

# GONZALO J. MARTINEZ

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## EDUCATION

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UNIVERSITY OF NOTRE DAME	Notre Dame, IN
PhD, Computer Science	05/2021
Thesis: <i>Increasing the efficiency and efficacy of multi-modal longitudinal sensing studies</i>	
MSc, Computer Science	01/2020
Advisor: Prof. Aaron D. Striegel	
CATHOLIC UNIVERSITY OF URUGUAY	Montevideo, Uruguay
Informatics Engineer (equivalent to MS)	12/2013
BSc in Computer Science	

## RESEARCH EXPERIENCE

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<b>UNIVERSITY OF NOTRE DAME</b>	<b>Notre Dame, IN</b>
<b>Research Assistant, Computer Science and Engineering</b>	<b>Jan 2017 – Present</b>

Currently working on the Tesseract study, a year-long study of 750 participants where we use a combination of sensors and social media data to understand the behaviors that support good workplace performance. This ongoing project has already resulted in multiple published works and multiple more currently in editing phase.

Built a mobile application and gathered mobile network data using a Low Altitude Unmanned Aircraft Vehicle for the Drone Sounder project. Analyzed the results, produced a research paper (currently in editing) and an open-source dataset to be made public at the time of publishing.

Created a prototype server backend and frontend for the Radiohound project, a custom spectrum sensing network capable of tuning from 25 MHz to 6 GHz, which covers nearly all widely deployed wireless activity. The backend and frontend enabled us to see the data as it was coming in from the hardware sensors developed at ND in a close to real-time manner.

<b>CATHOLIC UNIVERSITY OF URUGUAY</b>	<b>Montevideo, Uruguay</b>
<b>Department of Engineering and Technology</b>	<b>2013-2014</b>

Outside of my official teaching duties, I worked on the implementation of a framework for distributing algorithms using standard web technologies that resulted in two research papers in a top CS conference/journal in Latin America.

## RESEARCH INTERESTS

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Ubiquitous technologies and mobile sensing  
Recommender systems  
Machine learning

## TEACHING EXPERIENCE

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### UNIVERSITY OF NOTRE DAME

Notre Dame, IN

#### Teaching Assistant, CSE-30331 Data Structures

Aug 2016 – Dec 2016

My duties consisted of hosting office hours twice a week and grading.

### CATHOLIC UNIVERSITY OF URUGUAY

Montevideo, Uruguay

#### Assistant Professor, Department of Engineering and Technology

Mar 2014 – Aug 2016

Courses were taught under the Team Based Learning (TBL) methodology as part of a department-wide effort to improve student outcomes in coding and project based courses given decreasing performance under traditional lecture focused methods. Courses defined intended learning outcomes and defined precisely how each of them would be achieved through course work. Classes were organized into modules consisting of preparation before class (done by students following material provided by professors), in-class readiness assurance testing, and application focused exercises. Additionally, a class project was expected in each of the courses that would require the application of concepts learned throughout the course. Unless stated otherwise, my duties included: grading, answering questions from students during the application-focused exercises, and preparing course materials for student preparation before class, in-class readiness assurance testing, and application focused-exercises.

#### **Algorithms and Data Structures**

Mar 2015 – Aug 2016

This course was for sophomores of the Computer Science major. It included an introduction to Java as students had been using Python and C# up to that point. The course focused on explaining and implementing data structures such as Arrays, Lists, Queues, Heaps, Trees (Binary Search Trees, TRIE, B-Trees), Key-value stores. The course introduced as well the concepts of time/space complexity and algorithms for sorting and searching.

#### **Functional Programming**

Mar 2015 – Aug 2016

A sophomore year course that taught the paradigm of functional programming using Haskell as a reference language. The course introduced Haskell and the differences with other programming languages students had seen so far (C#, Python); algebraic data types; recursion patterns; polymorphism; folds; and monads.

**Artificial Intelligence****March 2014 – Aug 2016**

This senior year course introduced Bayes' theorem, Bayes classifiers, expert systems, and metaheuristics. The course sought to present the basic concepts of artificial intelligence, its methods, meaning, limits and applications.

