PRASHANT KUMAR

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Web Page

EDUCATION

Oregon State University (OSU), Corvallis, USA (GPA 3.72/4.00)

Sept 2014 – Present M.Eng., Computer Science
Ph.D., Computer Science (Ongoing)

Indian Institute of Technology (IIT), Kharagpur, India

July 2003 – May 2008 B.S., Chemistry, Honors
M.S., Chemistry

PROFESSIONAL EXPERIENCE

Divergent Technologies, Inc., Torrance, California, USA

March 2019 – July 2019 Intern, Software Development

- Multi-Material Selection Optimization (MMSO)

Developed a tool to recognize and recommend commercial off-the-shelf (COTS) to reduce the overall cost of 3D printing process

Wolfram Research, Inc., Champaign, Illinois, USA

June 2016 – Sept 2016 Intern, Mathematica Algorithm R&D

- Linked Wolfram's Mathematica with SideFX's Houdini

Developed software package to connect Mathematica with Houdini, for reading geometry data useful for plot functions and other functionalities of 3D Printing

Department of Computer Science, OSU

Sept 2014 – Present Graduate Assistant

- Geometry and Field Processing on Non-Orientable Surfaces

Designed and developed topological modifications and remeshing of non-orientable surfaces

- Connectivity Editing for Hexahedral Meshes

Designed and optimized topological modifications of hexahedral meshes

- Robust and Fast Extraction of 3D Symmetric Tensor Field Topology

Designed and visualized degenerate curves and neutral surfaces of 3D symmetric tensor fields

- Interactive Design and Visualization of N-ary Relationships

Designed and visualized N-dimensional binary relationships of graphs and networks

- Tensor Field Design in Volumes

Designed tensor field in volumes important in graphics applications like solid texturing, and geometry synthesis

- Interactive Design and Visualization of Branched Covering Spaces

Designed and visualized branched covering spaces of arbitrary surface and fields

- Visualization of Escher Pattern on 3D models

Designed drawing rules for Escher pattern on triangular mesh

3DPLM Software Solutions (Dassault Systemes Subsidiary), R&D Division, Bangalore, India

May 2013 – Sept 2014 Software Engineer

- Designed and developed generalized automation features for applications such as Machining, Robotics, Simulations, Sensors and Riveting Operations
- Managed Product Lifecycle of various modules in Digital Enterprise Lean Manufacturing Interactive Application

Sept 2008 – April 2011 Software Engineer

- Integrated True Type Extension fonts and font size capability into Computer-Aided Three-Dimensional Interactive Application

Responsible for designing, developing, testing and delivering the functionalities to end users

Department of Chemistry, University of Montreal (UDeM), Montreal, Canada

May 2011 – March 2013 Research Assistant

- Studied flow control in microfluidic channels

Explored nanometric deflections of microcantilever actuators in response to a change in pH/potential

TEACHING EXPERIENCE

Department of Computer Science, OSU

Summer 2017 – 2018 Instructor

- Instructed undergraduate level course in CS261, **Data Structures** (65 Students)

Covered topics of Big-O, Dynamic Arrays, Linked Lists, Binary Search Trees, AVL Trees, Heaps, Maps, Hash Tables and Graphs

Sept 2014 – Present Graduate Teaching Assistance

- Taught graduate and undergraduate level courses

CS515 (Algorithm and Data Structures)
CS261 (Data Structures)
CS550 (Introduction to Computer Graphics)
CS325 (Analysis of Algorithms)
CS575 (Introduction to Parallel Programming)
CS340 (Introduction to Databases)
CS344 (Operating Systems I)
CS362 (Software Engineering II)
CS290 (Web Development)

PUBLICATIONS

- Robust and Fast Extraction of 3D Symmetric Tensor Field Topology
  *Lawrence Roy, **Prashant Kumar**, Yue Zhang, Eugene Zhang*
  *January 2019 **IEEE Transactions** on Visualization and Computer Graphics*
- Interactive design and visualization of N-ary relationships
  *Botong Qu, **Prashant Kumar**, Eugene Zhang, Pankaj Jaiswal, Laurel Cooper, Justin Elser, Yue Zhang*
  *November 2017 SA '17: **SIGGRAPH Asia 2017** Symposium on Visualization*
- Tensor field design in volumes
  *Jonathan Palacios, Lawrence Roy, **Prashant Kumar**, Chen-Yuan Hsu, Weikai Chen, Chongyang Ma, Li-Yi Wei, Eugene Zhang*
  *November 2017 ACM Transactions on Graphics (TOG) - Proceedings of **ACM SIGGRAPH Asia 2017***
- Interactive Design and Visualization of Branched Covering Spaces
  *Lawrence Roy, **Prashant Kumar**, Sanaz Golbabaei, Eugene Zhang*
  *August 2017 **IEEE Transactions** on Visualization and Computer Graphics*
- Construction and visualization of branched covering spaces
  *Sanaz Golbabaei, Lawrence Roy, **Prashant Kumar**, Eugene Zhang*
  *November 2016 SA '16: **SIGGRAPH Asia 2016** Technical Briefs*

REVIEWS

- A Description of the Diamond Grid for Topological and Combinatorial Analysis
  Lidija Comic, Benedek Nagy
  May 2018 Graphical Models (GMOD)
- Portrait Relief Generation from 3D Object
  Yu-Wei Zhang, Bei-bei Qin, Caiming Zhang, Yanzhao Chen, Zhongping Ji
  December 2018 Graphical Models (GMOD)

RELEVANT SKILLS

- Comprehensive knowledge and experience in Geometry Modeling, Software engineering, Computer Application Architecture, Computer Aided Designing, OpenGL, Font Rendering, Graphics and Visualization
- Extensive programming experience in C, C++, Python and Shell Scripting
- Proficient in Visual Studio, Linux, Unix environment

SELECTED HONORS & AWARDS

- 2013 — Company-wide **"Delivery Excellence Award"**, **3DPLM Software Solutions**
- Sept 2014 – Present — Graduate Assistantship (full tuition and stipend), **OSU**
- May 2011 – March 2013 — Graduate Assistantship (full tuition and stipend), **UDeM**
- 2003 — Ranked **top 0.1%** among 300,000 applicants in Joint Entrance Examination

SELECTED PRESENTATIONS

- "Interactive Design and Visualization of Branched Covering Spaces" — **OSU**, March 2017
- "Sketch-Based Generation and Editing of Quad Meshes" — **OSU**, October 2017
- "HexEx: Robust Hexahedral Mesh Extraction" — **OSU**, May 2017
- "Mixed-Integer Quadrangulation" — **OSU**, May 2015
- "Boxelization: Folding 3D Objects into Boxes" — **OSU**, November 2014