SUHONG KIM

☐ +1 778 814 9462   @ suhongk@sfu.ca   ⚲ 5238 Forest Pl, Burnaby, BC, V5G1X6
in linkedin.com/in/suhongkim   ⊙ github.com/suhongkim   ⚇ suhongkim.github.io

👍 TECHNICAL SKILLS

Programming	C/C++, **Python**, MATLAB/SIMULINK, Git/GitHub, Linux
Computer Vision	Image/Video Processing(OpenCV), Camera Model, 3D Geometry Modeling
+ Deep Learning	**CNN / RNN / GAN (PyTorch)**, Image Segmentation, Object Detection
Machine Learning	Statistical Machine Learning, Bayesian/Probabilistic methods, Natural Language Processing
Mechatronics	Embedded C/Firmware, CAN/Diagnosis, Control/Failsafe logic, Vehicle Testing

💼 PROFESSIONAL EXPERIENCE

RESEARCH ASSISTANT | Simon Fraser University, BC   MAY 2019 - PRESENT

> Implemented Video Reflection Removal algorithm with a computational approach, which produced the best quality of the results compared to the state-of-the-art works
> MATLAB   C++   Video Processing   Computational Photography

> Proceed to improve the limitation of the computational algorithm, designing a novel deep neural network using self-supervised learning method based on a thorough understanding of associated academic research.
> Python   PyTorch   Loss Design   Optical Flow

RESEARCH ENGINEER | Hyundai Mobis Research Center, Korea   JUN 2012 - MAY 2016

> Developed the software of Electric Parking Brake systems regarding control algorithm, failsafe logic, and firmware of the target micro-controllers, as well as leading an international research team of six based in Tech Center in India both remote and on-site for the software verification and validation process, which was successfully launched
> Embedded C   Firmware   S/W Design and Testing   Simulation(SIL/MIL/PIL)   Vehicle Testing

> Spearheaded the design project of PBC (Parking Brake Control) aimed at the re-architecture of legacy software and integration with the main brake system based on Model-Based Design with SIMULINK, which resulted in major automotive companies adopting the product worldwide
> MATLAB/SIMULINK   Model Based Design(MBC)   AUTOSAR   S/W Architecture

🔖 PUBLICATIONS

CRIME ANALYSIS THROUGH MACHINE LEARNING   NOV 2018

2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference in Vancouver, BC
> Published the paper regarding Vancouver Crime Analysis to reinforce a patrol system
> Gave a presentation at the conference as a **first author**
> ⧉ https ://ieeexplore.ieee.org/document/8614828

🎓 EDUCATION

MSC IN COMPUTER SCIENCE | SIMON FRASER UNIVERSITY, BC, Canada   SEP 2018 - PRESENT

> Professional Master's Program in Visual Computing Specialization
> Courses : Machine Learning, Computational Photography and Image Manipulation, Geometry Modeling in Computer Graphics, Visual Computing Lab1,2, Frontiers of Visual Computing, Natural Language Processing

BSC IN MECHATRONICS | HANDONG GLOBAL UNIVERSITY, KOREA   MAR 2008 - AUG 2012

> Mechanical and Control System Engineering (Major) and Global Entrepreneurship (Minor)
> Received the national science and technology scholarship (2008-2009)

📖 ACADEMIC PROJECTS

Computer Vision	**Safe Robot Tele-operation**	FALL 2018

Implemented a keyboard based tele-operation system for the turtlebot3 robot to check safety using Simultaneoulay Localization and Mapping (SLAM) algorithm with LiDAR data

`ROS` `SLAM` `Lidar` `C++`

+ Deep Learning	**Vehicle Object Detection**	FALL 2018

With the Single Shot Multi-Box Detector (SSD), designed the full network architecture from the scratch and trained it on the cityscapes datasets to detect vehicles and pedestrians

`SSD` `PyTorch` `Python`

Semnatic Image Segmentation SPRING 2019

Implemented a pixel-wise image segmentation with both Active Contour and U-Net, which gave me fundamental and mathematical understanding on image processing

`U-Net` `PyTorch` `Python` `Matlab`

+ NLP	**Children Stories Generator from Hand Drawings**	FALL 2018

Proposed the creative application for children which allows us to extract unique stories from hand drawings, and designed the mixture model with both Image Captioning (CNN+RNN) and Story Telling (RNNs)

`CNN+RNN` `Caffe` `OpenCV` `Python`

Computational Photography	**Generative Image In-painting**	SPRING 2019

Implemented the Deep Convolutional Generative Adversarial Network (DCGAN) to recover damages in input images, and then analyzed the model to improve the performance with various experiments based on the implementation experiences such as UNet, ResNet, and Poisson Blending method

`DCGAN` `Python` `PyTorch` `OpenCV` `Matlab`

Computer Graphics	**Novel 3D Chair Generation**	SPRING 2019

Applied the 2D projection and mix-n-match methods from the different views of images, and then developed the 3D deep neural network which returns a plausibility scores for generated 3D voxel chairs

`3D` `Blender` `OpenCV` `Python`

🚀 SELF-DIRECTED LEARNING

PyTorch Scholarship Challenge from Facebook
UDACITY, online
JAN-MAR 2018

- Selected one of the challenge members
- Accomplished 94% of accuracy in the final project

Cloud-Based Web Development Course
KIC CAMPUS, Korea (On-site, Full-time)
JUL-DEC 2017

- Learned Web Development with JAVA and Python
- Completed this course with the first grade among 22 students

☺ EXTRA-CURRICULAR INVOLVEMENT

Teaching Assistant at SFU SPRING 2019

Supported the students enrolled in the Introduction to Computer Systems (CMPT295) which requires X86-64 assembly coding labs as well as deep understanding of digital system underpinnings

Scuba Dive Master in Thailand SUMMER 2016

Participated in PADI Dive Master program for two months to train myself as a professional in scuba diving with multicultural fellow trainees, which made me more self-conscious and confident

President of the Mechatronics Academy 2010-2011

Initiated the summer boot camp program for sharing how to implement C language in the embedded system at university, which resulted in a 95 % complete rate among 33 trainees