

# Micah Taylor

812.877.8396

<http://www.kixor.net/>

[micah@kixor.net](mailto:micah@kixor.net)

---

## Research interests:

Interactive sound propagation : Realtime ray tracing : Visibility & rendering

---

## Education:

- PhD - Computer Science, May 2014  
"Interactive Sound Propagation for Massive Multi-user and Dynamic Virtual Environments"  
University of North Carolina, Chapel Hill
- MS - Computer Science, 2012  
University of North Carolina, Chapel Hill
- BS - Computer Science, 2004  
Technical Translator in German, 2004  
Rose-Hulman Institute of Technology

---

## Work experience:

- Rose-Hulman Institute of Technology, 2012 - Present  
*Assistant Professor*
  - Taught introductory and elective courses
  - Served as academic adviser to CS/SE students
  - Worked with colleagues and served on committees to improve Computer Science and Software Engineering course offerings
- Green Hills Software, 2018  
*Software Engineer*
  - Investigated and documented advanced debugging techniques
  - Designed undergraduate course on robust and repeatable debugging processes
- Impulsonic (now Valve), 2016  
*Senior Researcher*
  - Developed proprietary acoustic algorithms.
  - Developed software with team in-office and remotely
- University of North Carolina, Gamma group 2007 - 2012  
*Research Assistant*
  - Created interactive [GPU based sound propagation system](#) for early specular reflection and diffraction
  - Designed interactive [acoustic simulation](#) with diffuse, specular, and diffraction components
  - Developed [diffraction tracing](#) using real-time ray frustum tracer
- Dolby - San Francisco, CA Summer 2010  
*Research intern*
  - Designed fast GPU and CPU based audio rendering system
  - Collaborated with senior researchers on large scale acoustic rendering systems

- Baker Hill (now Experian), Carmel, IN 2004 - 2007  
*Software Engineer*
  - Served as lead designer on critical path projects for major [products](#)
  - Developed tools to automate refactoring of over 50,000 lines of code
  - Designed and implemented automatic build and deploy process across multiple platforms and devices

---

## Teaching experience:

- Rose-Hulman Institute of Technology, 2012 - present  
*Assistant Professor*  
Courses taught:
  - Introduction to Computer Systems - 11
  - Object-Oriented Software Development - 1
  - Data Structures and Algorithm Analysis - 1
  - Computer Architecture - 18
  - Computer Graphics - 5
  - Advanced Computer Graphics - 3
  - Independent study - 6
  - Thesis - 2 advised
- University of North Carolina, Introduction to Computer Graphics, Fall 2011  
*Instructor*
  - Full responsibility for course, including structure and lectures
  - Designed homeworks, quizzes, and programming assignments
  - Held office hours and graded assignments
- University of North Carolina, Advanced Image Synthesis, Fall 2008  
*Teaching Assistant*
  - Implemented Wavefront OBJ loader for ray tracing scenes
  - Graded assignments and tested assignment softwares
- University of North Carolina, Computer Architecture, Fall 2007  
*Teaching Assistant*
  - Conducted reviews of classroom materials
  - Held office hours and graded assignments
- Hancock County Public Library, Greenfield IN Summer 2003  
*Volunteer*
  - Prepared and taught basic Java programming class
  - Handled lab setup and student questions
- Hancock County Public Library, Greenfield IN 1999 - 2000  
*Volunteer*
  - Taught basic Internet skills class
  - Worked with students on example internet use
  - Tutored basic computer use

---

## Skills:

- Programming  
C, C++, Javascript, PHP, VB6, C#, MATLAB, Java, SQL, Scheme
- APIs & Tools  
CUDA, OpenGL, OpenMP, SDL, Blender, Final Cut, Audacity, Apache, Git, Bash

---

## Projects:

- Designed and developed [CourseUp](#), a domain specific language for defining courses in a flexible and intuitive format.
- Implemented platform independent [realtime ray tracer](#). Supports multiple hierarchy structures, split-selectors, shaders, and post-processing.
- Designed and implemented [fast motion](#) blur effects using sample reprojection. Generates similar results to stochastic motion blur at a fraction of the cost.
- Maintain and host my [personal webpage](#). Custom code and design with database backend and light frontend.

