Chang Long Zhu Jin

Portfolio: **www.changlongzj.com**
Phone: +1 (857) 200-8389 (USA)
E-mail: changlongzj@gmail.com

Education

Sept. 2014– June 2015	**Visiting Researcher** Fluid Interfaces Group - Media Lab – Massachusetts Institute of Technology (Cambridge, USA) *Thesis:* "Physicalization of Affective Interfaces", *directed by Professor Pattie Maes and Jordi Albo*
2013 – 2015	**M.Sc. in Electrical Engineering** La Salle – Ramon Llull University (Barcelona, Spain) *With Honors (GPA: 3.7/4)*
2009 – 2014	**B.Sc. in Electrical Engineering and Computer Science** La Salle – Ramon Llull University (Barcelona, Spain) *With Honors (GPA: 3.4/4)*

Experience

April 2016 – Present

Research Engineer

Costumer Experience (CX) Lab – Samsung Research America

Responsible for developing hardware and software prototypes for new types of interaction for current and future display and display-related devices. Worked closely with UX researchers, designers (IxD, ID, and Vis) to create prototypes that can be used in real scenarios.

Research and implementation of new types of sensing technologies (such as radar, capacitive and piezoelectric systems) for human activity recognition, gesture detection, and context awareness. Following iterative processes, exploring feasibility from off the shelf parts, to custom PCB design, such as for fast signal processing data. Patenting new type of interaction using hovering input technologies. Developed proof of concepts through custom PCB design, using ARM microcontrollers, developed signal processing techniques, as well as translating raw data to semantic information

Perform data analysis Python in to analyze behavior on Samsung smart devices usage across US.

Developed applications using NodeJS and Python, as well as development through Android and C++ (UI with OpenFrameworks).

In charge of fostering relationships with outside companies and universities and other groups within Samsung, in order to scout next generation sensing and input/output technologies.

Notable products commercialized: Samsung The Frame TV. In charge of exploring UX and technology for future displays and interactions. Developed algorithms that adapts to the user behavior and room settings.

July. 2015 – March 2016

Research Engineer Intern

Research Track - Next Experience Display Lab - Samsung Research America

IoT Ambient Intelligence Architecture: A reference design that brings all components necessary for Samsung to realize the future IoT UX in the form of an extensible environment for UX developers leverage prototype scenarios. The three core concepts involve 1) gathering IoT device data and events, 2) analysis and decision making, and 3) methods of actuating devices. Developed the architecture using Django, Crossbar and Celery, as well as creating Android-based demos.

Indoor localization: Responsible of defining and developing early stage proof of concept for context awareness and indoor localization to leverage IoT UX that works with existing IoT radio hardware and standards. Developing firmware from different manufacturers' chips, as well as analysis software to explore concept feasibility.

UX Prototyping Track – Costumer Experience Lab – Samsung Research America

In charge of creating hardware and software prototypes to validate ideas for projects within CX Lab with the end goal of study the usability and feasibility of the concept. Multiple stage processes, from early experimentation to designing PCBs and front end development.

Sept. 2014 – June 2015

Research Assistant at Fluid Interfaces Group

MIT Media Lab, Cambridge, MA, USA

Data-Objects: In a two-people project, ideated a new approach of data physicalization of psycho-physiological data from users through. The physical object has unique features as a result of the user's data, thus embodying characteristics that is transferred back for self-reflection. We researched different shapes, as well as textures. Developed the smartwatch application to monitor heart rate during the day, as well as parametrization of the resulting shapes.

Cardio: Combining sensing techniques for physiological data collection (camera, radar, and GSR). Creating non-traditional feedback techniques to induce behaviour change by using pneumatic shape-changing steering wheel, as well as ambient light to reflect mood and physiological signals.

Social Textiles: Social textiles embodies who you are and dynamically reflects the interests with people nearby. Developed the proof of concept using thermochromic paint and conductive textiles we can control different messages depending on the proximity provided by BLE and capacitive sensing.

KickSoul: A wearable device that maps natural feet movements into inputs for digital devices. It consists of an insole with embedded IMU that tracks movement and triggers actions in devices that surround us.

