Mintae Kim

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RESEARCH INTERESTS

Machine Learning, Computer Vision, Robotics, Generative Models,
Motion Planning, Scene Representation, Deep Learning for Differential Equations

EDUCATION

Mar. 2019 - Feb. 2022	**KAIST**	**Daejeon, Korea**

B.S, Industrial and Systems Engineering
- **Individually designed major: Computer Science and Mathematical Science**
- GPA of 3.47 / 4.3
- I was the only student in the class of 2022, completed undergraduate program within three years (Full scholarship)

Mar. 2016 - Feb. 2019	**Daejeon Dongsin Science High School**	**Seoul, Korea**

- Summa Cum Laude (Topper in Mathematics, Computer Science and Physics)

RESEARCH EXPERIENCE

Oct. 2022 – Present	**DiffeqML**	

- Contributed to TorchDyn higher-order Neural ODE variants for classification
- Currently working on Lagrangian and Hamiltonian Networks

Apr. 2022 - Present	**Ados**	**Seoul, Korea**

- Adversarially-trained One Class Classification
- Open Set Anomaly Detection for Action Recognition (with Samsung Display)
- LSTM Encoder-Decoder based Log Anomaly Detection (with Samsung Display)
- Score-based Generative Model for Data Synthetization (Government Project)
- Sensory Data Anomaly Detection via GAN
- Anomaly Detection of Solar Photovoltaic System and Inverter based on VAE

Dec. 2020 – Jun. 2021	**Miso Technologies**	**Seoul, Korea**

- Smart Crosswalk for Traffic Accident Prevention (Computer Vision)
- Real-time Personal Information Blurring in Traffic Video (Government Project)

WORK EXPERIENCE

Mar. 2022 - Present	**RIMES Labs**	**Seoul, Korea**

- Co-Founder and CTO (Oct. 2022 - Present)
- Former CEO (Mar. 2022 – Oct. 2022)
- Selected by Microsoft for Startups 2022
- Machine Learning and Back-end Developer
- Government support program for RIMES Art project (Acceptance rate 3.3%)

Apr. 2022 - Present	**Ados**	**Seoul, Korea**
	• Leading Research Scientist of AI Lab	
	• Working with Samsung Electronics Security Department	

Dec. 2021 - Mar. 2022	**TBUnicorn**	**Seoul, Korea**
	• Research Intern at Machine Learning Team	

Dec. 2020 - Mar. 2021	**Miso Technologies**	**Seoul, Korea**
	• Lab Intern at Machine Learning Team	

Aug. 2019 - Jun. 2022	**D&B Edu Consulting**	**Seoul, Korea**
	• Co-Founder and CTO	
	• Front-end and Back-end Developer	

Mar. 2019 - Dec. 2020	**Seoul Forest Basketball Club**	**Seoul, Korea**
	• Assistant Coach and Co-Director of Korea U16 National Team Training Camp	

PAPERS

Nov. 2022	**Adversarially-trained One Class Classification**
	Mintae Kim
	In Progress

Oct. 2022	**Open Set Action Anomaly Detection**
	Mintae Kim, Hyeongmin Moon
	KSII Transactions on Internet and Information Systems (Submitted)

Jun. 2022	**Insider Threat Detection through Video and Log Anomaly Detection**
	Mintae Kim, Hyeongmin Moon, Jake Lee
	Project paper with Samsung Display Security Department

RESEARCH PROJECTS

Oct. 2022 - Present	**Deep Learning for Differential Equations**
	Michael Poli, Stephano Massaroli, Mintae Kim
	Project at DiffeqML

Sep. 2022 - Present	**Efficient Crime Surveillance System via Open Set Recognition**
	Mintae Kim, Gaeun Lee, Joonyong Choi
	Project at RIMES Labs

Aug. 2022	**RIMES Art: Book Text to Illustration Generation**
	Mintae Kim, Gaeun Lee
	Project at RIMES Labs (Microsoft for Startups)

Dec. 2021	**FoodGAN: Food Image Generation using Deep Convolutional GAN**
	Mintae Kim
	Final project paper for Deep Generative Model, Multi Armed Bandit, and Bayesian Optimization class at KAIST

