

# Josue Santana

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## EDUCATION

### CORNELL UNIVERSITY

DOCTOR OF PHILOSOPHY (PH.D.)

BIOMEDICAL ENGINEERING

FOCUS AREA | BIOMECHANICS

- NSF Graduate Research Fellow
- Cornell Colman Diversity Fellowship Scholar
- Graduate Student Ambassador
- Graduate School Dean's Scholar

### FLORIDA INTERNATIONAL UNIVERSITY

BACHELOR OF SCIENCE

BIOMEDICAL ENGINEERING

- December 2015 | Miami, FL
- Cum. GPA: 3.6 / 4.0
- Cum Laude Graduate
- The Honors College (Alumnus)
- Ronald E. McNair Program (Fellow)

### MIAMI DADE COLLEGE

ASSOCIATE IN ARTS

BIOMEDICAL/MEDICAL ENGINEERING

- August 2013 | Miami, FL
- The Honors College Dual Language Program (Alumnus)
- Cum. GPA: 3.9 / 4.0
- Dean's List (All Semesters)
- Graduated with Highest Honors & Distinction

## LINKS

LinkedIn: [linkedin.com/in/santanajosue](https://www.linkedin.com/in/santanajosue)

Twitter: [@JosueSantana\\_](https://twitter.com/JosueSantana_)

## LANGUAGES

### SPANISH

Native Language

### ENGLISH

Full Professional Proficiency

### PORTUGUESE

Reading Proficiency

## ORGANIZATIONS

### SACNAS | 2017

### SHPE | 2017

Society of Hispanics Professional Engineers

### BMES | 2015

### PTK | 2013

## RESEARCH EXPERIENCE

### GRADUATE STUDENT RESEARCHER | CORNELL UNIVERSITY

HERNANDEZ RESEARCH GROUP

August 2016 - Present | Ithaca, NY

- Exploring the direct effect of microdamage in cancellous and trabecular bone, and the contributions of microdamage to bone marrow lesions (BMLs), radiology findings associated with early stage of osteoarthritis.
- The current research project is targeted to the use of a novel preclinical model to enhance our understanding of the etiology and physiology of fatigue damage-induced BMLs.
- Currently, three-dimensional dynamic bone histomorphometry techniques are utilized to localize areas of bone remodeling and microdamage within cancellous bone as a response to an external mechanical stimulus.

### SUMMER GRADUATE RESEARCH FELLOW | HOSPITAL FOR SPECIAL SURGERY

DEPARTMENT OF BIOMECHANICS

June 2017 - August 2017 | New York, IN

- Conducted a retrospective study to investigate demographic and skeletal-specific risk factors for periprosthetic fractures in a cohort of patients requiring a surgical revision after total knee arthroplasty (TKA).
- Conducted a pilot study evaluating the feasibility of a novel surgical tool to measure the in vivo force applied to pedicle screws during spine surgical procedures.
- Worked with ex-vivo human bone specimens to assess the accuracy of a digital torque wrench used to measure the insertional force of pedicle screws in bones with compromised material and structural properties.

### SUMMER RESEARCH INTERN | UNIVERSITY OF NOTRE DAME

TISSUE MECHANICS LABORATORY

May 2015 - July 2015 | Notre Dame, NY

- Researched the effects of *low magnitude mechanical stimulation* in trabecular bone to determine the primary mechanical signal driving bone adaptation.
- Constructed FE models to conduct CFD & Solid Mechanics simulations exploring the mechanostimulatory signals in the trabecular bone marrow.
- Studied the effect of shear stress in the bone marrow *in silico* from pre-treatment CT scans of porcine vertebral bone explants.

## HONORS & AWARDS

May 2017	DPE First Year Graduate Student of the Year - Recipient
July 2016	Cornell Graduate School Dean's Scholar - Recipient
Apr. 2016	National Science Foundation Graduate Research Fellowship - Recipient
Mar. 2016	Cornell Colman Diversity Fellowship Program - Recipient
Dec. 2015	Biomedical Engineering Outstanding Bachelors Graduate - Recipient

## COMPUTER SKILLS

Basic	Python, MS Project & MS Access, ANSYS, ADINA CFD, NI LabVIEW
Intermediate	SolidWorks, JMP, Arduino, L <sup>A</sup> T <sub>E</sub> X, Minitab, Adobe Photoshop & Illustrator
Advanced	MATLAB, R Programming, Amira, ImageJ, GraphPad, Minitab, Excel

## ORAL & POSTER PRESENTATIONS

Aug. 2017	Cornell Clinical Summer Immersion Term Symposium   Poster
Dec. 2015	BME Senior Design Project Expo and Competition   Oral
Oct. 2015	Annual Biomedical Research Conference for Minority Students   Poster
Oct. 2015	Biomedical Engineering Society Annual Meeting   Poster