Ritesh Sharma

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https://sharmrit.github.io/Homepage

Education

Ph.D. in Computer Science (CGPA 4.0/4.0) August, 2018 - Present
Research Area: Computer Graphics, Navigation, Path planning, Spatial representation and Visualization
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

Graduate Student Researcher, *University of California, Merced, United States* *May 19 - Present*

- *Investigating research topics in Path planning, Navigation and Crowd Simulation in 2D and 3D and visualization of navigation metrics in 2D.*

PhD Researcher(Intern), *Hasso-Plattner-Institut, Potsdam, Germany* *May 20 - present*

- *Investigating topics in geometry interaction related to laser cutting.*

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.*
  - *Contributed to back-end by writing server side code to communicate with database.*
  - *Contributed to the foundation of the company's product used by major airlines and airports, US and International, by building core functionality and integration 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

- ***Sharma, R.**, Weiss, T., Kallmann, M., Formation-Aware Planning and Navigation, Eurographics (Full paper), 2021 (Submitted).*
- ***Sharma, R.**, Weiss, T., Kallmann, M., Plane-Based Local Behaviors for Multi-Agent 3D Simulations with Position-Based Dynamics, IEEE International Conference on Artificial Intelligence and Virtual Reality (IEEE AIVR), 2020.*

- ***Sharma, R.**, Weiss, T., Kallmann, M., 3D Behaviors for Multi-Agent Simulations with Position-Based Dynamics, ACM SIGGRAPH Symposium of Interactive 3D Graphics and Games(I3D) 2020 (Poster paper), San Francisco, United States, 14th-18th September, 2020.*
- ***Sharma, R.**, Farias, R., Kallmann, M., Integrating Local Collision Avoidance with Shortest Path Maps, EuroGraphics 2020 (Poster paper), Norrkoping, Sweden, May 25th-29th, 2020.*
- ***Sharma, R.**, Tomson, A., Lobato, E., Kallmann, M., Padilla, L., Data Driven Multi-Hazard Risk Visualization, EuroVis 2020 (Poster paper), Norrkoping, Sweden, May 25th-29th, 2020.*
- *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 **ACM 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, GitLab and Stash*
- **Software***: Microsoft Visual Studio, Matlab, Eclipse, Netbeans, Renderman, Mathematica, Wolfram Workbench, Rhinoceros 3D, Unity3D, Unreal Engine 4.0, WebStorm 2018*

Teaching Experience

Teaching Assistant, *University of California Merced* *August 18 - June 20*

- *CS 020: Introduction to Computing I: Java (Spring 2020)*
- *CS 030: Data Structures (Fall 2018, Spring 2019)*
- *CS 170: Computer Graphics (Fall 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)*

Academic Projects

- *Predictive Modeling of Flood Susceptibility, Phase 1*
  - *Worked with group of researcher from different discipline at UC Merced and USRA (University Space Research Association) for modeling and visualization of predictive based flood visualization.*

- *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 California 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*

Awards

- *EECS Bobcat Travel Fellowship 2020*
- *Travel award for NSF sponsored SOCG 2019, Portland, Oregon*
- *EECS Bobcat Fellowship 2019*
- *EECS Bobcat Travel Fellowship 2019*
- *Graduate Assistantship (Full tuition & Stipend) at University of California Merced (2018- Present)*
- *Graduate Assistantship (Full tuition & Stipend) at Oregon State University (2014-2017)*
- *Received Honorary Citizenship of Corvallis, Oregon for contributions and achievements at Oregon State University by the mayor of city of Corvallis, Oregon, United States*

Journal/Proceedings Reviewer

- *ACM MIG 2019, ACM MIG 2020, ICAPS 2019, CASA 2019, CASA 2020*

Co-Curricular

- *Peer mentor for two first year PhD students under UC Merced GRAD-EXCEL Peer Mentor Program for the academic year 2020-2021.*
- *Served as the Secretary of the Merced Indian Graduate Student Association (MIGSA) at University of California Merced for the academic year 2019-2020, California, USA*

- *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.*
- *ACM and ACM SIGGRAPH Student Member since 2015*
- *Served as Student Volunteer at ACM SIGGRAPH 2019 held at Los Angeles, July 28th - August 1st, 2019*

References

Professor Marcelo Kallmann (PhD Advisor)
University of California, Merced, USA
Email: mkallmann@ucmerced.edu

Professor Patrick Baudisch
Hasso-Plattner-Institut, Potsdam, Germany
Email: patrick.baudisch@hpi.de

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New Jersey Institute of Technology, USA
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