. 6, p. 31191, 2016.

## Conference Poster Sessions

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### American Society of Clinical Oncology (ASCO) 2017 Annual Meeting

R. Ferguson, D. Simpson, **C. N. Martinez**, M. Vogelsang, E. Kazlow, U. Moran, J. S. Weber, R. J. Sullivan, K. Flaherty, A. C. Pavlick, A. Ribas, I. Osman, and T. Kirchhoff, “Expression quantitative trait loci (eqtls) as germline determinants of melanoma immunotherapy response,” *Journal of Clinical Oncology*, vol. 35, no. 15 suppl, pp. 3017–3017, 2017.

D. Simpson, R. Ferguson, **C. N. Martinez**, E. Kazlow, U. Moran, A. Heguy, D. Hanniford, E. Hernando, I. Osman, and T. Kirchhoff, “Mutation burden as a potential prognostic marker of melanoma progression and survival,” *Journal of Clinical Oncology*, vol. 35, no. 15 suppl, pp. 9567–9567, 2017.

E. Kazlow, R. Ferguson, D. Simpson, **C. N. Martinez**, M. Vogelsang, U. Moran, Y. Lee, I. Osman, D. Polsky, and T. Kirchhoff, “Novel germline risk loci in familial melanoma (fm).,” *Journal of Clinical Oncology*, vol. 35, no. 15 suppl, pp. 1535–1535, 2017.

## ASCO 2016 Annual Meeting

(Presented) D. Hanniford, **C. N. Martinez**, I. Dolgalev, M. W. Lattanzi, E. V.-S. de Miera, E. M. Robinson, C. Goldman, A. Heguy, T. Kirchhoff, I. Osman, and E. Hernando, "Targeted next-generation sequencing of melanoma patient samples to reveal mutations in non-protein coding regions of targetable oncogenes.," *Journal of Clinical Oncology*, vol. 34, no. 15 suppl, pp. 9559–9559, 2016.

T. Kirchhoff, E. Ucisik-Akkaya, M. Vogelsang, K. Rai, R. Pilarski, **C. N. Martinez**, R. Ferguson, E. Kazlow, I. Osman, F. H. Davidorf, C. M. Cebulla, and M. Abdel-Rahman, "The identification of novel genetic risk loci in uveal melanoma.," *Journal of Clinical Oncology*, vol. 34, no. 15 suppl, pp. 1543–1543, 2016.

S. A. Weiss, **C. N. Martinez**, E. V.-S. de Miera, I. Dolgalev, R. L. Shapiro, A. Heguy, E. Hernando, T. Kirchhoff, and I. Osman, "Genomic characterization of acral lentiginous melanoma: Identification of altered metabolism as a potential therapeutic target.," *Journal of Clinical Oncology*, vol. 34, no. 15 suppl, pp. 9524–9524, 2016.

## Technical Skills

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### Core:

- Statistical data analysis and numerical computation: **NumPy, pandas, R, MATLAB, Excel**
- Machine learning libraries: **Scikit, Keras, Tensorflow**
- Interactive and static visualizations with **Dash, plot.ly, matplotlib, seaborn, ggplot2**
- General programming: **Python, C++, shell scripting**
- Querying, joining, aggregating **SQL** databases (familiar with PostgreSQL, MySQL, SQLite)
- Equally comfortable in **Windows** or **UNIX**-based OS
- Basic cloud computing with **AWS EC2** instances and **S3** storage
- Basic web development and deployment via **Django** and **Heroku**
- Professional communication in technical formats (manuscripts, reviews, poster presentations, slide decks)

### Bioinformatics / Genomics:

- **Genomic pipeline development & analysis** for next-generation sequencing data with various software including: **GATK, SAMtools, BWA, Cufflinks, ANNOVAR, Variant Effect Predictor**
- Custom track management for use on **UCSC Genome Browser**
- Querying and investigating public datasets such as **TCGA, Ensembl, 1000 Genomes Project**

## Academics & Certificates

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### Gates Millennium Scholar

2011 - 2018

Full-ride scholarship awarded by the Bill & Melinda Gates Foundation to minority high school students exhibiting academic promise and commitment to community service.

### Deep Learning Specialization

March 2018

Deep Learning, a 5-course specialization by deeplearning.ai on Coursera

## Selected Projects

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### City Perimeter Detection - [cmartinez.io/perimeter-detection/](http://cmartinez.io/perimeter-detection/)

Automatically detect the perimeters of cities from aerial images. A CNN detects roads in the image followed by image processing to expand the road network into a contour of the city. Tools used include **Keras with Tensorflow** for implementing a CNN, **AWS** for data acquisition, and **OpenCV** for image processing.

### Toeing the Party Manifold – [cmartinez.io/toeing-party-manifold/](http://cmartinez.io/toeing-party-manifold/)

Interactive 2- and 3D visualization of various dimensionality reduction techniques applied to US congressional voting data. Made with **Dash** and deployed using **Heroku**.