Matias **Quintana**

Ph.D. Student · Building Technology

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Education

National University of Singapore — *Singapore*

Ph.D. Student at the School of Design and Environment — *2018 - Present*

- Relevant Coursework: Building Energy Performance Active & Passive Systems, Neural Networks and Deep Learning, Theory and Algorithm for Machine Learning, Uncertainty Modeling in AI

Carnegie Mellon University — *Pittsburgh, PA*

Master of Information Systems Management — *2015 - 2016*

- Relevant Coursework: OOP in Java, Database Management, Distributed Systems, Data Mining, Data Structures for Application Programmers, Exploring & Visualizing Data, OO Analysis and Design, Linux & Open Source, Internet Technologies, Applied Machine Learning

Pontifical Catholic University of Peru — *Lima, Peru*

Bachelor of Science, Electronic Engineering, Honors list - 2nd place in class of 2014 — *2009 - 2014*

- Relevant Coursework: Electronic Design I and II, Theory of Communication I and II, Computer Architecture, Electronic Project I and II, Sustainable Energy, Information Systems Workshop
- Thesis: "3D Point Cloud Registration Using a Kinect for 3D Reconstruction of Archaeological Walls" (**ES PDF**)

Research Experience

Department of Building - School of Design and Environment, National University of Singapore — *Singapore*

Graduate Research Assistant, Building and Urban Data Science Laboratory (**BUDS Lab**), Singapore-Berkeley Building Efficiency and Sustainability in the Tropics 2 (**SinBerBEST2**) — *August. 2018 - Present*

- Developed backend pipeline and analytics dashboard for in-house experiments and research collaborations
- Conducted thermal comfort longitudinal field studies with wearable technology
- Analyzed building electricity consumption for anomaly detecion and missing data inputation techniques

Civil and Environmental Engineering Department, Carnegie Mellon University — *Pittsburgh, PA*

Graduate Research Assistant, Intelligent Insfrastructure Research Lab (INFERLab) — *Apr. 2017 - Jun. 2018*

- Conducted a Thermal Comfort Study to predict and evaluate thermal comfort of smart buildings occupants, using a combination of different data-driven and thermal modelling methods, given environmental sensor data and bio-metrics (paper and dataset in progress for Ubicomp 2018)
- Designed, produced, and programmed an AC waveform power meter board based on an Atmega328p for the Raspberry Pi
- Collaborated in Department of Energy funded project: Human-in-the-loop Sensing and Control for Commercial Building Energy Efficiency and Occupant Comfort
- Designed and implemented a data preparation and evaluation framework with Bosch U.S. research scientists for RGBD building occupancy data
- Implemented a BACnet agent on a Raspberry Pi to control HVAC systems on a building based on real-time occupancy data

H. John Heinz III College, Carnegie Mellon University — *Pittsburgh, PA*

Graduate Teaching Assistant for Database Management — *Aug. 2016 - Dec. 2016*

- Assisted in grading assignments, projects, and exams
- Designed database based on existing students' clubs for future assignments
- Suggested improvements on previous assignments and proposed alternative solutions
- Held office hours and laboratory sessions to help students with assignments and class' concepts

Professional Experience

VIT Initiative, LLC. — *Pittsburgh, PA*

Firmware & Mobile Developer — *Dec. 2017 - Jun. 2018*

- Reviewed and finished company's firmware and propietary algorithm for embedded device
- Developed data collection pipeline for Internet of Things (IoT) device, mobile devices, and web servers
- Designed and developed mobile application functionality and User Interface (UI) for IoT sensor and web server interaction
- Assembled, tested, and performed demostration of fully finalized commercial product on clients' site and funding events

Banking Commission — *Majuro, Republic of Marshall Islands*

Intern, Technology Consultant — *May 2016 - Jul. 2016*

- Assessed current state of technology infrastructure and information management, focus on potential areas for improvement
- Designed, proposed, and implemented solutions to improve the data collection and analysis process of the Financial Intelligence Division, to start their online presence, and to improve the security and reliability of their email communication
- Provided training and workshops for the office employees in the use and maintenance of the implemented systems.
- Elaborated comprehensive **final report** with detailed description of the project and further recommendations

IBM *Lima, Peru*

Intern, IT Storage Student Specialist *Apr. 2014 - Jul. 2015*

- Administered backend storage and SAN infrastructure for different platforms
- Initiated and maintained a storage devices inventory in the main datacenters for internal infrastructure improvement and optimization; reduced time for cabling and implementation requests by 75%
- Elaborated a new technology service based on IBM's products and CAMSS strategy, followed up by a presentation to the top management team as part of the 2015 Student Challenge
- Enforced security parameters and procedures for storage infrastructure and internal audits