Feb. 2020	**Discrete Wave Equations and Newton's Cradle**
	Mintae Kim, Heeju Na
	Project paper for Advanced Physics: Electromagnetics and Quantum Mechanics class at KAIST
Dec. 2019	**Aharonov-Bohm Effect in Electron-Electron Interactions and Momentum Conservation Paradox**
	Mintae Kim, Heeju Na
	Project paper for Advanced Physics: Electromagnetics and Quantum Mechanics class at KAIST
Nov. 2019	**Where does Energy Go when Noise is Cancelled: On Energy Conservation in Destructive Interference of Waves**
	Mintae Kim, Heeju Na
	Project paper for Advanced Physics: Electromagnetics and Quantum Mechanics class at KAIST
Oct. 2019	**Mellin Transformation for Computation of Madelung's Constant**
	Mintae Kim
	Project paper for Advanced Physics: Electromagnetics and Quantum Mechanics class at KAIST
Jun. 2019	**Generalized Brachistochrone Problem with Snell's Theory**
	Mintae Kim, Heeju Na
	Project paper for Advanced Physics: Mechanics and Thermodynamics class at KAIST
Apr. 2019	**Why Doors Always Stop: Door Stopping Problem in a Closed System**
	Mintae Kim, Heeju Na
	Project paper for Advanced Physics: Mechanics and Thermodynamics class at KAIST
Jul. 2018	**CEOSAT: Chemical Explosion Observing Satellite**
	Mintae Kim, Dongsoo Choi, Yunjee Hong
	Project for Cube Satellite Contest by KAIST Satellite Technology Research Lab

INVITED AND CONTRIBUTED TALKS

Jun. 2022	**Korea Quantum Computing Corporate Association**	**Seoul, Korea**
	• Colloquium at Korea Institute of Science and Technology Information	
	• Title: *Introduction to Quantum Machine Learning*	
Jan. 2021	**KSCY**	**Seoul, Korea**
	• Seminar at Mechanical Engineering and Electrical Engineering Sessions	
	• Title: *How to Adopt Deep Learning in Your Robotics Research*	
Mar. 2020	**Daejeon Dongsin Science High School**	**Daejeon, Korea**
	• Computer Science Seminar for Freshmen	
	• Title: *Object Detection and Action Recognition with OpenCV*	

TEACHING

Mar. 2022 - Present	**Primestone Consulting**	**Seoul, Korea**

- Computer Science and Mathematics for IMO and IOI
- AP Computer Science and Mathematics for ages 16-18

Aug. 2019 - Jun. 2022	**D&B Edu Consulting**	**Seoul, Korea**

- Computer Science and Mathematics for IMO and IOI
- Calculus, Differential Equations, Mathematical Statistics and Linear Algebra
- AP Computer Science and Mathematics for ages 16-18
- Wrote *Mark's Essential AP Calculus BC with Problems*

Dec. 2019 - Feb. 2020	**Korean Mathematical Olympiad**	**Daejeon, Korea**

- Teaching Assistant at Korean Mathematical Olympiad Winter School

VOLUNTEER EXPERIENCE

Mar. 2022 – Present	**RIMES Seminar**	**Seoul, Korea**

- *Exploring Deep Generative Model: Generative Adversarial Networks* (Sep. 2022)
- *Exploring Deep Generative Model: Normalizing Flows* (Aug. 2022)
- *Exploring Deep Generative Model: Variational AutoEncoder* (Jul. 2022)
- *Deep Dive into Neural Process* (Jun. 2022)
- *Deep Dive into Gradient Methods* (May. 2022)
- *Deep Dive into Neural Networks* (Apr. 2022)
- *Advanced Python Programming* (Mar. 2022)

Sep. 2019 - Sep. 2021	**KSCY**	**Seoul, Korea**

- *Introduction to Differential Geometry and Topology* Lecture at Winter Camp 2021
- *PDE101: Why Partial Differential Equations* Lecture at Summer Camp 2021
- *Maxwell's Equations and PDEs* Lecture at Mathematics Session 2020
- *Introduction to Motion Planning* Lecture at Mechanical Engineering Session 2019

Feb. 2020 - Jan. 2021	**YuCheon Community Child Care Center**	**Daejeon, Korea**

- Drone Education for ages 14-16
- Taught Mathematics for ages 14-16
- Basketball Team Coach

SKILLS & OTHERS

- Python, Java, C++, PyTorch, Tensorflow, Keras, Linux
- Javascript, HTML, CSS, React
- Both fluent in English and Korean
- Inaugural Member of Korea Quantum Computing Corporate Association
- Assistant Coach at KAIST Basketball Team
- Assistant Coach at Yonsei University American Football Team