

WORK & RESEARCH EXPERIENCE

- Future Cities Lab Global, Singapore-ETH Centre**
Postdoctoral Researcher and Module Coordinator

Singapore, SG
 04/2023 – Present

 - **Industrial research:** Collaborated with government agencies and industry partners for AI-based solutions at the urban scale.
 - **Project Management:** Led and managed a team of **6 researchers** (PostDocs, Ph.D. students, and Software developers) across Singapore and Zürich on an **SG\$1,000,000** project.
 - **Data Science:** Mentored Ph.D. students and visiting scholars regarding machine learning and data science projects at the building and urban level.
- Chair of Computational Social Science, ETH Zürich**
Visiting Researcher

Zürich, CH
 09/2023 – 10/2023

 - **Industrial research:** Met with local industry partners ESRI R&D Zürich, to start research exchanges and concrete collaborations.
 - **Project Management:** Prepared and organised presentations and reports for the **Future Cities Lab Global conference**, the Scientific Advisory Committee, and Singapore-ETH Centre researchers.
 - **Data Science:** Engaged and started research projects with Prof. **Dirk Helbing** chair including Ph.D. students and PostDocs.
- College of Design and Engineering, National University of Singapore**
Postdoctoral Research Fellow (BUDSLab)

Singapore, SG
 08/2022 – 03/2023

 - **Field experiments:** Led field studies with wearable technology for health and thermal comfort monitoring.
 - **Data Science:** Lab research and development manager, handled machine learning and data science projects at the building and urban level.
- College of Design and Engineering, National University of Singapore**
Graduate Research Assistant (BUDSLab, SinBerBEST2)

Singapore, SG
 08/2018 – 08/2022

 - **Field experiments:** Conducted field studies with wearable technology for health and thermal comfort monitoring.
 - **Data Science:** Performed unsupervised and semisupervised learning research on a global portfolio of building electricity consumption and field experiment datasets for thermal comfort. Main collaborator and content creator for MOOC **Data Science for Construction Architecture and Engineering (2021 edX Prize Finalist for Innovation in Online Teaching)**.
 - **Hardware & Software:** Organized and maintained laboratory computational resources for scientific research.
- Civil and Environmental Engineering Dept., Carnegie Mellon University**
Graduate Research Assistant, Intelligent Infrastructure Research Lab (INFERLab)

Pittsburgh, US
 04/2017 – 06/2018

 - **Industrial research:** Collaborated in a Department of Energy-funded project regarding Sensing and Control for Commercial Building Energy Efficiency and Occupant Comfort.
 - **Data Science:** Designed and implemented a data preparation and evaluation framework with Bosch U.S. research scientists for RGBD building occupancy data.
 - **Hardware:** Designed, produced, and programmed an AC waveform power meter board based on an Atmega328p for the Raspberry Pi.
- VIT Initiative, LLC. (Acquired by SWORD Health)**
Firmware & Mobile Developer

Pittsburgh, US
 12/2017 – 06/2018

 - **Product development:** Assembled, tested, and performed demonstration of a fully finalized commercial product on clients' sites and funding events.
 - **Data Science:** Developed data collection pipeline for Internet of Things (IoT) devices, mobile devices, and web servers.
 - **Software:** Designed and developed mobile application functionality and user interface for IoT sensor and web server interaction.
- Banking Commission of the Republic of Marshall Islands**
Intern, Technology Consultant

Majuro, MH
 05/2016 – 07/2016

 - **Consulting:** Assessed the current state of technology infrastructure and information management and provided recommendations (comprehensive **final report**)
 - **Software:** Designed, proposed, and implemented data collection and analysis solution for the Financial Intelligence Division.

