Jasmeet Singh

Developer | GSoC'er | Masters, UBC | B. Tech., IIT

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Experience

ANSLab, UBC | Research Assistant - Mesh Generation Software
Sep-2017 - May 2020 | Vancouver, BC

- Created a C++ surface mesh generation application (EDAMSurf) to produce surface meshes automatically from a given triangulation.
- Features in the mesh such as quad-dominance and anisotropy make the mesh suitable to serve as an input to 3D mesh generator and produces more accurate an robust fluid flow simulation results.
- Worked on a large project (200,000 lines of code and 5 team members) using Jenkins CI and Git. Wrote unit tests and regression tests for robust application development.

CGAL, Google Summer of Code | Software Development Intern
May 2019 - July 2019 | Vancouver, BC **Website** **Github** **Docs**

- Developed basic viewers for various data structures in Computational Geometry Algorithms Libraty (CGAL) using C++, Git, GitHub, template metaprogramming concepts.
- Basic viewers that I wrote are global functions that visualize 3D data-structures of CGAL. They help to visualize the result of an algorithm and can other developers to debug their code.
- Interactive viewers were developed for data structures - Voronoi Diagram, Nef Polyhedra, Periodic Triangulaiton and Arrangement 2D.

Indian Institute of Science | Research Assistant - Interdisciplinary Work
Jan 2016 - July 2017 | Bangalore, India

- Developed an algorithm to convert spatial flame fronts into connected graphs using MATLAB. Performed network analysis on the constructed graphs to infer flame front characteristics.
- This study produced state of the art highly enriched graphical representation of flame fronts and was a pioneering interdisciplinary work in complex networks and combustion dynamics.

Projects

Secondary Animation using Dynamic Kelvinlets
Digital Humans Course Project | Sep 2019 - Dec 2019 **Github** **Report**

- Implemented a procedure to automatically add secondary motion to objects given skeletal animation keyframes for a model using linear blend skinning.
- The algorithm solves elastodynamics equations to compute material response towards elastodynamic forces.
- The implementation runs in about real time (55.6 FPS) and requires no information about the geometry of the object being animated. Technologies used - C++, Git, OpenFrameWorks (OpenGL).

Canvas Drawing Application
Side Project | March 2020 - April 2020 **Website** **Github**

- Created a canvas drawing application where multiple people can draw at the same time on a canvas using Linux, Apache2, Php, and Google Firebase infrastructure.

Publications

- Singh J., Olliver Gooch, Carl F. "Advancing Layer Surface Mesh Generation." AIAA Scitech 2020 Forum. 2020. **Best Student Paper Award.**
- Singh, J., Belur Vishwanath, R., Chaudhuri, S., & Sujith, R. I. (2017). Network structure of turbulent premixed flames. Chaos: An Interdisciplinary Journal of Nonlinear Science, 27(4), 043107.
- Singh, J. (2020). Entire domain advancing layer surface mesh (EDAMSurf) generation (Masters dissertation, University of British Columbia).

Education

MASc, Mechanical Engg., University of British Columbia
Grade - 92.7%
Sept 2017 - May 2020

B.Tech, Mechanical Engg., IIT BHU, Varanasi
Grade - 8.22/10
July 2011 - May 2015

Skills

C++ • Java • Python • JavaScript • HTML • CSS • MySQL • Google Cloud • MongoDB • Data structures • Algorithms • OOP • Numerical Simulation • Visualization • Computational Geometry

Awards

Best Student Paper Award - AIAA SciTech 2020	*2019*
Continuing Merit Award - UBC	*2018*
Department Entrance Scholarship - UBC	*2017*
Merit-Cum Means Sholarship | 4 years of Bachelor's | 95 percentile	*2015*
Unilever Future Leaders Internship Fellowship - Pan IIT	*2013*
99.3 percentile in IIT - Joint Entrance Exam	*2011*
99.7 percentile in All India Engineering Entrance Examination	*2011*

Leadership

VP, Communications - Interdisciplinary Graduate Student Network (iGSN)	*2018-2019*
Co-Founder and Core Member - Career Guidance Forum, IIT, Varanasi	*2014-2015*