

# Jieun Seong

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🐙 [github.com/jieun-seong](https://github.com/jieun-seong)

★ [jieun-seong.github.io](https://jieun-seong.github.io)

🐙 [github.gatech.edu/jseong8](https://github.gatech.edu/jseong8)

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🌐 LinkedIn

**Education**     **MS in Comp. Sci. and Engineering** @ Georgia Tech, *GPA: 3.60/4.00*     2020 – Present  
**MS in Mathematics** @ Georgia Tech, *GPA: 3.80/4.00*     2017 – 2019  
**BS in Discrete Mathematics** @ Georgia Tech, *GPA: 3.92/4.00*     2013 – 2017

**Research**     **Differentiability at the Tip of Arnold Tongues**     2019 – 2021  
Proved analytically the differentiability at the tip of the Arnold Tongue – the set of parameters in the standard map equation that gives a given rotation number. Used C and Julia to carry out numerical experiments to research the differentiability.

**Skills**     **Programming**  
C/C++, Python, MATLAB, Julia, Java, TeX, PyTorch, SciPy, OpenCV, Git, Colab, Linux, Unity  
**Knowledge**  
Computer Vision, Dynamical Systems, Differential Equations, Numerical Analysis, Linear Algebra, Parallel Computing, Algorithms, Data Structures, Machine Learning, Data Analysis, Optimization, Modeling and Simulation, Deep Learning

**Projects**     **Semantic Segmentation of Images with Deep Learning**  
Implemented Pyramid MaxPooling to semantically segment different objects in images from Camvid and Kitti datasets with PyTorch.  
**MNIST Handwriting Recognition**  
Implemented a simple softmax regression and two-layer multi-layer perceptron (MLP) for MNIST Handwriting Recognition from scratch.  
**Differential Growth: Modeling and Simulation**  
Modeled and simulated the exquisite growth patterns found in nature – plant leaves, coral reefs, cabbage, brain, and fingerprints.  
**ConvNet for CIFAR-10**  
Built a two-layer network from scratch and built a two-layer network and a vanilla convolutional neural network using PyTorch.  
**SIFT Local Feature Matching**  
Implemented Harris Corner Detectors, Local Feature Descriptors, and Feature Matching methods to match points in two images of an object.  
**Camera Calibration and Fundamental Matrix Estimation**  
Estimated the camera projection matrix and fundamental matrix given matching points in two images.  
**Style Transfer**  
Applied a SqueezeNet to produce a new image that reflects the content of one but the "artistic" style of the other. Used PyTorch.  
**Network Visualization**

Implemented Saliency Maps and Gradient Class Activation Mapping (GradCAM) for model interpretability on images. Used PyTorch.

### **Source Separation**

Modified the modules inside Open-Unmix music source separation model to better its performance in separating different sources in music.

Experiences	<b>Graduate Teaching Assistant</b>	2017 – Present
	Georgia Institute of Technology	Atlanta, GA
	Teach 30-60 students every semester on college math subjects like linear algebra, multivariable calculus, and differential equations. Evaluate their performances regularly by collaborating with other instructors and teaching assistants on grading quizzes, projects, and exams. Hold weekly office hours to help students who want extra help.	
	<b>Digital Systems Design Lab Assistant</b>	2014 – 2015
	Georgia Institute of Technology	Atlanta, GA
	<b>Prototype Designer / App Developer</b>	Atlanta, GA
	OshKosh B'gosh	2014 – 2015
	Designed and produced a prototype for a speaker. Built speaker with SolidWorks, 3D printer, soldering, and circuit design. Developed an app to be used for the speaker with AppInventor.	
Awards	<b>Georgia Tech President's Undergraduate Research Award \$1,500</b>	2016
Outreach	<b>Leader of Women in Georgia Tech Korean Student Association</b>	2018 – 2019
	<b>Secretary of Georgia Tech Korean Student Association</b>	2017 – 2019
	<b>Volunteer at Korea Methodist Church of Norcross Food Pantry</b>	2014 – 2015
	<b>Women in Electrical and Computer Engineering</b>	2014 – 2015
	<b>Study Abroad in China - "Language for Business and Technology: China"</b>	2015