**Object Oriented Programming****Aug 2014 – Aug 2016**

The second course on programming for the Computer Science major included an introduction to Java, a short introduction to OOP, and the main focus which was on algorithms and data structures. TA duties included: grading, answering questions from students during the applied part of class (labs and lectures were not separated into different sessions), and preparing exercise sheets for use in class.

**Algorithms and Data Structures****Mar 2014 – Jul 2014**

This course was for freshmen up until July 2014. It was the second course on programming for the Computer Science major. It included an introduction to Java, a short introduction to OOP, and the main focus which was on data structures, sorting and searching algorithms, and time and space complexity. Although the content was similar to the version from March 2015, it was not as in-depth as it was aimed to students that had taken only one programming course.

**Teaching Assistant, Algorithms and Data Structures****Mar 2013 – Dec 2013**

This is the same course as the one listed from March 2014 to July 2014. TA duties included: grading and answering questions from students during the application-focused exercises.

**PROFESSIONAL EXPERIENCE**

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**DECEMBERLABS****Montevideo, Uruguay****Full Stack Software Developer, Web department****Jan 2016 – Aug 2016**

Developed the backend and frontend of multiple web-based applications, as well as maintained and upgraded the backend of mobile applications for startups in the United States, resulting in ambitious projects being completed on time and on budget. The technology stack included MySQL, Yii, Laravel, Angular JS, HTML+CSS.

**LITHIUM SOFTWARE****Montevideo, Uruguay****Senior Java Developer****Oct 2013 – Feb 2016**

Duties consisted in the development of in-house applications for the largest post office in Uruguay.

Upgraded the Track & Trace system from 10+ year old Oracle platform to a combination of then current Oracle 12 and J2EE services.

Developed a new back-office system that replaced several disconnected applications by a centralized web-based system running on J2EE technology.

Developed an interoperability platform that allowed modern applications to communicate with legacy systems, while also providing secure access to third-party companies to the services provided by the post office.

## **FREELANCE**

**Montevideo, Uruguay**

### **Self-Employed Developer**

Apr 2008 – Aug 2016

Development of freight services marketplace, cotizadorlogistico.com (04/2015 – 08/2016)

Development and maintenance of 15 different websites and an elementary school management system for my client RedTotal (04/2008 – 06/2010)

Academic Management System for Instituto Crandon (06/2012 - 08/2016)

Developed and maintained a Java Web Application to substitute paper-based processes, i.e. creation, editing and validation of grades reports, creation of Department of Education required documentation, etc. Tasks included requirements analysis, development, documentation development, and training of employees in the use of the system developed. Technologies used during the project: J2EE, Git, Tomcat, Hibernate, Vaadin Framework, MySQL.

## **CATHOLIC UNIVERSITY OF URUGUAY**

**Montevideo, Uruguay**

### **Intern in Career Services**

Jun 2009 – Sep 2009

Created a new HTML based bulletin that replaced plain text emails.

Collaborated in the organization of the career fair in promotion, design, and marketing.

Worked in matching potential candidates with job ads uploaded to the career services platform.

## **PUBLICATIONS**

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### **CONFERENCE**

Poorna Talkad Sukumar, **Gonzalo J. Martinez**, Ted Grover, Gloria Mark, Sidney D'Mello, Nitesh V Chawla, Stephen M Mattingly, Aaron D. Striegel. Characterizing Exploratory Behaviors on a Personal Visualization Interface Using Interaction Logs. Eurovis 2020 - Accepted

Suwen Lin, Xian Wu, **Gonzalo J. Martinez**, Nitesh V. Chawla, Filling Missing Values on Wearable-Sensory Time Series Data, SIAM International Conference on Data Mining (SDM20) – In Press

Koustuv Saha, Manikanta D. Reddy, Vedant das Swain, Julie M. Gregg, Ted Grover, Suwen Lin, **Gonzalo J. Martinez**, Stephen M. Mattingly, Shayan Mirjafari, Raghu Mulukutla, Kari Nies, Pablo Robles-Granda, Anusha Sirigiri, Dong Whi Yoo, Pino Audia, Andrew T. Campbell, Nitesh V. Chawla, Sidney K. D'Mello, Anind K. Dey, Kaifeng Jiang, Qiang Liu, Gloria Mark, Edward Moskal, Aaron Striegel, and Munmun de Choudhury. 2019. Imputing Missing Social Media Data Stream in Multisensor Studies of Human Behavior. In 2019 8th International Conference on Affective Computing and Intelligent Interaction (ACII), 178–184.

