

# JOSUE (JOSH) SANZ – ROBINSON

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## EDUCATION

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### Ph.D.: Electrical Engineering

Sept. 2010 – May 2016 (expected)

Princeton University, Princeton, New Jersey

- Thesis Topics: Microphone arrays, TFTs and transducers, audio signal processing, “wallpaper” sensor systems.
- Advisors: Prof. James C. Sturm (principal), Naveen Verma, Sigurd Wagner.

### Bachelor of Engineering: Honours Electrical Engineering

Sept. 2006 – May 2010

McGill University, Montreal, Canada

- Cumulative GPA: 3.89 / 4.00. Top 5% of class. Graduated with Dean’s Honor List (highest graduation honors).

## SELECTED AWARDS

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Qualcomm Innovation Fellowship (Awarded to 8 out of 138 teams from top engineering universities)	2013
VLSI Symposium Best Student Paper (Leading circuits conference)	2013
James McGill Award, McGill University (Top 5% of class)	2008
J.B. Woodyatt Scholarship, McGill University (Top 5% of class)	2008
Louis C. Ho Scholarship in Engineering, McGill University (Top 5% of class)	2007

## EXPERIENCE

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### Research Assistant, Large Area Electronics Group (Princeton University)

May 2011 – Present

- Led a five student team to demonstrate the first flexible microphone array with a wallpaper format.
- Designed an algorithm to separate voices of multiple people talking simultaneously (blind source separation), based on beamforming and machine learning (cluster analysis).
- Developed transparent, flexible microphones constructed out of piezoelectric thin-film (PVDF), and associated flexible instrumentation circuitry (based on a-Si TFTs).
- Co-authored over 20 journal publications / conference papers, and obtained one patent.

### Acoustic Systems Engineer Intern, Cirrus Logic, Austin, TX

June 2015 – Sept. 2015

- Developed a machine learning algorithm for improving voice quality in high noise environments for a pre-product launch headphone.

### Teaching Assistant, Electronic Circuits Design Analysis (Princeton University)

Sept. 2014 – Jan. 2015

- Coordinated logistics, lectured and advised the 45 students enrolled on the “Electrocardiogram system project.”
- Obtained a course evaluation score from students of 4.8/5.0 (Department Average: 3.9/5.0).

### Research Assistant, Wireless ICs and MEMS Lab (McGill University)

May 2009 – June 2010

- Designed a novel method for packaging MEMS (micron sized electro-mechanical systems) using silicon carbide thin film encapsulation, which significantly reduces fabrication costs and can withstand harsh environments.

## SKILLS

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**Languages:** Native fluency in English and Spanish. Intermediate French and Portuguese.

**Programming:** MATLAB, C, Java, JS, Assembly (MIPS), VHDL.

**Design Software:** Cadence, L-Edit, Sentaurus TCAD, Quartus II, pSpice.

**Microfabrication:** Thin-film process engineering (PECVD, RIE, lithography), mask design, material characterization.

## INTERESTS

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Equestrian (Show Jumping: Placed third out of 72, Amateur 1m, El Rancho, Sept, 2009; second out of 48, Amateur 1m, La Hacienda, Aug. 2010), Scuba diving (PADI Open Water Diver), Specialty coffee, Quadcopters and UAVs, Entrepreneurship and the business aspects of technology.

## SELECTED CONFERENCES AND PUBLICATIONS

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J. Sanz-Robinson, L. Huang, T. Moy, W. Rieutort-Louis, Y. Hu, S. Wagner, J. C. Sturm, and N. Verma, "Robust Blind Source Separation in a Reverberant Room Based on Beamforming With a Large-Aperture Microphone Array," *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Sept. 2015 (submitted).

J. Sanz-Robinson, L. Huang, T. Moy, Y. Hu, W. Rieutort-Louis, S. Wagner, J. C. Sturm, and N. Verma, "Reconstruction of Multiple-user Voice Commands using a Hybrid System Based on Thin-film Electronics and CMOS," to appear in *IEEE J. of Solid-State Circuits (JSSC)*, (invited).

J. Sanz-Robinson, W. Rieutort-Louis, Y. Hu, L. Huang, N. Verma, S. Wagner, and J. C. Sturm, "Hybrid Amorphous / Nanocrystalline Silicon Schottky Diodes for High Frequency Rectification," *IEEE Electron Device Letters*, vol. 35, no. 4, pp. 425-427, April 2014.

W. Rieutort-Louis, J. Sanz-Robinson, T. Moy, L. Huang, Y. Hu, Y. Afsar, J. C. Sturm, N. Verma, S. Wagner, "Integrating and Interfacing Flexible Electronics in Hybrid Large-Area Systems," *IEEE Trans. Components, Packaging and Manufacturing Technology (TCPMT)*, vol. 5, no. 9, pp. 1219-1229, Sept. 2015 (invited).

Y. Hu, L. Huang, W. Rieutort-Louis, J. Sanz Robinson, S. Wagner, J. C. Sturm, and N. Verma, "3D Gesture Sensing System for Interactive Displays Based on Extended-range Capacitive Sensing," *Int'l Solid-State Circuits Conf. (ISSCC)*, Feb. 2014.

Y. Hu, W. Rieutort-Louis, J. Sanz Robinson, L. Huang, B. Glisic, J. C. Sturm, S. Wagner, and N. Verma, "Large-scale Sensing System Combining Large-area Electronics and CMOS ICs for Structural Health Monitoring," *IEEE J. of Solid-State Circuits (JSSC)*, vol. 49, no. 2, pp. 513-523, Feb. 2014.

## PATENT

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Yingzhe Hu, Liechao Huang, Warren Rieutort-Louis, Josue Sanz-Robinson, Naveen Verma, Sigurd Wagner and James C. Sturm (2013). "System and Method for 3D Position and Gesture Sensing of Human Hand", Patent No. WO2014182824.