

# FRANCISCO CASTRO

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## EDUCATION

- Ph.D. in COMPUTER SCIENCE**, Worcester Polytechnic Institute Expected: **May 2020**  
HUMAN-COMPUTER INTERACTION and LEARNING SCIENCES specialization
- MASTER of INFORMATION TECHNOLOGY**, Ateneo de Manila University 2014
- BACHELOR OF SCIENCE in COMPUTER SCIENCE**, University of the Philippines Los Baños 2010

## EXPERIENCE

- LEAD RESEARCHER** 01/2015 – Present  
Computing Learning Research Group, WORCESTER POLYTECHNIC INSTITUTE  
**VISITING RESEARCHER** – Joint appointment at BROWN UNIVERSITY  
Lead researcher on National Science Foundation (NSF)-funded human-centered research projects exploring human behavior, cognition, and interactions with programming systems and technologies. Produced award-winning analytical frameworks and research methodologies published at top international research conferences, now increasingly used by other researchers. Led the development and implementation of field and longitudinal research studies that combined user research and cognitive science-based techniques and methodologies to study human-technology interaction.
- HUMAN-COMPUTER INTERACTION RESEARCH and UX ENGINEER INTERN** 05/2018 – 08/2018  
Research and Development, AMADEUS, USA  
Lead developer of the interactive front-end interface of TripMercy, an airline operations response system. Analyzed the user behaviors and system interactions of airline operations managers and used insights from these to implement a novel visualization of flight information, airline delays, and situational response protocols with D3.js, Node.js, and Angular.
- DATA SCIENCE LEARNING CONTENT DEVELOPMENT INTERN** 05/2016 – 08/2016  
DATACAMP, USA  
Designed and developed online interactive data science courses that have been used by about 400,000 learners worldwide to date. Developed software for automated evaluation and feedback of user submissions, and beta-tested products. Online courses deployed: Python Data Science Toolbox series [[Part-1](#), [Part-2](#)] and Importing Data in Python series [[Part-1](#), [Part-2](#)]
- USER EXPERIENCE DESIGNER** 03/2014 – 06/2014  
Traffic Computing Research Group, ATENEO DE MANILA UNIVERSITY, PHILIPPINES  
Designed and developed user interfaces for Android mobile and web applications of a traffic and air pollution analysis system. Conducted initial usability testing to enhance the user experience of the Android and web interfaces.
- VISITING RESEARCHER** 10/2013  
Augmented Human Communication Lab, NARA INSTITUTE OF SCIENCE AND TECHNOLOGY, JAPAN  
Developed the automatic speech recognition system of the Augmented Human Communication Laboratory by mining web and video resources for speech patterns using in-house Python tools and libraries.
- TECHNICAL and RESEARCH CONSULTANT** 06/2013 – 01/2014  
Social Computing Science Lab, ATENEO DE MANILA UNIVERSITY, PHILIPPINES  
Deployed a Department of Science and Technology (DOST)-funded Android mobile healthcare information system to local government implementation sites across five Philippine regions. Provided field technical training on mobile healthcare system usage to medical and public health practitioners. Conducted and published research on eHealth technology development and deployment in a developing country. [<http://ehatid.ehealth.ph/>]

## SKILLS

### RESEARCH METHODS

- Survey design
- Focus groups
- Think-aloud protocols
- Grounded Theory
- Interviews
- Ethnography
- Contextual inquiry
- Card sorting

### PROGRAMMING

- Python
- R
- TypeScript
- Angular
- HTML5
- Anaconda platform
- Java
- D3.js
- JavaScript
- Node.js
- Android SDK
- Visual Studio Code

### SOFTWARE TOOLS

- Dedoose
- Qualtrics
- Justinmind
- Trello
- Microsoft Office suite
- NVivo
- SurveyMonkey
- Adobe Photoshop, InDesign
- Slack
- Google suite
- Snagit
- SPSS
- Git (via GitHub, BitBucket)
- Zotero

## SELECTED RESEARCH PROJECTS AND PUBLICATIONS [Full list at: [franciscastro.github.io/publication](https://franciscastro.github.io/publication)]

### HUMAN-COMPUTER INTERACTION AND COGNITION

- Designing a Multi-Faceted SOLO Taxonomy to Track Program Design Skills Through an Entire Course. Koli Calling International Conference on Computing Education Research. 2017. **BEST PAPER AWARD.** [\[pdf\]](#)
- Talk-Alouds with Novice Functional Programmers. ACM International Computing Education Research Conference. 2017. [\[pdf\]](#)
- On the Interplay Between Bottom-Up and Datatype-Driven Program Design. ACM Technical Symposium on Computer Science Education. 2016. [\[pdf\]](#)
- An Analysis of Java Programming Behaviors, Affect, Perceptions, and Syntax Errors among Low-Achieving, Average, and High-Achieving Novice Programmers. Journal of Educational Computing Research. 2013. [\[pdf\]](#)

### HEALTH INFORMATICS AND MOBILE HEALTH TECHNOLOGIES

- eHealth TABLET: A Developing Country Perspective in Managing the Development and Deployment of a Mobile-Cloud Electronic Medical Record for Local Governments. IEEE International Conference on Mobile Data Management 2014. [\[pdf\]](#)
- Bottom Up Approach and Devolved Design of a Health Information System: eHealth TABLET. International Conference on Brain and Health Informatics. 2013. [\[pdf\]](#)

### DATA MINING IN EDUCATION AND INTELLIGENT TUTORING SYSTEMS

- Building Models to Predict Hint-or-Attempt Actions of Students. International Conference on Educational Data Mining. [\[pdf\]](#)

### SIMULATION DEVELOPMENT FOR CROWD COMPUTING

- Microsimulations of Arching, Clogging, and Bursty Exit Phenomena in Crowd Dynamics. Philippine Information Technology Journal. 2013. **BEST PAPER AWARD.** [\[pdf\]](#)

## ACADEMIC POSITIONS

**TEACHING ASSISTANT**, WORCESTER POLYTECHNIC INSTITUTE, USA 08/2014 – 12/2014

Awarded **Computer Science Teaching Assistant of the Year** as lead TA for two large courses (120-150 students/class): Introduction to Program-Design and Object-Oriented Design. Taught and managed laboratory classes, designed and assessed course requirements, and managed undergraduate 10-member teaching assistant teams.

**INSTRUCTOR**, ATENEO DE MANILA UNIVERSITY, PHILIPPINES 06/2013 – 07/2014

Redesigned an undergraduate course on computing and information technology. Taught undergraduate and graduate computer science courses and interdisciplinary courses on health informatics and IT, with class sizes of 30-40 students.

**INSTRUCTOR**, UNIVERSITY OF THE PHILIPPINES LOS BAÑOS, PHILIPPINES 06/2011 – 05/2013

Redesigned and taught undergraduate computer science courses for both CS and non-CS majors, with course sizes of 100-150 students. Authored university publication articles as member of the College of Arts and Sciences Publication Committee.

## PROFESSIONAL ORGANIZATIONS AND SERVICE

**ACM SPECIAL INTEREST GROUP ON COMPUTER-HUMAN INTERACTION (SIGCHI)** 2017 – Present

**ACM SPECIAL INTEREST GROUP ON COMPUTER SCIENCE EDUCATION (SIGCSE)** 2016 – Present

**RESEARCH REVIEWER**, Conference on Innovation and Technology in Computer Science Education 2017 – Present

**RESEARCH REVIEWER**, ACM Technical Symposium on Computer Science Education 2016 – Present