Koustuv Saha, Ayse E. Bayraktaroglu, Andrew T. Campbell, Nitesh V. Chawla, Munmun De Choudhury, Sidney K. D'mello, Anind K. Dey, Ge Gao, Julie M. Gregg, Krithika Jagannath, Gloria Mark, **Gonzalo J. Martinez**, Stephen M. Mattingly, Edward Moskal, Anusha Sirigiri, Aaron Striegel, And Dong Whi Yoo. 2019. Social Media as A Passive Sensor in Longitudinal Studies of Human Behavior and Wellbeing. In Extended Abstracts of the 2019 Chi Conference on Human Factors in Computing Systems (CHI EA '19). Association for Computing Machinery, New York, NY, USA, Paper CS12, 1–8.

Stephen M. Mattingly, Julie M. Gregg, Pino Audia, Ayse Elvan Bayraktaroglu, Andrew T. Campbell, Nitesh V. Chawla, Vedant Das Swain, Munmun De Choudhury, Sidney K. D'mello, Anind K. Dey, Ge Gao, Krithika Jagannath, Kaifeng Jiang, Suwen Lin, Qiang Liu, Gloria Mark, **Gonzalo J. Martinez**, Kizito Masaba, Shayan Mirjafari, Edward Moskal, Raghu Mulukutla, Kari Nies, Manikanta D. Reddy, Pablo Robles-Granda, Koustuv Saha, Anusha Sirigiri, And Aaron Striegel. 2019. The Tesseract Project: Large-Scale, Longitudinal, In Situ, Multimodal Sensing of Information Workers. In Extended Abstracts of the 2019 Chi Conference on Human Factors in Computing Systems (CHI EA '19). Association for Computing Machinery, New York, NY, USA, Paper CS11, 1–8

**Gonzalo J. Martinez**, Leonardo Val. Implementing cross-platform distributed algorithms using standard web technologies. In 2014 XL Latin American Computing Conference (CLEI) (pp. 1-8). IEEE.

## JOURNAL

Stephen M Mattingly, Ted Grover, **Gonzalo J. Martinez**, Talayeh Aledavood, Pablo Robles-Granda, Kari Nies, Aaron Striegel, and Gloria Mark. The Effects of Seasons and Weather on Sleep Patterns Measured through Longitudinal Multimodal Sensing. *Nature Partner Journals Digital Medicine*. Under Review.

Vedant Das Swain, Koustuv Saha, Hemang Rajvanshy, Anusha Sirigiri, Julie M. Gregg, Suwen Lin, **Gonzalo J. Martinez**, Stephen M. Mattingly, Shayan Mirjafari, Raghu Mulukutla, Subigya Nepal, Kari Nies, Manikanta D. Reddy, Pablo Robles-Granda, Andrew T. Campbell, Nitesh V. Chawla, Sidney D'Mello, Anind K. Dey, Kaifeng Jiang, Qiang Liu, Gloria Mark, Edward Moskal, Aaron Striegel, Louis Tay, Gregory D. Abowd, and Munmun De Choudhury. 2019. A Multisensor Person-Centered Approach to Understand the Role of Daily Activities in Job Performance with Organizational Personas. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 3, 4: 130:1–130:27

Shayan Mirjafari, Kizito Masaba, Ted Grover, Weichen Wang, Pino Audia, Andrew T. Campbell, Nitesh V. Chawla, Vedant Das Swain, Munmun De Choudhury, Anind K. Dey, Sidney K. D'Mello, Ge Gao, Julie M. Gregg, Krithika Jagannath, Kaifeng Jiang, Suwen Lin, Qiang Liu, Gloria Mark, **Gonzalo J. Martinez**, Stephen M. Mattingly, Edward Moskal, Raghu Mulukutla, Subigya Nepal, Kari Nies, Manikanta D. Reddy, Pablo Robles-Granda, Koustuv Saha, Anusha Sirigiri, and Aaron Striegel. 2019. Differentiating Higher and Lower Job Performers in the Workplace Using Mobile Sensing. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* 3, 2, Article 37 (June 2019), 24 pages.