TEACHING & MENTORING EXPERIENCE

- **Future Cities Lab Global, Singapore-ETH Centre** Singapore, SG
Postdoctoral Researcher and Module Coordinator 04/2023 – Present
 - **Mentoring:**
 - * Mentored **3** Ph.D. students, **1** Research Assistant, and **1** Software Developer in research projects and theses.
 - * Organised and ran workshops and seminars for Machine Learning and Cloud computing tools and effective science communication.
- **Faculty of Science and Engineering, Pontifical Catholic University of Peru** Lima, PE
Visiting Professor 02/2024 – 03/2024
 - **Course 1IND41 - Where (and when) is Waldo?: Introduction to Urban analytics and Geospatial Artificial Intelligence (GeoAI):** Created syllabus and content from scratch and taught lectures, hands-on sessions, and laboratory sessions to undergraduate engineering students.
- **Chair of Computational Social Science, ETH Zürich** Zürich, CH
Visiting Researcher 09/2023 - 10/2023
 - **Course 052-0653-23L - Future Cities Laboratory Indicia 03: Actions and evidences for future settlements:** Gave **2** lectures and facilitated discussions among undergraduate and graduate students at the Department of Civil, Environmental and Geomatic Engineering (D-BAUG)
- **College of Design and Engineering - National University of Singapore** Singapore, SG
Teaching assistant 08/2020 – 03/2023
 - **Mentoring:** Mentored **11** B.Sc., **2** M.Sc., and **3** Ph.D. students in research projects and their theses.
 - **Online teaching:** Main collaborator and content creator for MOOC **Data Science for Construction Architecture and Engineering (2021 edX Prize Finalist for Innovation in Online Teaching)** .
 - **Courses:** Held office hours and taught hands-on sessions and laboratory sessions
 - * PF1103 - Digital Construction (Undergraduate)
 - * PF3211 - AI Applications for the Built Environment (Undergraduate)
 - * BPS5229 - Data Science for the Built Environment (Graduate)
- **Heinz College - Carnegie Mellon University** Pittsburgh, PA
Teaching Assistant 08/2016 – 12/2016
 - **Course 95-703 - Database Management:** Held office hours and laboratory sessions to help students with assignments and class concepts, improved assignments, and designed new homework

EDUCATION

- **National University of Singapore (Singapore): *Ph.D. Engineering*** 2018-2022
Thesis: Cohort-based Personal Comfort Models for HVAC Occupant-Centric Control
- **Carnegie Mellon University (USA): *Master of Info. Sys. Mngmt.*** 2015-2016
Modules: Data Mining; Machine Learning; Data Structures and Algorithms
- **Pontifical Catholic University of Peru (Peru): *B.Sc. Electronic Eng.*** 2009-2014
Modules: Electronic Design; Computer Architecture; Web Technologies

PUBLICATIONS

- **As of March 19, 2024; H-index: 12; Citations: 525**
- **Journals**
 8. Liguori, A., Quintana, M., Fu, C., Miller, C., Frisch, J. & Treeck, C. van. (2024). Opening the Black Box: Towards inherently interpretable energy data imputation models using building physics insight. *Energy and Buildings*, 114071. <https://doi.org/10.1016/j.enbuild.2024.114071>
 7. Fu, C., Quintana, M., Nagy, Z. & Miller, C. (2024). Filling time-series gaps using image techniques: Multidimensional context autoencoder approach for building energy data imputation. *Applied Thermal Engineering*, 236, 121545. <https://doi.org/10.1016/j.applthermaleng.2023.121545>
 6. Nagy, Z., Henze, G., Dey, S., Arroyo, J., Helsen, L., Zhang, X., Chen, B., Amasyali, K., Kurte, K., Zamzam, A., Zandi, H., Drgoña, J., Quintana, M., McCulloch, S., Park, J. Y., Li, H., Hong, T., Brandi, S., Pinto, G., Capozzoli, A., Vrabie, D., Berges, M., Nweye, K., Marzullo, T., & Bernstein, A. (2023). Ten questions concerning reinforcement learning for building energy management. *Building and Environment*, 110435. <https://doi.org/10.1016/j.buildenv.2023.110435>
 5. Quintana, M., Schiavon, S., Tartarini, F., Kim, J., & Miller, C. (2023). Cohort comfort models—Using occupant’s similarity to predict personal thermal preference with less data. *Building and Environment*, 227, 109685. <https://doi.org/10.1016/j.buildenv.2022.109685>
 4. Tartarini, F., Schiavon, S., Quintana, M., & Miller, C. (2022). Personal comfort models based on a 6-month experiment using environmental parameters and data from wearables. *Indoor Air*, 32(11). <https://doi.org/10.1111/ina.13160>

