Jessica de Souza

Graduate Student Researcher – University of California San Diego
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I joined the University of California San Diego as a Ph.D. student in January of 2020, where I joined the Ubiquitous Data Computing Laboratory advised by Professor Edward Wang. At UCSD, my research focuses on solving problems in healthcare and enabling affordable and convenient personal health monitoring for patients with specific needs. More specifically, I am exploring new ways of measuring blood pressure using smartphones in adults that need an easy self-assessment of their heart conditions. Also, I am exploring a new project related to maternal and neonatal care to better understand and improve the breastfeeding experience for newborns using sound analysis and smart devices. My research interests involve ubiquitous computing and human-computer interaction for healthcare and how we can build accessible devices for people in need, especially for chronic illnesses. I am also interested in novel methods to get reliable biological data, either by using sensors, smartphones, or other devices. My technical background includes HCI and cognitive science, ubiquitous computing, sensing techniques, hardware development, embedded systems, data analysis, and signal processing.

Education History

- **Ph.D., Electrical and Computer Engineering** — **Jan. 2020 - Present**
  University of California San Diego (UCSD), USA — *Current GPA: 3.587*
- **B.E., Telecommunications Engineering** — **2013 - 2019**
  Federal Institute of Santa Catarina (IFSC), Brazil
- **Exchange Student, Electrical and Computer Engineering** — **2014 - 2015**
  University of Nevada, Reno, USA
- **Intensive English Language Center, High Advanced** — **2014**
  University of Nevada, Reno, USA

Employment History

Research

- **UC San Diego** — **Dr. Edward J. Wang**
  Graduate Student Researcher, Ubiquitous Data & Computing Lab — *Since January 2020*

  At the UDComp Lab, I am exploring new sensing techniques for biological signal acquisition using sensors, hardware development and programming in embedded systems. Some sensors I've worked with are: heart rate (PPG), pressure, thermal imaging, temperature probing, EMG.

- **Microsoft Research, Redmond** — **Dr. Sidhant Gupta and Dr. Jonathan Lester**
  Undergraduate Intern, Clinical Sensing and Analytics Group — *May 2018 - August 2018*

  At MSR I created a novel wearable pulse sensing interface to improve cardiovascular health monitoring, with a non-invasive signal enhancement technique. I evaluated and compared it to existing wearable interfaces in a controlled study.

- **Federal Institute of Santa Catarina, Brazil**
  Research & Extension

  Dr. Elen M. Lobato and Ramon M. Martins

  1. *Research student* — *June 2017 - December 2017*

     I analyzed heart activities from a dataset involving myocardial infarction, arrhythmias, and healthy subjects, to predict abnormalities in cardiovascular exams.

2. **Dr. Jorge H. Busatto Casagrande**
Research student *June 2016 - December 2016*

Developed a novel sensor for electrical and hydraulic monitoring in residential electric showers to reduce water and energy consumption.

3. **Dr. Pedro Armando da Silva Junior**
Extension student *February 2016 - June 2016*

Taught middle and high school students the concepts of embedded systems and basic robotics. Worked towards increasing the number of students in the STEM field.

- **University of Nevada, Reno** **Dr. Yantao Shen**
Research student, Bioinstrumentation and Automation Lab *June 2014 - July 2015*

At UNR I worked on the "E-Braille" project, collecting bioimpedance from the fingertip to find correlations between finger applied force and the bioimpedance, for an electrical stimulation closed-loop system.

Industry

- **AQTech Power Prognostics, R&D Team**
Software Development Analyst *July 2019 – November 2019*

I worked with Analog Devices' WirelessHART technologies for a wireless sensor network for an energy power plant. Implemented protocols and coded in firmware and intermediate level (C/C++) for specific applications. I also started and managed the testing table process for large-scale device manufacturing.

- **IMEX Medical Group**
Equipment Maintenance and Installation Intern *March 2019 – July 2019*

At IMEX I've provided corrective and preventive maintenance in digital X-rays, ultrasounds, mammography, and CT. I also did remote access to install and correct bugs in x-ray systems, exam visualization software, and hospital database. I have gained experience with the following brands for hardware and software: Terarecon, IRAY, Barco, Hologic Dimensions, Alpinion Medical Systems.

Honors, Awards, and Grants

- **2017** Second place at the IFSC Innovative Ideas Contest, Brazil. 10,000.00 BRL grant.
- **2017** Best extended abstract at the VIII Computer on the Beach. UNIVALI, Brazil.
- **2015** Outstanding First-Year Student In Chinese. University of Nevada, Reno, USA.
- **2014** Scholarship Holder of CAPES (Improvement Coordination of Higher Education Personnel), in the Brazil Scientific Mobility Program (BSMP).

Technical and Personal skills

- **Programming Languages:** Familiar with: C, C++, Python, Java, Android, PowerShell, HTML, CSS.
- **Industry Skills:** Signal processing, analog and digital circuits, wireless communication & RF, computer networks, embedded systems (hardware & firmware), human-computer interaction, prototyping and testing devices, medical imaging equipment.
- **Personal Skills:** Written and oral communication, project management, activity and environment organization, problem-solving, leadership, creativity, eager to learn.
- **Softwares:** MATLAB, Multisim, Eagle, Visual Studio, Quartus ModelSim, GIT, Linux, Proteus Circuit, AutoCAD.
- **Relevant Courses:** Linear algebra, cognitive science foundations, foundations for future user interfaces, human-centered computation for health, embedded system design project, human-centered programming, programming for data analysis, introduction to biophysics, principles of biomedical imaging, medical devices and interfaces.

Extra-curricular activities

- UDComp Lab Spring break research experience. Eagle tutorial for undergraduates. UC San Diego. 2021.
- Volunteer at ACM international joint conference on pervasive and ubiquitous computing (UBICOMP). Online. 2020.
- Presented several inspirational talks at my undergraduate university about: engineering careers, opportunities during college, exchange programs, why is it important to learn a new language, experiences as a woman in STEM. Between 2015 and 2018.
- Attended the Annual Ideagen UN Empowering Women Girls 2030 Summit. United Nations NY. 2018.
- Organizing committee, IEEE Latin American Symposium on Circuits and Systems. Florianopolis, Brazil. 2016.

References

- Edward Wang, Ph.D., UC San Diego.
- Sidhant Gupta, Ph.D., Microsoft Research.
- Samuel Heiderscheidt, Imex Medical Group.
- Roberto Wanderley da Nóbrega, Ph.D., Federal Institute of Santa Catarina.