**Gonzalo J. Martinez**, Leonardo Val. Capataz: a framework for distributing algorithms via the World Wide Web. CLEI electronic journal, 18(08).

#### **PEER REVIEWED WORKSHOP**

**Gonzalo J. Martinez**, Stephen Mattingly, Jessica Young, Louis Faust, Anind Dey, Andrew Campbell, Munmun Choudhury, Shayan Mirjafari, Subigya Nepal, Pablo Robles-Granda, Koustuv Saha, and Aaron D. Striegel. 2020. Improved Sleep Detection Through the Fusion of Phone Agent and Wearable Data Streams. In Pervasive Computing WristSense 2020: 6th Workshop on Sensing Systems and Applications using Wrist Worn Smart Devices (WristSense 2020). In Press - Best Paper Honorable Mention

**Gonzalo J. Martinez**, Stephen Mattingly, Shayan Mirjafari, Subigya Nepal, Andrew Campbell, Anind Dey, and Aaron D. Striegel. 2020. On the Quality of Real-world Wearable Data in a Longitudinal Study of Information Workers. In Pervasive Computing WristSense 2020: 6th Workshop on Sensing Systems and Applications using Wrist Worn Smart Devices (WristSense 2020).

#### **DEMO PUBLICATION**

Nikolaus Kleber, Abbas Termos, **Gonzalo Martinez**, John Merritt, Bertrand Hochwald, Jonathan Chisum, Aaron Striegel, and J. Nicholas Laneman. 2017. RadioHound: A pervasive sensing platform for sub-6 GHz dynamic spectrum monitoring. In 2017 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), 1–2.

#### **LEADERSHIP AND SERVICE**

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President, University of Notre Dame, Catholic Graduate Community 2018-2019

My duties revolved around keeping the community financially viable, organizing a fundraiser, participating in events organized by the vice presidents, and communicating with the members through our mailing list (with 300+ students). Additionally, I organized a group of volunteers to visit and cook meals at a homeless shelter, a project I started when I was a vice president the year before.

Vice-President of Service, University of Notre Dame, Catholic Graduate Community. 2017-2018

During this time, I organized a group of volunteers to visit a local homeless shelter and cook meals monthly. There, I also had the opportunity to use my Spanish to speak with families who could only understand Spanish. I also led the organization in a program where we "adopted" three underprivileged families, two of which could only speak Spanish, for the Christmas holidays and bought gifts for their children. Other service projects included building ramps for the disabled in the community, painting and cleaning a parish, attending church with prisoners at a maximum-security prison, and visiting the elderly at a retirement center.

## **HONORS & AWARDS**

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### **PAPER**

Best Paper Honorable Mention – Pervasive Computing Wristsense Workshop 2020

### **STUDENT GRANTS**

Student travel grant to SIAM Data Mining 2020 (cancelled due to COVID-19) \$650, 2020

Student travel grant to PerCom 2020 (amount reduced due to COVID-19) \$1000, 2020

### **MISCELLANEOUS**

Winner - Apps4fun 2012 competition organized by Microsoft Argentina and Uruguay 2012

Based in C#, XAML; used maps, push notifications, provided a live gamecast that consumed a php service that aggregated information from different websites and transformed to an easy to display format for a Windows Phone App, and generated push notifications directly from PHP.

Finalist – Virtual Enterprises Competition by DESEM and US Embassy in Uruguay 2007

Young Entrepreneur – Young Entrepreneurs Program by DESEM 2006