Sept. 2013 – July 2014

Research Assistant at PAL Robotics

PAL Robotics, Barcelona, Spain

	Team lead and engineer to compete in the international RoboCup@Home using the robot REEM-H2. Developing ROS-based (Robot Operating System) software modules to execute daily human tasks such as grasping, object and speech recognition.
June 2013 – Sept. 2013	**Visiting Researcher at ESARP Lab, ECE Department**
	The University of Memphis, TN, USA
	Responsible for optimizing the system based on the ARM PSoC 3 for lower power consumption, through data storage and relay by DMA, and system management. The work was an effort for the development of a wearable BCI for EEG to monitor neuronal states.
Sept. 2012 – July 2014	**Research Assistant**
	La Salle – Ramon Llull University, Barcelona, Spain
	Robotics Lab: Developing iOS apps for LEGO Mindstorms to teach children with brain trauma, in order to improve their cognitive and social skills.
	Home Automation Lab: Developing open-source software to control proprietary home automation protocol KNX using Raspberry Pi.
	Media Technologies: Collaboration with TUM (Germany) to develop a robot with Kinect gestures based control.
Sept. 2013 – July 2014	**Teaching Assistant**
	La Salle – Ramon Llull University, Barcelona, Spain
	Developing the course-work for students for lab practices in major electronics subjects: Basic Electronics, Analog Electronics, and VHDL/FPGA

Patents

2017	Yoganandan, Arun Rakesh, Stacie Hibino, and Chang Long Zhu Jin. "REMOTE HOVER TOUCH SYSTEM AND METHOD." U.S. Patent Application 15/581,412, filed December 21, 2017.
2017	Chang Long Zhu Jin, Arun Yoganandan. "A METHOD OF MANAGING A PLURALITY OF DEVICES". US. Patent Application 15/858,667. 2017
2017	Arun Yoganandan, Chang Long Zhu Jin, Kumi Akiyoshi, Kyle McGill, Stacie Hibino. "SYSTEM AND METHOD FOR OBJECT MODIFICATION USING MIXED REALITY". US. Patent Application 15/850,310. 2017
2017	Arun Yoganandan, Kumi Akiyoshi, Chang Long Zhu Jin, Tais Mauk, Jay Hong. "SYSTEM AND METHOD FOR CONTEXT-BASED INTERACTION FOR ELECTRONIC DEVICES". US. Patent Application 15/857,301. 2017

Publications

2015	Chang Long Zhu*, Harshit Agrawal*, Pattie Maes: "Data-Objects: Redesigning Everyday Objects as Tactile Affective Interfaces". ACII 2015
2015	Xavier Benavides, Chang Long Zhu, Pattie Maes, Joe Paradiso. "Kicksoul: A Wearable System for Feet Interactions with Digital Devices". UIST 2015. *(to appear)*
2015	Chang Long Zhu, Xavier Benavides, Judith Amores, Roger Boldu, Pattie Maes. "Cardio: Designing Affective Interfaces for Driver Self-Awareness". Persuasive Technology 2015. *(to appear)*
2015	Viirj Kan, Katsuja Fujii, Judith Amores, Chang Long Zhu, Hiroshi Ishii and Pattie Maes. "Social Textiles: Social Affordances and Icebreaking Interactions Through Wearable Social Messaging". TEI'15, 2015.
2013	Alex Barco, Jordi Albo-Canals, Carles Garriga-Berga, Miguel Kaouk Ng, Juan Pablo Forero, Chang Long Zhu And Xavier Vilasís-Cardona, Laura Callejón, Marc Turón, Claudia Gómez And Anna López-Sala, "Robotics Therapy For Children With Traumatic Brain Injury (TBI)". IROS 2013
2012	K. Olaskoaga, J.P. Forero, L. Palm, C.L. Zhu. "Introduction To The Robotics With LEGO MINDSTORMS – Social Use Of The LEGO MINDSTORMS Robots" Hispabrick Magazine, 2012.

Skills

	- **Hardware**: Analog electronics, Digital Electronics (MCU), ARM SoC, PCB (Altium/Eagle), Spice. - **Software**: C/C++, Java, Python. - **Firmware**: Assembly, C, VHDL. - **Rapid Prototyping**: Arduino, Processing, OpenFrameworks - **Protocols – Sensor networks**: ZigBee (+Pro), 802.15.4 - **Robotics**: ROS, Sphinx. - **Simulation**: Matlab, Cadence, OrCAD (Spice). - **Fabrication/Modelling**: OpenSCAD, Fusion360

Grants

March 2013 – July 2014	Funitec Scholarship