SIDHARTH SAHDEV

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EDUCATION

2015 – 2017 **Master of Science, Applied Computing**
Department of Computer Science, University of Toronto, Toronto, Canada.
Research focus: Machine Learning & Human Computer Interaction.

2014 – 2015 **Bachelor Research in HCI**
INFRES Department, Telecom ParisTech, Paris, France.
Research focus: Human Computer Interaction & Robotics.

2011 – 2015 **Bachelor of Engineering (Honors), Electronics & Communications**
Electrical Engineering Department, Birla Institute of Technology & Science, Pilani, Hyderabad, India.
Research focus: Electronics & Image Processing.

PUBLICATIONS

ACM SIG-CHI 2017 **Sidharth Sahdev**, Clifton Forlines, Ricardo Jota, Bruno De Araujo, Braon Moseley, Jonathan Deber, Steven Sanders, Darren Leigh, Daniel Wigdor; GhostID: Enabling Non-Persistent User Differentiation in Frequency-Division Capacitive Multi-Touch Sensors; To appear CHI '17. (10 + 3 pages. ***AR: 25%***)

ACM SIG-CHI 2016 Gilles Bailly, **Sidharth Sahdev**, Sylvain Malacria, Thomas Pietrzak; LivingDesktop: Augmenting Desktop Workstation with Actuated devices; CHI '16 (10 + 3 pages. ***AR: 23%***)

IEEE VLSI-SATA 2015 Apurva Kumari, **Sidharth Sahdev**, S.K. Sahoo; Improved Single Image and Video Dehazing Using Morphological Operation; VLSI-SATA '15 (5 pages)

EXPERIENCE

Research Engineer
August 2017 - Present
MTL.AI Inc., Montréal, QC, Canada
mtl.ai is an augmented reality based startup for marketing and digital advertising in the sports industry. Worked on implementing optimized and trained geometric models for localization of sports fields using techniques in graphics and optimization. Working on real-time pixel accurate image segmentation, image alignment, radial distortion estimation using online deep-learning techniques for HD video broadcasting (C++/Python/GLSL).

Researcher
May 2016 – May 2017
Tactual Labs Co., Toronto, ON, Canada
Tactual Labs Co. is an innovator in human-to-computer sensing and processing technology. Worked on a patented User Differentiation technique without any external hardware. Also, developed interaction techniques that depict the mobility and usefulness of the sensing technology (Python/Java/Octave).

Research Assistant
Jan 2016 – May 2016
Centre for Vision Research, York University, Toronto, ON, Canada
Worked on object detection using Convolutional Neural Networks. Created a dataset and experimented with different deep neural network architectures (Python).

Research Intern
May 2014 – July 2015
LTCI, CNRS, Télécom ParisTech, Université Paris-Saclay, Paris, France
Worked on the LivingDesktop: an augmented desktop that improves ergonomics, fosters collaboration, leverages context and reinforces physicality in desktop workstation. Involved concepts in Robotics, Image Processing, and HCI. Also, designed novel interaction scenarios for a desktop workstation (C/C++).

Junior Researcher
May 2012 – July 2015
R&D, Security Defence Systems, Baddi, HP, India (part-time).
Security Defence Systems is a 29-year-old ISO 9001 company that manufactures the largest range of sophisticated EOD equipment. I have worked in the R&D unit of the organization for varied durations over three years. Contributed to EOD robot motor control code and trained the circuit testing team (C/C++/MATLAB).

Software Developer
Oct 2013 – July 2015
xBITS Pvt. Ltd. with NPMASS DRDO-BITS Hyderabad, India (part-time).
xBITS Pvt. Ltd. Is a start-up company that provides cost effective rapid detection and testing devices for diseases in rural and urban areas. I have been a core team member since the inception of the idea and have created the frontline device, 'RightBiotic' – The fastest Antibiotic Finder in the world (C/MATLAB).

Internship
May 2013 – July 2013
Centre for Electronic Engineering and Research Institute, Govt. of India, Pilani, Rajasthan, India
Generated real-time anaglyph images using computer vision algorithms and Kinect for windows sensor. It was aimed at testing the features of a 3-D endoscope using Kinect (C#).

Technical Lead — **Valonia, Hyderabad, AP, India (part-time).**
Nov 2011 – July 2014 — Valonia is an educational startup that provides a revolutionary way of imparting practical skills to students. I delivered lectures and took workshops on Robotics and Electronics in various colleges across India. Also, judged national technical events at colleges.

