

# Subhajit Chaudhury

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EDUCATION	<b>Indian Institute of Technology, Bombay, India</b> M.Tech, Department of Electrical Engineering GPA : <b>9.81 out of 10 (Rank: 2<sup>nd</sup>/24)</b>	July 2012 - June 2014
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**Jadavpur University**, Kolkata, India July 2008 - June 2012  
 B.E.(Hons.) Department of Electrical Engineering  
 GPA - **8.90 out of 10(Rank: 3<sup>rd</sup>/125)**

PUBLICATIONS Subhajit Chaudhury, Gaku Nakano, Jun Takada, Akihiko Iketani, **Spatial-temporal motion field analysis for crack detection on concrete surfaces**, WACV 2017(under review)

Vijay Daultani, Subhajit Chaudhury, Kazuhisa Ishizaka, **Convolutional Neural Network Layer Re-ordering for acceleration**, SASIMI 2016

Sourav Saha, Pritha Ganguly, Subhajit Chaudhury. **Vision Based Human Pose Estimation for Virtual Cloth Fitting**. ICVGIP 2014(Poster : Acceptance rate 26%)

Subhajit Chaudhury, Subhasis Chaudhuri. **Volume preserving haptic pottery** in IEEE,HAPTICS 2014(**Oral : Acceptance rate 27%**)

Hiya Roy, Subhajit Chaudhury, **Digitalisation of a Peak Voltmeter display and subsequent error minimisation using Polynomial Compensation technique**, IEEE CALCON 2011

WORK EXPERIENCE	<b>Researcher</b> <i>NEC Central Research Labs, Japan</i>	October 2014- Present
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**Graduate Teaching Assistant** July 2012- April 2014  
*Indian Institute of Technology, Bombay, India*

RESEARCH EXPERIENCE	<b>Computer vision based predictive infrastructure maintenance</b> <i>NEC Central Research Labs, Japan</i>	October 2014- Present
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- Working on Neural Attention based Recurrent Fully Convolutional Network (A-RFCN) for crack detection from images.
- Developed a Conditional Random Fields (CRF) based internal deterioration detection in bridges using spatial-temporal motion field analysis obtained from dense frame-wise optical flow.
- Obtained computational speed-up in Convolutional Neural Network (CNN) inference by rearranging pooling and activation layer ordering for non-decreasing activation non-linearities.

**Master of Technology (M. Tech) thesis**  
*IIT Bombay, India*

December 2012- June 2014  
 Prof. Subhasis Chaudhuri

- *Haptic Pottery* : Developed a realistic deformation model for incompressible semi-solid clay based virtual pottery with volume preservation using Rayleigh clay distribution function, providing real time visual feedback at 25 fps and tactile feedback at 1000 Hz.
- *Tactile Virtual chat* : Proposed a 3D virtual reality based conferencing system with multi-client environment sharing providing real-time graphics rendering and tactile feedback using custom-made wearable haptic suit.

	<b>Student Mentorship for Summer Interns</b> April 2014 - June 2014 <i>IIT Bombay, India</i> - <i>Virtual Trial-Room</i> :Developed a real-time virtual cloth fitting using generic web camera input by representing human joints with a Directed Acyclic Graph (DAG) obtained from body parts detection and structurally aligning the input garment to the edges of the DAG. Mentored intern students for developing the algorithm and implementation in OpenCV.
	<b>Undergraduate (B.E.) project</b> Jan 2012 - May 2012 <i>Jadavpur University, India</i> Prof. Amitava Chatterjee - <i>Vision based door detection</i> : Developed a door detection algorithm for autonomous mobile robot navigation by generating proposals for candidate door-like structures followed by a fuzzy classifier for final door detection based on geometric features.
PATENTS	Subhajit Chaudhury and Gaku Nakano , <b>A device for automatic crack detection from 2D motion in video sequences</b> , PCT/JP2016/072700 ( <i>filed at NEC</i> )  Subhajit Chaudhury, Vineet Gokhale, Subhasis Chaudhuri , <b>A virtual reality system and method for providing synchronous tactile feedback for user interaction</b> , Indian Patent, 503/MUM/2015 ( <i>filed at IIT Bombay</i> )
AWARDS AND ACHIEVEMENTS	<ul style="list-style-type: none"> <li>• Secured All India Rank <b>33 out of 110,125</b> students in Electrical Engineering, GATE-2012.</li> <li>• Secured rank <b>86/100,000</b> students in West Bengal Engineering Entrance Examination 2008</li> <li>• Received academic excellence award for <b>1<sup>st</sup></b> position in class X (2006) and XII (2008) exam.</li> <li>• Awarded <b>1<sup>st</sup></b> position prize in Inter-School coding competition.</li> </ul>
RELEVANT PROJECTS	<b>Can fully convolutional networks perform well for general image restoration problems?</b> Proposed a fully convolutional network model for learning direct end-to-end mapping between corrupted images and desired clean images for general image restoration task. Preliminary results indicate that FCN models show potential for fast and accurate image restoration performance.  <b>Direct reconstruction of dense 3D non-rigid deformation from 2D correspondences</b> Developed dense 3D surface deformation estimation method from monocular images by minimizing local-global 3D to 2D motion re-projection functional using Euler-Lagrange minimization method.  <b>Deep Hyperspectral image classification</b> Implemented classification of Hyperspectral Satellite Images Using Convolutional Neural Networks.
TEACHING EXPERIENCE	-Teaching Assistant for Signals and System, Prof Animesh Kumar, IIT Bombay, Spring-2013. -Teaching Assistant for Digital Signal Processing , Prof Animesh Kumar, IIT Bombay, Autumn-2013 -Teaching Assistant for Computer Vision, Prof Subhasis Chaudhuri, IIT Bombay, Spring 2014
RELEVANT COURSES	<b>Electrical Engineering:</b> Wavelets, Statistic Signal Processing , Applied Linear Algebra , Digital Signal Processing, Number Theory and Cryptography, Digital Message Transmission  <b>Computer Science:</b> Computer Vision, Foundations of Machine Learning, Computer Graphics, Advanced Computer Graphics
COMPUTER SKILLS	<ul style="list-style-type: none"> <li>• <b>Programming Languages :</b> <i>C, C++, Java, Python</i></li> <li>• <b>Tools :</b> <i>Matlab, OpenCV, CUDA, OpenGL</i></li> <li>• <b>Machine learning Tools :</b> <i>scikit-learn, Theano + Lasagne, Keras, Caffe, Matconvnet</i></li> </ul>