Luis Miguel Rodriguez

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Professional Experience

**Software Engineer**

*Johns Hopkins University Applied Physics Laboratory*

Laurel, MD

June 01, 2018 – Present

* Develop and maintain a big-data storage cloud-based framework used to accumulate neuro

TEM and SEM multidimensional image data. The service is estimated to hold 6 petabytes of data.

* Contributing to the tiered architecture of a database by implementing AWS Glacier to store

often unused data. This will allow for lower cost and faster rate of operation.

* Flight software engineer for NASA’s Double Asteroid Redirection Task (DART). DART will be the first demonstration of the kinetic impact technique to change the motion of an asteroid in space. As part of the Flight Software team, I have been charged with the development of different Applications necessary for effective flight and with maintaining a feasible and efficient DevOps infrastructure. The FSW development framework is intended to facilitate software heritage for future missions to come while leveraging past technologies from previous missions such as the Parker Solar Probe Mission.
* Automating neuroscience image data analysis processes using machine learning algorithms

**Software Engineering Intern**

*Johns Hopkins University**Applied Physics Laboratory*

Laurel, MD

May 2017-May 2018

* Created a reproducible containerized workflow using Docker and Galaxy to process large

quantities of image data extracted directly from cloud storage databases.

* Extended a Python 2/3 package that parallelizes common data access workflows to allow for

easy data transfer and analyses from different petascale databases through a single remote

* Developed a user web-based interface for partner company using React-JS (front-end) and

FlaskApp (back end) to allow for easy data access and data sharing between companies

* Optimized user experience by closely working with end users and conducting tactical user-research

**Undergraduate Researcher**

*Johns Hopkins Microfluidics Laboratory*

Baltimore, MD

Nov 2016-May 2018

* Leading NASA funded research on –meso- and micro-scale fluidic sample acquisition and

handling for human exploration in deep space science missions.

* Investigated the use of an ITP derived technique to simplify the concentration and continuous sample preparation of blood serum to monitor astronaut health in deep space missions.
* Obtained the Muley K Doshna award from the Johns Hopkins University for my lead on the NASA microfluidic payload experiments.
* Formulating a method for monitoring microfluidic flows using impedance spectroscopy

**Research & Development Intern**

*Diabetes Research Institute*

Miami, FL

*Summer 2016*

* Co-designed and assembled a high perfusion device to automate scientific data collection

using 3D CAD, 3D printing techniques and Python and MATLAB coding languages. The device is still

* Completed a user-manual and code development of a MATLAB based image processing program

used to measure bead displacement caused by heart muscle contractions

Organizations & Contributions

**Payload Team Leader**

*AstroJays Rocketry Team*

Baltimore, MD

Aug 2017 – May 2018

* Engineered telemetry acquisition data for AstroJays Rocket
* Created back-end python based software that communicates with an ARDUINO UNO board and all its sensory components. The software receives data regarding the current altitude, angular position, speed, and geographical coordinates of the in-flight rocket.
* Developed a front-end REACT/html application that allows for easy access of the rocket's telemetry data. The site runs locally on a machine and is used to visualize incoming data through graphs and GPS coordinate tracking.
* Engineered and designed payload experiments for AstroJays Rocket
* Designed and tested NASA funded ITP experiment for on-board blood serum processing on AstroJays rocket.
* Designed and tested experiments to assess the level of contamination around the launch site using Arduino sensors to detect methane and other contaminants.

**President**

*International Society of Pharmaceutical Engineers (ISPE)*

Baltimore, MD

Aug 2017-May 2018

* Founded the ISPE chapter at Johns Hopkins University
* Lead 7 other officers, and manage 30+ members from 8 different departments

**President**

*Chemically Engineered Car Club of Johns Hopkins University*

Baltimore, MD

Nov 2014-May 2018

* Manage a 20+ member team composed of three independent engineering departments
* Supervise the design and fabrication of a chemically controlled car

**Treasurer**

*American Institute of Chemical Engineers*

Baltimore, MD

August 2016-May 2017

* Managed the Johns Hopkins University Chapter budget of $15,000
* Scheduled both social and professional events for the Chemical Engineering Department JHU