3. Quintana, M., Stoeckmann, T., Park, J. Y., Turowski, M., Hagenmeyer, V., & Miller, C. ALDI++: Automatic and parameter-less discord and outlier detection for building energy load profiles. *Energy & Buildings*, 265, 112096. (2022). <https://doi.org/10.1016/j.enbuild.2022.112096>
2. Jayathissa, P., Quintana, M., Abdelrahman, M., & Miller, C. Humans-as-a-sensor for buildings: Intensive longitudinal indoor comfort models. *Buildings*, 10(174), 1–23. (2020). <https://doi.org/10.3390/buildings10100174>
1. Quintana, M., Arjunan, P. & Miller, C. (2021). Islands of misfit buildings: Detecting uncharacteristic electricity use behavior using load shape clustering. *Building Simulation*, 14(1), 119–130. <https://doi.org/10.1007/s12273-020-0626-1>

• Conferences

26. Fu, C., Kazmi, H., Quintana, M. & Miller, C. (2023). Enhancing Classification of Energy Meters with Limited Labels using a Semi-Supervised Generative Model. *Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, 450–453. <https://doi.org/10.1145/3600100.3626633>
25. Mosteiro-Romero, M., Quintana, M., Miller, C. & Stouffs, R. (2023). From Personal Comfort to District Performance: Using Smartwatch and WiFi Data for Occupant-Driven Operation. *Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, 278–279. <https://doi.org/10.1145/3600100.3626259>
24. Miller, C., Quintana, M., Frei, M., Chua, Y. X., Fu, C., Picchetti, B., Yap, W., Chong, A. & Biljecki, F. (2023). Introducing the Cool, Quiet City Competition: Predicting Smartwatch-Reported Heat and Noise with Digital Twin Metrics. *Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, 298–299. <https://doi.org/10.1145/3600100.3626269>
23. Jin, X., Fu, C., Kazmi, H., Balint, A., Canaydin, A., Quintana, M., Biljecki, F., Xiao, F. & Miller, C. (2023). The Building Data Genome Directory – An open, comprehensive data sharing platform for building performance research. *Journal of Physics: Conference Series*, 2600(3), 032003. <https://doi.org/10.1088/1742-6596/2600/3/032003>
22. Maisha, K., Frei, M., Quintana, M., Chua, Y. X., Jain, R. & Miller, C. (2023). Utilizing wearable technology to characterize and facilitate occupant collaborations in flexible workspaces. *Journal of Physics: Conference Series*, 2600(14), 142009. <https://doi.org/10.1088/1742-6596/2600/14/142009>
21. Mosteiro-Romero, M., Miller, C., Quintana, M., Chong, A. & Stouffs, R. (2023). Leveraging campus-scale Wi-Fi data for activity-based occupant modeling in urban energy applications. *Journal of Physics: Conference Series*, 2600(13), 132008. <https://doi.org/10.1088/1742-6596/2600/13/132008>
