WONHO BAE

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Research enthusiast interested in machine learning and computer vision, specifically for low supervision regime such as **self and weakly supervised** as well as **active** and **meta learning**.

EDUCATION

University of British Columbia *Sep 2020 - Present*
PhD of Computer Science *GPA: 4.00*

University of Massachusetts, Amherst *Sep 2018 - May 2020*
Master of Computer Science *GPA: 3.78*

University of California, Berkeley *Sep 2013 - Dec 2017*
Bachelor of Statistics *GPA: 3.76*

Santa Monica College *Sep 2011 - May 2013*
Associate of Economics, member of Alpha Gamma Sigma *GPA: 3.95*

RESEARCH EXPERIENCE

Borealis AI at Vancouver *May 2022 - Sep 2022, May 2023 - Present*
Research Intern
- Supervisor: Dr. Gabriel Oliveira, Dr. Fred Tung, and Dr. Mohamed Ahmed
- Conducted a research on temporal point processes to capture periodic patterns in long-term event sequences.

Vision & Learning Lab at Seoul National University *Feb 2018 - Sep 2020*
Research Assistant
- Supervisor: Prof. Gunhee Kim
- Conducted a research on i) small object detection using Generative Adversarial Network in Faster R-CNN framework, ii) object localization task under weakly-supervised learning setting using a class activation mapping method.

Data Science for Common Good Fellowship at UMass, Amherst *May 2019 - Aug 2019*
Research Fellow
- Supervisor: Dr. Brant Cheikes, Prof. Matthew Rattigan
- Conducted a research on classifying wild animal images collected using camera traps in collaboration with The Nature Conservancy. Deployed a web-based open-source tool for ecologists.

Renewable & Appropriate Energy Lab at UC Berkeley *Jan 2017 - Dec 2017*
Research Assistant
- Supervisor: Prof. Daniel Kammen, Prof. Deborah Sunter
- Participated in the Inclusive Green Growth porject. Worked on keyword detection task using Natural Language Process techniques to replace synonyms and pronouns in the text. Currently writing a book to publish.

PUBLICATIONS

[1] **Wonho Bae**, Jing Wang, Danica J. Sutherland, "Exploring Active Learning in Meta-Learning: Enhancing Context Set Labeling", **Under Review**.

[2] **Wonho Bae**, Yi Ren, Mohamed Osama Ahmed, Frederick Tung, Danica J. Sutherland, Gabriel L. Oliveira, "AdaFlood: Adaptive Flood Regularization", **Under Review**.

[3] Jing Wang, **Wonho Bae**, Jiahong Chen, Junhyug Noh, "Neighborhood-Informed Diffusion Model for Source-Free Domain Adaptation: Retrieving Source Ground Truth from Target Query's Neighbors", **Under Review**.

[4] Jing Wang, **Wonho Bae**, Jiahong Chen, Kuangen Zhang, Leonid Sigal, "What Has Been Overlooked in Contrastive Source-Free Domain Adaptation: Leveraging Source-Informed Latent Augmentation within Neighborhood Context", **Under Review**.

[5] Mohamad Amin Mohamadi, **Wonho Bae**, Danica Sutherland, "A Fast, Well-Founded Approximation to the Empirical Neural Tangent Kernel", in **ICML 2023**, Hawaii, July 2023.

[6] **Wonho Bae**, Mohamed Osama Ahmed, Gabriel Leivas Oliveira, Frederick Tung, "Meta Temporal Point Processes", in **ICLR 2023**, Kigali, Rwanda, May 2023.

[7] Yi Ren, Shangmin Guo, **Wonho Bae**, Danica J. Sutherland, "How to Prepare Your Task Head for Finetuning", in **ICLR 2023**, Kigali, Rwanda, May 2023.

[8] Junhyug Noh, Kyung Don Yoo, **Wonho Bae**, ..., YonSu Kim, Gunhee Kim, "Predicting outcomes of continuous renal replacement therapy using body composition monitoring: a deep-learning approach", in **Scientific Reports (2023)** by Nature Publishing Group.

[9] Mohamad Amin Mohamadi*, **Wonho Bae***, Danica Sutherland, "Making Look-Ahead Active Learning Strategies Feasible with Neural Tangent Kernels", in **NeurIPS 2022**, New Orleans, LA, Nov 2022.

[10] Jinhwan Seo, **Wonho Bae**, Danica J. Sutherland, Junhyug Noh, Daijin Kim "Object Discovery via Contrastive Learning for Weakly Supervised Object Detection", in **ECCV 2022**, Tel-Aviv, Israel, Oct 2022.

[11] **Wonho Bae**, Junhyug Noh, Milad Jalali Asadabadi, Danica J. Sutherland, "One Weird Trick to Improve Your Semi-Weakly Supervised Semantic Segmentation Model", in **IJCAI 2022**, Vienna, Austria, July 2022.

[12] **Wonho Bae***, Junhyug Noh*, Gunhee Kim, "Rethinking Class Activations Mapping for Weakly Supervised Object Localization", in **ECCV 2020**, online, Aug 2020.

[13] Junhyug Noh, Kyung Don Yoo, **Wonho Bae**, ..., YonSu Kim, Gunhee Kim, "Prediction of the Mortality Risk in Peritoneal Dialysis Patients using Machine Learning Models: A Nation-wide Prospective Cohort in Korea", in **Scientific Reports (2020)** by Nature Publishing Group.

[14] Junhyug Noh, **Wonho Bae**, Wonhee Lee, Jinhwan Seo and Gunhee Kim, "Better to Follow, Follow to Be Better: Towards Precise Supervision of Feature Super-Resolution for Small Object Detection", in **ICCV 2019**, Seoul, Korea, Oct 2019.

WORK EXPERIENCE

Republic of Korea Army *Feb 2015 - Nov 2016*
Signals Intelligence Analyst
- Served in the intelligence battalion of the Republic of Korea Army for 21 months as a signals intelligence analyst.

AWARD & SCHOLARSHIP

Learning from Imperfect Data (LID) Competition - 1**st** *June 2020*
1st place in LID workshop at CVPR 2020

Data Science for Common Good Fellowship *May 2019 - Aug 2019*
Research fellow in the Center of Data Science at UMass, Amherst

American Math Competitions *2011 - 2012*
*3*rd place in 2011 and *1*st place in 2012

TEACHING

Teaching Assistant
Advanced Machine Learning (2023), Computer Vision (2019 - UMass, 2021, 2022)

OUTREACH / PRESENTATIONS

Talk at Borealis AI, Vancouver *Sep 2023*
Gave a talk about "Meta Temporal Point Processes", ICLR 2023 at Borealis-UBC workshop.

Talk at ViewMagine (Online) *Jan 2021*
Gave a talk about "how to access a research problem in computer vision" based on the publications from ICCV 2019 and ECCV 2020 and research design course in UMass.

AI Summer Seminar at UMass, Amherst *Summer 2019*
Hosted AI seminar at UMass during Summer of 2019. Discussed various topics related to AI including but not limited to computer vision, natural language process and planning.

Presentation for Inclusive Green Growth at Institute of Advanced Study, Germany *Aug 2018*
Gave a talk about a data-driven approach for measuring Inclusive Green Growth of different countries and regions at Hanse-Wissenschaftskolleg Institute for Advanced Study in Germany.

SERVICES

Paper Review
NeurIPS (2021, 2022, 2023), ICML (2022, 2023), ICLR (2023), CVPR (2022, 2023)

Volunteer *Sep 2022 - Dec 2022*
Mentor in Science Undergraduate Society Mentorship Program at UBC