---

## Publications:

### Journals and conferences

1. Micah Taylor. [CourseUp: Human readable course language](#), Journal of Computing Sciences in Colleges 2018
2. Micah Taylor, Sid Stamm, and Christine Taylor. [The impact of changing homework frequency in a computer architecture course](#), Journal of Computing Sciences in Colleges 2018
3. Micah Taylor and Francis Meng. [Web-based geometric acoustic simulator](#), 23rd International ACM Conference on 3D Web Technology 2018  
[10.1145/3208806.3208817](#)
4. Micah Taylor, Anish Chandak, Qi Mo, Christian Lauterbach, Carl Schissler, and Dinesh Manocha. [Guided Multiview Ray Tracing for Fast Auralization](#), IEEE Transactions on Visualization and Computer Graphics 2012 (26%)  
[10.1109/TVCG.2012.27](#)
5. Lakulish Antani, Anish Chandak, Micah Taylor, Dinesh Manocha. [Direct-to-Indirect Acoustic Radiance Transfer](#), IEEE Transactions on Visualization and Computer Graphics 2012 (26%)  
[10.1109/TVCG.2011.76](#)
6. Lakulish Antani, Anish Chandak, Micah Taylor, Dinesh Manocha. [Efficient finite-edge diffraction using conservative from-region visibility](#), Applied Acoustics 2011 (43%)  
[10.1016/j.apacoust.2011.09.004](#)
7. Anish Chandak, Lakulish Antani, Micah Taylor, Dinesh Manocha. [Fast and Accurate Geometric Sound Propagation using Visibility Computations](#), International Symposium on Room Acoustics 2010
8. Micah Taylor, Anish Chandak, Lakulish Antani, Dinesh Manocha. [RESound: Interactive Sound Rendering for Dynamic Virtual Environments](#), 17th International ACM Conference on Multimedia 2009 (16%)  
[10.1145/1631272.1631311](#)
9. Anish Chandak, Lakulish Antani, Micah Taylor, Dinesh Manocha. [FastV: From-point Visibility Culling on Complex Models](#), 20th Eurographics Symposium on Rendering 2009 (29%)  
[10.1111/j.1467-8659.2009.01501.x](#)
10. Micah Taylor, Anish Chandak, Zhimin Ren, Christian Lauterbach, Dinesh Manocha. [Fast Edge-Diffraction for Sound Propagation in Complex Virtual Environments](#), EAA Symposium on Auralization 2009
11. Anish Chandak, Christian Lauterbach, Micah Taylor, Zhimin Ren, Dinesh Manocha. [AD-Frustum: Adaptive Frustum Tracing for Interactive Sound Propagation](#), IEEE Transactions on Visualization and Computer Graphics 2008 (26%)  
[10.1109/TVCG.2008.111](#)

## Patents

1. Anish Chandak, Lakulish Antani, Micah Taylor, Dinesh Manocha.  
Methods and systems for direct-to-indirect acoustic radiance transfer, [US 8995675](#)
2. Nicolas Tsingos, Micah Taylor.  
Method and system for split client-server reverberation processing, [US 8958567](#)
3. Anish Chandak, Lakulish Antani, Micah Taylor, Dinesh Manocha.  
Methods, systems, and computer readable media for fast geometric sound propagation using visibility computations, [US 8847695](#)

## Other

- Micah Taylor, Anish Chandak, Lakulish Antani, Dinesh Manocha, [Interactive geometric sound propagation](#), EE Times, 2010
- Micah Taylor, Anish Chandak, Lakulish Antani, Dinesh Manocha, [Interactive Geometric Sound Propagation and Rendering](#), Intel Academic Spotlight, 2010
- Micah Taylor, Anish Chandak, Zhimin Ren, Christian Lauterbach, Dinesh Manocha. Fast edge diffraction for sound propagation in complex virtual environments, [Acoustical Society of America's North Carolina Chapter](#) (Best presentation award), 2009