20. Quintana, M., Nagy, Z., Tartarini, F., Schiavon, S., & Miller, C. (2022). ComfortLearn: Enabling agent-based occupant-centric building controls. *Third ACM SIGEnergy Workshop on Reinforcement Learning for Energy Management in Buildings & Cities (RLEM) (RLEM '22)*, 4. <https://doi.org/10.1145/3563357.3566167>
19. Miller, C., Chua, Y. X., Frei, M., & Quintana, M. (2022). Towards smartwatch-driven just-in-time adaptive interventions (JITAI) for building occupants. *The 9th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '22)*, 4. <https://doi.org/10.1145/3563357.3566135>
18. Zhan, S., Quintana, M., Miller, C., & Chong, A. (2022). From Model-Centric to Data-Centric: A Practical MPC Implementation Framework for Buildings. *BuildSys '22 Proceedings of the 9th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, 4. <https://doi.org/10.1145/3563357.3564077>
17. Teo, Y. T., Quintana, M., Bin, M. Z., Tan, C., Chong, A., & Miller, C. (2022). Dataset: Green Mark certified buildings metadata from Singapore. *The Fifth International Workshop on Data: Acquisition To Analysis (DATA '22)*, 4. <https://doi.org/10.1145/3560905.3567771>
16. Quintana, M., Abdelrahman, M., Frei, M., Tartarini, F., & Miller, C. (2021). Longitudinal Personal Thermal Comfort Preference Data in the Wild. *Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems*, 556–559. <https://doi.org/10.1145/3485730.3493693>
15. Quintana, M. (2021). Cohort-Based Personal Comfort Models for HVAC Occupant-Centric Control. *Proceedings of the 8th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, 242–243. <https://doi.org/10.1145/3486611.3492386>
14. Nazarian, N., Liu, S., Kohler, M., Lee, J. K. W., Miller, C., Chow, W. T. L., Alhadad, S. B., Martilli, A., Quintana, M., Sunden, L., & Norford, L. K. (2021). Project Coolbit: Can your watch predict heat stress and thermal comfort sensation? *Environ. Res. Lett.*, 16. <https://doi.org/10.1088/1748-9326/abd130>
13. Miller, C., Abdelrahman, M., Chong, A., Biljecki, F., Quintana, M., Frei, M., Chew, M., & Daniel, W. (2021). The Internet-of-Buildings (IoB) – Digital twin convergence of wearable and IoT data with GIS / BIM. *CISBAT 2021 - Carbon Neutral Cities - Energy Efficiency & Renewables in the Digital Era*, EPFL, July. <https://doi.org/10.1088/1742-6596/2042/1/012041>
12. Sae-Zhang, P., Quintana, M., & Miller, C. (2020). Differences in thermal comfort state transitional time among comfort preference groups. *16th Conference of the International Society of Indoor Air Quality and Climate: Creative and Smart Solutions for Better Built Environments*, Indoor Air 2020, November.
11. Quintana, M., Schiavon, S., Tham, K. W., & Miller, C. (2020). Balancing thermal comfort datasets: We GAN, but should we? In *Proceedings of the 7th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation* (pp. 120–129). Virtual Event, Japan. <https://doi.org/10.1145/3408308.3427612>

