# Shashwat Suri

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*Specialized Skills*

### Software Engineering Skills

- *Devops* - Azure Webapps, Azure Functions, Github Functions and Azure/Docker Containers
- *Programming Languages* - Python, C#, C++, Bash, Powershell, Java and PostgreSQL
- *Environments* - Azure, Git, AWS, VS/VSCode, Vim/NeoVim, Windows and Linux

### Machie Learning Skills

- *Deep Learning and Neural Networks* -MLPs, LSTMs, GNNs, Reinforcement Learning Models, GPT, ViT, Cross-attention transformer models.
- *Classical ML Techniques* - Regressions, SGD, KNN, KMeans, RBFs, Bayesian Networks etc.

### Vision Skills

- *Neural Radiance Fields* - Human-oriented (ANeRF, DANBO, NPC) and self-calibrating (SCNeRF, FocalPose, CamP)
- *Time Varying Gaussian Splatting* - Optical Flow (4DGS, DeformGS), Shape from Tempate (GaMeS, SuGaR) and Simulation (PhysGaussian, SpringGauss)
- *Classic Vision Techniques* - SfM, CNNs, GANs etc

*Work Experience*

**Research Assistant - University of British Columbia** **August 2023 – Present**
*Visual AI for Humans Lab and Sensorimotors Lab* *Vancouver, BC, Canada*

- Leveraged deformation fields to interpolate shapes between periodically captured humans
- Independently executed a 3D Capture Dataset of Humans under Dr. Helge Rhodin and Dr. Dinesh Pai.

**Software Developer - Mott MacDonald** **May 2021 - August 2023**
*Digital Advancement Network* *Vancouver, BC, Canada*

- Ensured technical support and high availability of engineering application evironments through organized and automated github workflow, Azure Function Apps and Github Functions
- Collaborated with data architects in designing project management dashboards though Microsoft PowerBI. Project required working closely with stakeholders, comprehensively documenting requirements, solutions and standards, and adapting to their dynamic requirements through scrum practices and agile workflow
- Individually hosted and owned multiple Azure Devops microservices through Docker, PostgreSQL, Redis and Azure containers. This was used by core engineering team for Toronto Transit Commision Scarborough Extension Project. Project was actively maintained through both remediation and root cause analysis, ensuring high availability
- Implemented potential traffic collision avoidance solution using computer vision-based predictive algorithms and vehicle tracking. This also included generating the front-end through ViewJS
- Co-developed a Geometry Data Management API to attach archivable metadata to engineering models using contemporary software development practices
- Organized and collaborated on multiple digital advancement initiatives developing system integrations, automating and streamlining release pipelines through Git and Azure tools, and documenting best developement practices

**Research Assistant - University of British Columbia** **January – May 2021**
*Visual AI for Humans Lab* *Vancouver, BC, Canada*

- Researched Direct Linear transformations and their application in human pose estimation under Dr. Helge Rhodin.
- Developed human tracking scripts through visual computation to research the accuracy and robustness of my closed-form implementation.

**Software Developer Co-op - Mott MacDonald** **May – December 2019**

*Digital Advancement Network* *Vancouver, BC, Canada*

- Demonstrated quick assimilation and solution development by generating and presenting novel visualizations for stress testing in SAP applications within 2 weeks of project bidding.
- Configured and enhanced existing engineering environments like Autodesk and Rhino through designing and implementing .NET libraries, thereby facilitating functional independence between Station-based and modeling geometry.

**Software Developer Co-op - Mott MacDonald** **January – August 2019**

*Digital Advancement Network* *Vancouver, BC, Canada*

- Implemented novel meshing algorithms to achieve interoperability within engineering modeling and CAD-based design software. These implementations were meticulously documented and presented to engineers and stakeholders
- Delivered new solutions and enhancements using existing low-code tools like Powershell automations scripts to control software duplication in the company

**Project Lead - University of British Columbia** **January 2020 – May 2020**

*Emerging Media Labs* *Vancouver, BC, Canada*

- Lead 3D Metabolism – an Augmented Reality (AR) solution to aid Biochemistry and Microbiology students visualize metabolism.
- Designed an AR app SynesthesiAR to map Fourier Transform pitch detection into visuals.

## *Education*

**University of British Columbia** **August 2023 – Present**

*Master's in Science, Majoring in Computer Science* *Vancouver, British Columbia, Canada*

- GPA: 4.0
- Awarded: International Tuition Award

**University of British Columbia** **August 2016 – May 2021**

*Bachelor's in Science, Majoring in Computer Science* *Vancouver, British Columbia, Canada*

- GPA: 3.7
- Awarded: Outstanding International Student Scholarship (OIS)
- Accomplished 16 months of industry experience under the Co-op program

## *Publications*

**SimMaterial: Evaluating Materials through Differentiable Simulations** **March 2025**

*Targeting IEEE International Conference of Computer Vision* *Honolulu, Hawaii*

- Time Varying Gaussians to track the deforming object through optical flows
- Physics-informed neural network and a differentiable simulator to get good estimations of simulation materials

**Learning Simulatable Models of Cloth with Complex Constitutive Properties** **January 2025**

*Submitted to 2025 IEEE Major Conference* *Vancouver, Canada*

- Differentiable Simulations to learn spring mass connections, and dampening and material parameters to represent cloth-like materials.
- Conference name avoided due to submission instructions, script and submission details can be provided upon asking

**CasCalib: Cascaded Calibration for Motion Capture from Sparse Unsynchronized Cameras** **August 2024**

*IEEE International Conference on Automatic Face and Gesture Recognition* *Istanbul, Turkey*

- Cascading style of calibration to address Multiview calibration and synchronization.
- Devised novel direct linear transformation algorithms, multiperson conditions and time synchornization ideas

**HAR: Human Activity Recognition** **August - December 2019**

*BC AI Showcase 2019* *Vancouver, BC*

- Predicted human activity using smartphone accelerometer data
- Used Multi-class Logistic Regression (MLR) and Radial Basis Functions (RBF)