

# 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 [Website](#)

- 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 and robust fluid flow simulation results.
- Worked on a large project 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 Library (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 help other developers to debug their code.
- Interactive viewers were developed for data structures - Voronoi Diagram, Nef Polyhedra, Periodic Triangulation 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 2019  
Award - AIAA SciTech  
2020

Continuing Merit Award - 2018  
UBC

Department Entrance 2017  
Scholarship - UBC

Merit-Cum Means 2015

Scholarship | 4 years of  
Bachelor's | 95 percentile

Unilever Future Leaders 2013  
Internship Fellowship -  
Pan IIT

99.3 percentile in IIT - 2011  
Joint Entrance Exam

99.7 percentile in All 2011  
India Engineering  
Entrance Examination

## Leadership

VP, Communications - 2018-  
Interdisciplinary 2019

Graduate Student  
Network (iGSN)

Co-Founder and Core 2014-  
Member - Career 2015

Guidance Forum, IIT,  
Varanasi