10. Sood, T., Quintana, M., Jayathissa, P., Abdelrahman, M., & Miller, C. (2019). The SDE4 Learning Trail: Crowdsourcing occupant comfort feedback at a net-zero energy building. CISBAT2019 Climate Resilient Buildings - Energy Efficiency & Renewables in the Digital Era. <https://doi.org/10.13140/RG.2.2.33265.12644>
9. Quintana, M., & Miller, C. (2019). Poster Abstract: Towards Class-Balancing Human Comfort Datasets with GANs. BuildSys '19 Proceedings of the 6th ACM International Conference on Systems for Energy-Efficient Built Environments. <https://doi.org/10.1145/3360322.3361016>
8. Nazarian, N., Miller, C., Norford, L., Kohler, M., Chow, W., Kai, J. L., Alhadad, S. B., Quintana, M., Sundén, L., & Martilli, A. (2019). Project CoolBit Updates: Personal Thermal Comfort Assessments using Wearable Devices. Geophysical Research Abstracts, 21, 13042.
7. Munir, S., Francis, J., Quintana, M., Frankenberg, N. V., & Bergés, M. (2019). Dataset: Inferring Thermal Comfort using Body Shape Information Utilizing Depth Sensors. In ACM (Ed.), DATA'19 Proceedings of the 2nd Workshop on Data Acquisition To Analysis (pp. 13–15). <https://doi.org/10.1145/3359427.3361915>
6. Miller, C., Quintana, M., & Glazer, J. (2019). Twenty years of building simulation trends: Text mining and topic modeling of the BLDG-SIM email list archive topic modeling of the BLDG-SIM email list archive. IBPSA2019 Proceedings of the International Building Performance Simulation Association. <https://doi.org/10.13140/RG.2.2.24955.46885>
5. Francis, J.*, Quintana, M.*, Frankenberg, N. Von, Munir, S., & Bergés, M. (2019). OccuTherm: Occupant Thermal Comfort Inference using Body Shape Information. In BuildSys '19 Proceedings of the 6th ACM International Conference on Systems for Energy-Efficient Built Environments]. New York, NY, USA. <https://doi.org/10.1145/3360322.3360858>
4. Jayathissa, P., Quintana, M., Sood, T., Narzarian, N., & Miller, C. (2019). Is your clock-face cozie ? A smartwatch methodology for the in-situ collection of occupant comfort data. In CISBAT2019 Climate Resilient Buildings - Energy Efficiency & Renewables in the Digital Era. Lausanne, Switzerland.
3. Flores, F., Munir, S., Quintana, M., Prakash, A., & Bergés, M. (2019). Dataset: Occupancy Detection, Tracking, and Estimation Using a Vertically Mounted Depth Sensor. DATA'19 Proceedings of the 2nd Workshop on Data Acquisition To Analysis, 7–9. <https://doi.org/10.1145/3359427.3361916>
2. Quintana, M., Lange, H., & Bergés, M. (2017). Demo: Design and Implementation of a Low-cost Arduino-based High-Frequency AC Waveform Meter Board for the Raspberry Pi. BuildSys '17 Proceedings of the 4th ACM International Conference on Systems for Energy-Efficient Built Environments. <https://doi.org/10.1145/3137133.3141441>
1. Munir, S., Tran, L., Francis, J., Shelton, C., Singh Arora, R., Hesling, C., Quintana, M., Krishnan Prakash, A., Rowe, A., & Bergés, M. (2017). Demo: FORK: Fine grained Occupancy estimator using Kinect on ARM Embedded Platforms. BuildSys '17 Proceedings of the 4th ACM International Conference on Systems for Energy-Efficient Built Environments. <https://doi.org/10.1145/3137133.3141461>

MEDIA

4. [Net-Zero Energy buildings interview](#), TF1, 2023
3. [Science Communication Outreach](#), National University of Singapore, 2023
2. Presenter and panelist at Workshop on Applications and Research in Data Science ([TARECDA](#)), 2022, 2023
1. [Interviewed about scientific and professional career](#), Andina News Agency, 2022

AWARDS

- **Ph.D. Travel Fellowship**
University of Nebraska-Lincoln (UNL), Future of the Building Industry (FOBI) Workshop, Nebraska U.S. 2022
- **Innovation in Online Teaching Finalist**
edX 2021
- **Buildings Best Paper Award**
Buildings MDPI Journal 2020
- **Ph.D. Research Scholarship**
National University of Singapore 2018
- **Admission Scholarship**
Heinz College, Carnegie Mellon University 2015
- **Second Place Best Poster**
Euromed: International Conference on Cultural Heritage 2014

• Grants

- Context-aware and human-centric assessment of the urban environment: From individual experiences to collective understanding in the city and beyond (*Submitted and not granted*), RIE2025 CoT H1 “The Impact of The Built Environment on Mental Wellbeing”, **SG\$1,000,000 (approx. CHF 659,000)** - Principal Investigator (Singapore, 2023)
- Climate Change AI Innovation Grants, up to **USD 150,000 (approx. CHF 127,000)** - Reviewer (2023)