ACADEMIC PROJECTS

Department of Computer Science, University of Toronto, Toronto, Canada

Sept 2015 – May 2016 — Graduate course-work

- Deep Learning: learned about state-of-the art methods for many Computer Vision and Natural Language Processing applications. Project work titled *BackpackDetector: A Deep Learning Approach for Specific Object Detection for Surveillance Systems.*
- Parallel Programming: learned about CUDA-C on NVIDIA GPUs. Project work titled *An Evaluative Study of CUDA Implementation of Histogram of Oriented Gradient (HOG) Descriptor for Images.*
- Machine Learning: Graduate course on machine learning. Project work titled *An Evaluation of the state of the art techniques for the detection and classification of SVHN digits using local image descriptors.*
- Computer Vision: learned about principles in radiometry, robust estimation, tracking and recognition.
- Human Computer Interaction: an empirical research analysis course in HCI. Project work titled *A Comparative Evaluation of Two User Interfaces on Smartwatches.*

Birla Institute of Technology & Science, Pilani Hyderabad Campus, India

Aug 2014 - Nov 2014 — Perceptual Computing: interactions with 3D objects

- Worked with the leap motion sensor to study and implement the interactions with 3-D objects to sculpt out a point cloud created by a Kinect sensor.

Sept 2014 – Nov 2014 — Image and Video Encryption

- Studied various cryptography algorithms and implemented the Elliptic curve cryptosystem for fast image and video encryption

Jan 2014 – April 2014 — Whether degraded image and video processing and its real time implementation

- Implemented computer vision technique to remove haze/fog from images and live streaming videos.

TEACHING

- Teaching Assistant at University of Toronto: Python (Winter '17, Fall '16), R (Winter '16) and Microprocessor (Fall '15).
- Mentor to First, Second and Third year undergraduates at BITS Pilani: Image processing and Robotics (2013-14).

SKILLS

Programming languages : C, C++, Python, Processing, Java, GLSL, CUDA.
Operating System : Linux, Macintosh, Windows.
Assembly languages : Basics of ASM x86, MIPS and NIOS II.
Libraries : numpy, scipy, sklearn, OpenCV, Caffe, OpenGL, Tensorflow, OpenAI.
Software : QT, MATLAB, ROS (beginner), Visual-Studio, PyCharm, LabVIEW, Android Studio, Kivy, ccstudio, basic Keil, Xilinx, ltspice, Electric, Eagle, ORCAD, QtSpim, Netsim, Opnet, Solid Edge, AutoCAD.
Hardware : GPU, SDI Video Cards, Arduino Development Platform, AVR, Altera DEC-1 boards, basic ARM cortex M4, spectrum analyzer, TMS320C6713 DSP Processor (basic).
Sensors : Kinect, Leap Motion, Capacitive FDM multi-touch sensors, IMUs, PTZF Cameras, EM based sensors.

GRANTS, SCHOLARSHIPS & HONOURS

- OCE TalentEdge scholarship for $CAD 30,000 to conduct an eight-month research internship (2016).
- Grant sanction worth € 4,800 to carry out my Bachelors thesis work in France (2015).
- Received Raman Charpak Internship Scholarship by Campus France to carry out research work in France (2014).
- Winner of BEST (Biotechnology Entrepreneurship Student Teams) India 2014 organized by ABLE (Association of Biotechnology Led Enterprises); won a prize money worth Rs. 500,000 ($10,000) for a successful startup idea under xBITS.
- Exhibitor at INTERSEC Exhibition 2014 held in Dubai, UAE by Messe Frankfurt.
- Felicitated at **BITSAA Global Meet 2014** with a memento for my startup idea on Under Vehicle Surveillance System.
- Received merit scholarships for being in the top 1% and 2% of the 650 students of BITS Pilani for two terms (2011-12).
- **Tri-City topper** among all ICSE (The Indian Certificate of Secondary Education) schools in 2009, was felicitated by the State Bank of Patiala and Taj Group of hotels.
- Received **bronze standard in the international award** for the young people in the D.O.E (Duke of Edinburgh) 2008.

EXTRACURRICULAR

- I play tennis and represented my school twice at state level. Member of All India Tennis Association for 3 years.