

# Gaurav Chaurasia

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## Research Interests

- Image-based rendering
- Image warping
- Computational photography
- GPU acceleration of image processing algorithms
- Multi-view stereo

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## Current

2014- **Postdoctoral Associate, *Massachusetts Institute of Technology, MA, USA*** (Adviser: Prof. Fredo Durand)  
Domain specific language for expressing image convolutions as recursive filters to achieve constant time complexity, automatically generate code for multiple architectures and optimize the implementation for GPUs.

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## Education

2010-2014 **Ph.D in Computer Science, *INRIA Sophia Antipolis, France*** (Adviser: Dr. George Drettakis)  
THESIS: ALGORITHMS & PERCEPTUAL ANALYSIS FOR INTERACTIVE FREE VIEWPOINT IMAGE-BASED NAVIGATION.

2009-2010 **M.Sc in Computer Science, *ENSIMAG & INRIA Sophia Antipolis, France***

2005-2009 **B.Tech in Computer Science, *Indian Institute of Technology Delhi, India*** (Adviser: Dr. Subodh Kumar)  
THESIS: REAL TIME TRAFFIC SIMULATION. Multi-agent simulation for chaotic city traffic which generalizes existing approaches which are restricted to lane-based driving.

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## Visiting Positions

Summer 2013 **Visiting student, *Massachusetts Institute of Technology, MA, USA*** (Adviser: Dr. Fredo Durand)  
Halide ([halide-lang.org](http://halide-lang.org)) frontend for parallel execution of non-parallel algorithms like recursive filters.

Summer 2012 **Visiting student, *University of California Berkeley, CA, USA*** (Adviser: Dr. Ravi Ramamoorthi)  
Procedural noise functions for synthesizing non-Gaussian textures.

Feb-Jun 2010 **Intern, *INRIA Sophia Antipolis, France*** (Adviser: Dr. George Drettakis)  
Image-based rendering for urban scenes.

Summer 2008 **Intern, *NVIDIA Bangalore, India***  
OpenGL-ES extensions for GPU driver for embedded systems, OpenGL-ES 2.0 conformance test suite bugs.

Summer 2007 **Intern, *Dublin City University, Ireland*** (Adviser: Dr. Derek Molloy)  
Memory exercises as 3D games and user studies to test effect of 3D user interfaces on human recall.

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## Publications

- 2014 E. Chapoulie, R. Guerchouche, PD Petit, G. Chaurasia, P. Robert, G. Drettakis. “Reminiscence Therapy using Image-based Rendering in VR”, *IEEE Virtual Reality*. [\[www\]](#) [\[doi\]](#)
- 2013 G. Chaurasia, S. Duchene, O. Sorkine-Hornung, G. Drettakis. “Depth Synthesis and Local Warps for Plausible Image-based Navigation”, *ACM Trans. Graph.* 32(3) (presented at SIGGRAPH 2013). [\[www\]](#) [\[doi\]](#)
- 2013 P. Vangorp, C. Richardt, E.A. Cooper, G. Chaurasia, M.S. Banks, G. Drettakis. “Perception of Perspective Distortions in Image-Based Rendering”, *ACM Trans. Graph.* 32(4) (SIGGRAPH 2013). [\[www\]](#) [\[doi\]](#)
- 2011 G. Chaurasia, O. Sorkine, G. Drettakis. “Silhouette-aware Warping for Image-based Rendering”, *Comput.*

*Graph. Forum* 30(4): 1223-1232 (EGSR 2011). [\[www\]](#) [\[doi\]](#)

- 2011 P. Vangorp, G. Chaurasia, PY Laffont, R. Fleming, G. Drettakis. “Perception of Visual Artifacts in Image-Based Rendering of Façades”, *Comput. Graph. Forum* 30(4): 1241-1250 (EGSR 2011). [\[www\]](#) [\[doi\]](#)
- 2011 M. Cabral, P. Vangorp, G. Chaurasia, E. Chapoulie, M. Hachet, G. Drettakis. “A Multimode Immersive Conceptual Design System for Architectural Modeling & Lighting”, *IEEE Symposium on 3D User Interfaces (3DUI 2011)*. [\[www\]](#) [\[doi\]](#)
- 2010 G. Chaurasia, B.R. Selvamani, N. Gupta, S. Kumar. “Virtual Chaotic Traffic Simulation”, *Indian Conference on Computer Vision, Graphics & Image Processing (ICVGIP 2010)*. [\[www\]](#) [\[doi\]](#)

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## Invited talks

- Jul 2013 Algorithms and Perception for Interactive Free-Viewpoint Image-Based Navigation, *Microsoft Research Redmond (eXtreme Computing Group)*. [\[Talk\]](#)
- Sept 2013 Algorithms for Interactive Free-Viewpoint Image-Based Navigation, *MIT CSAIL (Graphics Lunch)*. [\[Abstract\]](#)

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## Professional Activities

- 2014 Reviewer for [ACM Transactions on Applied Perception, Pacific Graphics 2014](#)
- 2013 Reviewer for [SIGGRAPH Asia 2013](#)
- 2012 Reviewer for [Journal of Signal, Image and Video Processing](#)
- 2011 Reviewer for [SIGGRAPH 2012, Eurographics 2012](#)

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## Scholarships & Awards

- Aug 2010 PhD fellowship (*Allocation de Recherche*) by the French ministry for 3 years of PhD studies.
- Aug 2009 Scholarship of Excellence (*Bourse d'Excellence*) by ENSIMAG for one year of Master's studies.
- May 2007 Scholarship for 12 week research internship ‘ODCSSS-07’ in Dublin by Science Foundation of Ireland.
- Jun 2005 All India Rank 54 in IIT-JEE 2005 (entrance examination for Indian Institutes of Technology) amongst nearly 300,000 aspirants.

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## Technical Skills

C++, MATLAB, OpenGL, GLSL, CUDA, OpenCV, Java,  $\text{\LaTeX}$ , SVN, Git, Bash, Vim, Visual Studio

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## References

Available on request.