• Journals

- Energy and Buildings - Reviewer (2024)
- Science and Technology for the Built Environment - Reviewer (2024)
- Building and Environment - Reviewer (2021, 2023, 2024)
- Building Simulation - Reviewer (2023)
- Scientific Reports - Reviewer (2023)
- Building Performance Simulation - Reviewer (2022)
- Building Engineering - Reviewer (2022)
- Ambient Intelligence and Humanized Computing - Reviewer (2021)
- Applied Energy - Assistant Reviewer (2020)
- Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) - Reviewer (2020)

• Conferences

- Workshop on Tackling Climate Change with Machine Learning at the International Conference on Learning Representations (ICLR) - Program Committee (2023, 2024)
- ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys) - Organisation Committee (2021, 2022, 2023); Sponsorship Co-Chair (2021, 2022); Poster/Demo Co-Chair (2023); Student Volunteer (2020)
- ACM SIGEnergy Workshop on Reinforcement Learning for Energy Management in Buildings & Cities (RLEM) - Technical Program Committee Co-Chair (2021, 2022, 2023); Web Chair (2021)
- International Workshop on Applied Machine Learning for Intelligent Energy Systems (AMLIES) - Technical Program Committee (2020, 2021, 2022, 2023)
- Workshop on Tackling Climate Change with Machine Learning at the Conference on Neural Information Processing Systems (NeurIPS) - Program Committee (2021, 2022, 2023)
- Workshop on Tackling Climate Change with Machine Learning at the International Conference on Machine Learning (ICML) - Program Committee (2021)
- eSim 2020 Building simulation meets building data, IBPSA Canada - Reviewer (2021)
- ACM International Conference on Future Energy Systems (e-Energy) - Assistant Reviewer (2020)

UNIVERSITY & PUBLIC ENGAGEMENT

- **Access Singapore, NGO** Singapore, SG
Operations and Communications volunteer; mentor 03/2023 - Present
- **Global Young Scientists Summit, National Research Foundation** Singapore, SG
Participant and presenter 01/2023
- **Science Outreach Team, NUS** Singapore, SG
Presenter 08/2022 - 03/2023
- **Woodlands Social Centre** Singapore, SG
Volunteer and Consultant 02/2022 - 12/2022
- **Office of the Senior Deputy President and Provost, NUS** Singapore, SG
Member of the National University of Singapore (NUS) Board of Discipline 07/2021 - 06/2022
- **Office of Student Affairs, NUS** Singapore, SG
Resident Assistant and Secretary 06/2020 - 06/2022
- **ASHRAE Student Branch, NUS** Singapore, SG
Secretary 02/2020 - 05/2021
- **Building Research Students Network, NUS** Singapore, SG
President; former Treasurer 08/2019 - 07/2022

- **Office of Student Affairs, NUS**
Mentor at Teach with Heart@Tanglin Secondary School
Singapore, SG
07/2019 - 10/2019
- **Internet of Things Club, Carnegie Mellon University**
Co-founder and Technical Director
Pittsburgh, PA
06/2016 - 12/2016
- **Latino Graduate Student Association, Carnegie Mellon University**
President; former Treasurer
Pittsburgh, PA
08/2015 - 12/2016

HOBBIES & SKILLS

- **Hobbies:** Weightlifting, running, salsa dancing, playing string instruments, photography
- **Languages:** Spanish, English, French, Chinese
- **Programming & Scripting languages:** Python, Bash, SQL, JAVA, R, MATLAB, C/C++

REFERENCES

- **Filip Biljecki**
Assistant Professor, National University of Singapore
Email : filip@nus.edu.sg
- **Clayton Miller**
Associate Professor, National University of Singapore
Email : clayton@nus.edu.sg
- **Stefano Schiavon**
Professor, UC Berkeley
Email : schiavon@berkeley.edu
- **Mario Bergés**
Professor, Carnegie Mellon University
Email : marioberges@cmu.edu