Ritesh Sharma

https://sharmrit.github.io/Homepage

Education

Ph.D. in Computer Science (CGPA 4.0/4.0) August, 2018 - Present
Computer Graphics and Animation
Advisor: Professor Marcelo Kallmann
University of California, Merced, California

M.S. in Computer Science (CGPA 3.45/4.0) March, 2017
Computer Graphics and Visualization
Thesis: Interactive Design and Transition Point Analysis of 3D Linear Symmetric Tensor Fields
Advisor: Professor Eugene Zhang
Oregon State University, Corvallis, Oregon

B. Tech. in Computer Science and Engineering (CGPA 8.45/10) August, 2010
West Bengal University of Technology, India

Professional Experience

Senior Graphics Programmer, *Passur Aerospace Inc., United States* May 17 - August 18

- Software Development
  - Developed interactive graphical user interface and visualize shape files for new functionalities in Passur's web tracker and desktop-based flight tracking system.
  - Contribute to back-end by writing server side code to communicate with database.
  - Research and Analyzed different JavaScript framework and built functionality which will contribute to the foundation of the company's future product that will be used by major airlines and airports both in US and International with React/Redux from scratch

Intern (Mathematica Algorithm R&D), *Wolfram Research Inc., United States* Apr 16 - Aug 16

- Software Development
  - Developed software package to connect Wolfram's Mathematica with Pixar's Renderman.
  - Software package testing for geometry primitives, plot functions and functionalities used for 3D Printing.

Graduate Research Assistant, *Oregon State University, United States* Mar, 14 - Dec, 16

- 3D Symmetric Tensor Field Analysis and Visualization
  - Improved topology extraction techniques using A-Patches and by solving analytical solutions.

Research Assistant, *Indian Institute of Technology Bombay, India* Oct, 10 - Dec, 13

- Virtual Laboratory for Urban Transportation System Planning Course
  - Developed an accurate, reliable and autodidactic web-based virtual laboratory

Publications

- Zhang, Y., **Sharma, R.**, Zhang, E., Maximum Number of transition points in a 3D Linear Symmetric Tensor Fields, TopoInVis 2017, Tokyo, Japan, Feb 27th-28th, 2017
- Jenny, B., Stephen, D. M., Muehlenhaus, I., Marston, B. E., **Sharma, R.**, Zhang, E., Jenny, H, Force-directed layout of origin-destination flow maps, International Journal of Geographic Information Science (IJGIS), 2017
- Zhang, E., Palacios, J., Yeh, H., Wang, W., Zhang, Y., Laramee, B., **Sharma, R.**, Schultz, T., Feature Surfaces in Symmetric Tensor Fields Based on Eigenvalue Manifold, IEEE TVCG, Issue 99, March 1, 2016. Also featured at **SIGGRAPH ASIA 2016** and **IEEEVIS 2016**.
- Jenny, B., Stephen, D. M., Muehlenhaus, I., Marston, B. E., **Sharma, R.**, Zhang, E., Jenny, H, Design Principles for Origin-destination Flow Maps, Cartography and Geographic Information Science (CaGIS), 2016
- Nelson, V., **Sharma, R.**, Zhang, E., Schmittner, A., Jenny, B., 3D visualization of global ocean circulation, AGU Fall Meeting, San Fransisco, CA, Dec 18, 2015

- Stephen, D., Jenny, B.,**Sharma, R.**, Zhang, E., Muehlenhaus, I. (2015). Automatic Flow map creation using a force-directed layout. North American Cartographic Information Society Annual Meeting, Minneapolis, MN Oct. 15, 2015
- **Sharma, R.**, Jadhav, S., Tripathy, D., Sardar, V. H., Patil, G. R., Virtual Laboratory: An alternative approach to Urban Transportation Systems Planning Lab, Transportation Research Board, 93rd Annual Meeting, Washington, D.C, USA, 2014

Technical Skills

- **Programming and Scripting Languages**: C(Proficient), C++(Proficient), GLSL, PHP, HTML, CSS, Javascript, JQuery, Wolfram Language
- **Frameworks and Platforms**: wxWidgets, QT, OpenGL, OpenMP, OpenCL, EmberJS, React, Redux, GitHub and Stash
- **Software**: Microsoft Visual Studio, Matlab, Eclipse, Netbeans, Renderman, Mathematica, Wolfram Workbench, Rhinoceros 3D, Unreal Engine 4.0, WebStorm 2018

Academic Projects

- Realtime Multi-Agent Crowd Simulation
  - Implemented algorithm from the paper titled *Position-Based Multi-Agent Dynamics for Real-Time Crowd Simulation* by T. weiss et. al.(2017), as part of Computer Animation and Simulation Class at UC Merced.
- 3D visualization of global ocean circulation
  - Developed a visualization tool for showcasing mixing of ocean water at different density level and its effect on the distribution of tracers such as carbon isotopes.
- Isosurface Extraction using A-Patches
  - Achieved a better isosurface defined by a polynomial of any degree using A-Patch.
- Smoke Simulation
  - Implemented particle based method to simulate smoke.
- Pool Game Animation
  - Implemented Pool game simulation.
- Flow Visualization
  - Implemented Line Integral Convolution to visualize vector field using streamlines.

Graduate Course Highlights

University of Caliornia Merced Grades

- EECS 287: Computer Animation and Simulation A

Oregon State University

- CS 551: Computer Graphics A
- CS 554: Geometric Modeling A-
- CS 557: Computer Graphics Shaders A
- CS 575: Intro to Parallel Computing A

Teaching Exprience

Teaching Assistant, *University of California Merced* August 18 - Present

- CS 030: Data Structures (Fall 2018, Spring 2019)

Graduate Teaching Assistant, *Oregon State University* Jan, 14 - March, 17

- CS 325: Analysis of Algorithm (Winter 2016)

- CS 340: Introduction to Databases (Spring 2014, Spring 2015, Summer 2015)
- CS 344: Operating Systems I (Winter 2017)
- CS 480: Translators (Winter 2014)

Journal Reviewer

- ICAPS 2019, Association for the Advancement of Artificial Intelligence

Co-Curricular

- Received Honorary Citizenship of Corvallis, Oregon for contributions and achievements at Oregon State University by the mayor of city of Corvallis, Oregon, United States
- ACM Student Member since 2015
- Poster Presentation on 3D Symmetric Tensor Field Visualization at Engineering Research Expo held at Portland Art Museum, Portland, Oregon, Mar 1, 2016.
- Mentored a senior undergraduate student under REU (Research Experience for Undergraduate) Program during Summer 2015, funded by NSF.
- Poster Presentation on Mode Surface Extraction Using A-Patches at Engineering Research Expo held at Oregon Convention Center, Portland, Oregon, Mar 4, 2015.