Teaching & Mentoring Experience

School of Design and Environment - National University of Singapore

Graduate Research Student *2019 - 2020*

- Mentored 4 undergraduate students in their Final Year Project research design and data analysis which enabled successful completion of their research projects
- Conducted experimental laboratory sessions to further explain class' concepts (class PF1108)
- Held office hours and conducted laboratory/tutorial sessions for students regarding python and data analytics for the built environment (class PF1103)
- Designed and implemented quizzes and programming assignments for an online class released on **edX**

Heinz College - Carnegie Mellon University

Graduate Research Student *2016*

- Held office hours and laboratory sessions to help students with assignments and class' concepts (Classes 95-703: Database Management)
- Suggested improvements on previous assignments and proposed alternative solutions
- Designed new database for future homeworks

Selected Publications

2019	**Towards Class-Balancing Human Comfort Datasets with GANs**, Matias Quintana, Clayton Miller (ACM International Conference on Systems for Energy-Efficient Built Environments, BuildSys 2019) , **DOI**	*New York City, U.S.A*
2019	**OccuTherm: Occupant Thermal Comfort Inference using Body Shape Information**, Jonathan Francis, Matias Quintana, Nadine Von Frankenberg, and Mario Bergés (ACM International Conference on Systems for Energy-Efficient Built Environments, BuildSys 2019) , **DOI**	*New York City, U.S.A*
2019	**Is your clock-face cozie? A smartwatch methodology for the in-situ collection of occupant comfort data**, Prageeth Jayathissa, Matias Quintana, Tapeesh Sood, Negin Narzarian, and Clayton Miller (Climate Resilient Buildings - Energy Efficiency & Renewables in the Digital Era, CISBAT2019)	*Lausanne, Switzerland*
2019	**The SDE4 Learning Trail: Crowdsourcing occupant comfort feedback at a net-zero energy building**, Tapeesh Sood, Matias Quintana, Prageeth Jayathissa, Mahmoud Abdelrahman, and Clayton Miller (Climate Resilient Buildings - Energy Efficiency & Renewables in the Digital Era, CISBAT2019) , **DOI**	*Lausanne, Switzerland*
2017	**Demo: Design and Implementation of a Low-cost Arduino-based High-Frequency AC Waveform Meter Board for the Raspberry Pi**, Matias Quintana, Henning Lange, Mario Bergés (ACM International Conference on Systems for Energy-Efficient Built Environments, BuildSys 2017) , **DOI**	*Delft, Netherlands*

University & Public Engagements

ASHRAE Student Branch, National University of Singapore

Secretary *Feb. 2020 - Present*

- Organised company visits for members and secondary and univeristy students
- Collaborated with industry partners for events and internship opportunities for current student members

Building Research Students Network (BRSnet), School of Design and Environment, National University of Singapore

Treasurer *Aug. 2019 - Present*

- Elaborated budget for year-long events regarding incoming and existing research students at the deparment
- Coordinated workshops with current students to promote research projects and collaborations

Tanglin Secondary School - National University of Singapore Academic Mentoring

Student Mentor *Sep. 2019 - Dec. 2019*

- Mentored Junior Secondary School Students in Mathematics, Chemistry, Physics, and English
- Collaborated with students in classroom games and sports

Internet of Things Club, H. John Heinz III College, Carnegie Mellon University

Co-founder and Technical Director *Jun. 2016 - Dec. 2016*

- Gave technical training during workshops. Covered topics such as sensors, microcontrollers, light weight communications protocols, and circuit design
- Prepared projects for different laboratories and workshops sessions held by the club
- Designed and built PCBs for the club's hardware resources
- Established partnership with Dell's IoT Solutions division and invited to attend the DellEMC World 2016 conference

Latino Graduate Student Association (LGSA), Carnegie Mellon University

President *Dec. 2015 - Dec. 2016*

- Organized social and academic events for the Latino Community on campus
- Represented the Latino Community at Minority Leadership metings with the Provost and Associate Deans
- Raised funds and created awareness for Latino local charities and initiatives through traditional cooking events

Services

2020 **Eleventh ACM International Conference on Future Energy Systems (ACM e-Energy)** , Assistant Reviewer
2020 **Applied Energy Journal**, Assistant Reviewer
2020 **Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)**, Reviewer
2020 **International Workshop on Applied Machine Learning for Intelligent Energy Systems (AMLIES)** , TPC

Awards & Scholarships

2018 - 2022 **NUS PhD Research Scholarship**, National University of Singapore
2015 - 2016 **Graduate Admission Scholarship**, Carnegie Mellon University

Skills

Programming Languages Python, Java, SQL, C, C++, Assembly
Tools/Software LaTeX, EAGLE, Fusion360, RStudio, Matlab/Octave
Hardware Atmel Microcontrollers, Raspberry Pi, Qualcomm DragonBoard
Languages Spanish: Mother tongue, English: Proficient, Chinese: Basic, French: Basic