

Richard Boeri Decal

📍 Sarasota, FL, USA · 📞 [redacted] · ✉️ public@richarddecal.com
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Profile

Machine learning scientist with domain expertise in applying cloud computing and statistical modeling to engineering, scientific, and real-world problems. Work in team-contexts to create and modify scientific software libraries to process and understand noisy data generated by stochastic real-world processes. Able to seek input from outside experts to create domain-crossing solutions designed to scale.

Education

M.S. Data Science <i>New College of Florida</i>	Sarasota, FL Aug. 2017 — Dec. 2018
B.A., Chemistry/Biology (with honors) <i>New College of Florida</i>	Sarasota, FL Aug. 2007 — May 2011
Early admission in lieu of 4th year high school <i>Harriet L. Wilkes Honors College</i>	Jupiter, FL Sep. 2006 — May 2007

Expertise

+ denotes proficiency

Languages	Python ⁺ · R Tidyverse · Español ⁺ · English ⁺ · Italiano
Tools	PyTorch, Keras, Tensorflow · (Geo)Pandas ⁺ , MongoDB, PostgreSQL · Ray, PySpark, Hadoop · Plotly Dash, Flask · BeautifulSoup · Docker · Kedro, MLFlow

Computation

Operating Systems Proficient: MS Windows, Mac OS X, iOS, Linux, and Android.

Software Proficient: office suites, image manipulation and analysis software, and other common productivity packages. Novice: PyMol.

Programming Fluent: \LaTeX . Proficient: Python.

TECHNICAL SKILLS

- Sci Python Stack
- ML Python Stack
- AWS EC2, S3
- Docker
- Git
- Data versioning
- Distributed computing: Ray Distributed, Spark

Photography I am a DSLR photographer and have proficiency with the Adobe suite ([portfolio](#)).

Other Fluent in English and Spanish. Known to dabble in the kitchen. I've played violin, piano, contrabass, and ukulele. Licensed scuba diver.

Industry Work

Lead Machine Learning Engineer

Dendra Systems

Sarasota, FL
Feb. 2020 — Now

Enabling whole-ecosystem restoration using deep learning.

Lead Data Scientist

PaceMateTM

Sarasota, FL
Feb. 2019 — Dec. 2019

Automated remote detection of cardiac arrhythmias in Internet-enabled heart implants using deep learning.

Academic Work

Modeling Hospital Patient Trajectories

Florence A. Rothman Institute

Sarasota, FL
Au. 2018 — Dec. 2018

Data-driven characterization of interactions between chronic conditions and heart failure using clustering and finite state modeling.

Automated Tracing of Neurons

Peng Lab, Allen Institute for Brain Science

Seattle, WA
June 2018 — Aug. 2018

Implemented proof-of-concept algorithm for automatically reconstructing brain cell morphologies from petabyte-scale microscope data using deep reinforcement learning.

Multisensory Integration in Mosquitos

Fairhall Lab, University of Washington

Seattle, WA
Oct. 2014 — May 2016

Developed agent-based dynamical models of mosquito thermal plume navigation behavior using wind-tunnel flight data.

Humpback Whale Migratory Census

Kimberley Community Whale Research Project

James Price Point, Australia
Aug. 2012 — Oct. 2012

Replicated a study at the proposed site of a gas processing port in Humpback calving waters. Our field research revealed gross inaccuracies in the oil conglomerate's report.

Endogenous Genetic Control

Walstrom Lab, New College of Florida

Sarasota, FL
Aug. 2010 — May 2011

Studied a genetic expression control pathway in *C. elegans*. My honors [thesis project](#) proposes a model for RNA Helicase A function in endogenous RNAi based on qRT-PCR evidence.

Role of Mitochondrial Fusion in Parkinson's

Pallanck Lab, University of Washington

Seattle, WA
May 2010 — Aug. 2010

Establish a method to grow, stain, and image primary dopaminergic neural cultures from *Drosophila* embryos. I tested whether Parkin and PINK1, proteins involved in Parkinson's disease, are recruited to depolarized mitochondria in dopaminergic neurons. This research was [published](#) in *PNAS*.

Functional Study of APC2 Protein

McCartney Lab, Carnegie Mellon University

Pittsburgh, PA

May 2009 — Aug. 2009

I determined that APC2, a protein with roles in colon cancer tumorigenesis, did not directly interact with β -catenin of the Wnt pathway's destruction complex. I disproved the theory that APC2's N-terminal domain was essential for its proper localization. This research was published in *Genetics*.

Organic Synthesis of P450-like Molecule

Scudder Lab, New College of Florida

Sarasota, FL

Sep. 2008 — Nov. 2009

Partial synthesis of a high-valent iron-stabilizing macrocycle based on the active site of cytochrome P450, with potential applications for cleaning industrial pollution.

Publications

Burman JL, Yu S, Poole AC, **Decal RB** and Pallanck LJ. "[Analysis of neural subtypes reveals selective mitochondrial dysfunction in dopaminergic neurons from parkin mutants](#)". *Proc Natl Acad Sci USA*. 2012 Jun 26;109(26):10438-43.

Kunttas-Tatli E, Zhou M, Zimmerman S, Molinar O, Zhouzheng F, Carter K, Kapur M, Cheate A, **Decal RB**, McCartney BM. "[Destruction Complex Function in the Wnt Signaling Pathway of Drosophila Requires Multiple Interactions Between Adenomatous Polyposis Coli 2 and Armadillo](#)". *Genetics*. 2012 Mar; 190(3):1059-75.

Decal RB. "A Proposal for RNA Helicase A Function in Endogenous RNA Interference Pathways". Honors thesis, New College of Florida. May 2011.

Presentations

Decal RB, Burman JB, Pallanck L. "Is Parkin Recruited to Damaged Mitochondria in Dopaminergic Neurons?" SACNAS Conference. Anaheim, CA. September 2010. Poster.

Decal RB, McCartney BM. "APC2 Does Not Interact with in the β -Catenin Destruction Complex". Annual Sigma Xi Conference. The Woodlands, TX. November 2009. Poster.

Decal RB, McCartney BM. "APC2 Does Not Interact with in the β -Catenin Destruction Complex". ABRCMS Conference. Phoenix, AZ. November 2009. Poster.

Teaching & Outreach

Data Analysis Mentor, Intro to Programming Nanodegree. Udacity. 2017 — 2018

Brain Awareness Week 2015. University of Washington. March 2015

Upward Bound. University of Washington. July 2010

Awards, Grants & Honors

Full tuition waiver for master's program <i>New College of Florida</i>	Aug. 2017 — Dec. 2018
NIH PA-12-149 Supplement Grant <i>University of Washington</i>	Jan. 2015 — Jan. 2016
Florida "First Generation" Scholar (two-time recipient) <i>New College of Florida</i>	Aug. 2009 — May 2011
Florida "Bright Futures" Scholar <i>New College of Florida</i>	Aug. 2007 — May 2011
Four Winds Silver Scholar <i>New College of Florida</i>	Aug. 2007 — May 2011
Student Research Grant <i>Dubois-Felsmann Research Endowment</i>	Nov. 2010
Student Travel Grant <i>Dubois-Felsmann Research Endowment</i>	Sep. 2009
ABRCMS Travel Award <i>American Society for Microbiology</i>	Aug. 2009
Honors Scholarship <i>Harriet L. Wilkes Honors College</i>	Sep. 2006 — May 2007
AP Scholar Award <i>J.P. Taravella High</i>	Apr. 2006