Education

**Johns Hopkins University** Baltimore, MD

Master’s of Science, Computer Science Expected May 2021

GPA: 4.0

**Johns Hopkins University** Baltimore, MD

Bachelor of Science, Chemical and Biomolecular Engineering *May 24, 2018*

Minor in Computational Medicine

GPA: 3.62

**Miami-Dade College** Miami, FL

Associate of Arts Dual Enrollment while in High School  *May 24, 2014*

Journal Publications

1. DevOps for Spacecraft Software [IEEE]

Christopher Heistand, Justin Thomas, Austin Bodzas, Andrew Badger, Luis M. Rodriguez, Nigel…

1. Towards A Framework for Processing Large Neuroscience Datasets. In Preparation.

Johnson, E., Wilt, M., Norman-Tenazas, R., Rodriguez, L., Downs, J., Rivera, C., Wester, B., Dyer, E. L., Kording, K. P., Gray Roncal, W. R.

1. Intern: Toward Universal Data Access for Large-Scale, Reproducible Neuroscience.

Jordan Matelsky, Luis Rodriguez, Timothy Gion, William Gray-Roncal, Brock Wester.

Poster Publications

1. A framework for pipeline optimization and deployment for large neuroscience datasets.

Johnson, E., Wilt, M., Norman-Tenazas, R., Rodriguez, L., Downs, J., Reilly, E., Hughes, M., Matelsky, J., Drenkow, N., Rivera, C., Wester, B., Dyer, E. L., Kording, K. P., Gray Roncal, W. R.[Presented at

the Society for Neuroscience, 2018]

1. Intern

Authors… [Presented at APL, 2017]

1. SABER

Authors… [Presented at NIPS, 2017]

1. bossDB: Block Object Storage Service DataBase [Presented at Society for Neuroscience, 2017]
2. NASA Microfluidics

Luis M Rodriguez, Nicholas Mavrogiannis, Steven Doria, Zachary Gagnon [Presented at HOUR, 2017]

1. Monitoring microfluidic flows using impedance spectroscopy.

Luis M Rodriguez, Nicholas Mavrogiannis, Zachary Gagnon [Presented at HOUR, 2016]

Honors & Awards

**JHU Joseph L. Katz Award**

Presented to Chemical and Biomolecular Engineering seniors for academic excellence in the Chemical and Biomolecular Engineering Lab course.

**Provost’s Undergraduate Research Award**

Awarded to a selected group of undergraduate students for an innovative and ground breaking research project proposal. As an awardee, the student's project is fully funded by the provost's undergraduate research office.

**JHU Chemical Engineering Department, Sarah K. Doshna**

This award is given for demonstrated contributions to research in chemical and biomolecular engineering.

**Chemical and Biomolecular Engineering Special Service Award**

This award is given to a student who has made outstanding contributions to the Department of Chemical and Biomolecular Engineering.

**Undergraduate Research Recognition Award**

Awarded to a student for outstanding research project accomplishments at Johns Hopkins University

**Exxon Mobil STEM Student Scholar**

Presented to a student in a STEM field for their academic achievements.

**Hispanic Scholarship Fund Scholar**

Presented by the Honda Motor Company to a student of Hispanic descent for their academic achievements.

**Docker Diversity Scholar**

Presented by Docker to attend the national Docker conference to individuals currently effectively and efficiently using Docker.

**Dean’s List (2014-2018)**

Granted each semester to academically driven students whos GPA's exceeds 3.50

**The Miami Herald, S.K. Award in Mathematics**

Presented to a student for their achievements in mathematics.

http://www.miamiherald.com/site-services/miami-herald-events/silver-knight/article1964742.html

Skills

**Software:**

Amazon Web Services (S3, DynamoDB, Glacier, Lambda, etc.), ASPEN, CSS, Docker, HTML, JavaScript,

MAPLE, MATLAB, Microsoft Office, Python, React-JS, Simulink, Tensorflow, SQL, PHP, C, Ruby,

COSMOS

**Modeling and Design:**

SolidWorks, eDrawings, Arduino, PyMOL, 3DPrinting, Laser Cutting, ZView, ImageLab, Welding,

Woodwork, Soldering

**Laboratory:**

PCR, Electrophoresis, Chromatography, Microfabrication, SELEX, Electron Beam Evaporation, SEM, TEM

**Languages:**

Fluent in Spanish and English