Yongsung Park

Marine Physical Laboratory, Scripps Institution of Oceanography
University of California San Diego, 9500 Gilman Drive, La Jolla, California, 92093-0238

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Education

Seoul National University, Seoul, Korea

Ph.D. (Integrated Ph.D. program),
Naval Architecture and Ocean Engineering (Underwater acoustics), 2019

- Dissertation title:
  "Grid-free compressive sensing with applications to underwater acoustic signal processing"
- Advisor: Prof. Woojae Seong

B.S., Naval Architecture and Ocean Engineering, 2013

Research Interests

Underwater acoustics, Ocean engineering, Array signal processing, Sparse signal recovery, Statistical signal processing, Bayesian inference, Machine learning

Research Experience

Assistant Project Scientist March 2022 – Present
Marine Physical Laboratory, Scripps Institution of Oceanography, University of California San Diego

Postdoctoral Scholar October 2019 – February 2022
Marine Physical Laboratory, Scripps Institution of Oceanography, University of California San Diego

Researcher March 2019 – September 2019
Research Institute of Marine Systems Engineering, Seoul National University

Visiting Scholar February 2018 – July 2018
Marine Physical Laboratory, Scripps Institution of Oceanography, University of California San Diego

Publications

Y. Park and F. Meyer, and P. Gerstoft "Sequential variational Bayesian estimation of DOAs," 2022 (submitted to *IEEE Trans. Signal Process.*)

Y. Park and P. Gerstoft, "Gridless sparse covariance-based beamforming via alternating projections including co-prime arrays," *J. Acoust. Soc. Am.*, 2022 (accepted)

Y. Park, F. Meyer, and P. Gerstoft, "Sequential sparse Bayesian learning for time-varying direction of arrival," *J. Acoust. Soc. Am.*, 149(3), pp. 2089-2099, 2021

M. Wagner, **Y. Park**, P. and Gerstoft, "Gridless DOA Estimation and Root-MUSIC for Non-Uniform Linear Arrays," *IEEE Trans. Signal Process.*, 69, pp. 2144-2157, 2021

Y. Park, W. Seong, and P. Gerstoft, "Block-sparse two-dimensional off-grid beamforming with arbitrary planar array geometry," *J. Acoust. Soc. Am.*, 147(4), pp. 2184-2191, 2020

M. Park, **Y. Park**, K. Lee, and W. Seong, "Incipient tip vortex cavitation localization using block-sparse compressive sensing," *J. Acoust. Soc. Am.*, 147(5), pp. 3454-3464, 2020

Y. Choo, **Y. Park**, and W. Seong, "Detection of direction-of-arrival in time domain using compressive time-delay estimation with single and multiple measurements," *Sensors*,

20, pp. 5431-5454, 2020

Y. Park, P. Gerstoft, and W. Seong, "Grid-free compressive mode extraction," *J. Acoust. Soc. Am.*, 145(3), pp. 1427-1442, 2019

Y. Park, Y. Choo, and W. Seong, "Multiple snapshot grid free compressive beamforming," *J. Acoust. Soc. Am.*, 143(6), pp. 3849-3859, 2018

Y. Park, W. Seong, and Y. Choo, "Compressive time delay estimation off the grid," *J. Acoust. Soc. Am.*, 141(6), pp. EL585-EL591, 2017

Conference Publications

Y. Park, F. Meyer, and P. Gerstoft, "Learning-aided initialization for variational Bayesian DOA estimation," 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Singapore, Singapore, 2022

Y. Park and P. Gerstoft, "Alternating projections gridless covariance-based estimation for DOA," 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Toronto, Canada, 2021

F. Meyer, **Y. Park**, and P. Gerstoft, "Variational Bayesian Estimation of Time-Varying DOAs," 2020 IEEE 23rd International Conference on Information Fusion (FUSION), Rustenburg, South Africa, 2020

Y. Park, F. Meyer, and P. Gerstoft, "Sequential sparse Bayesian learning for DOA," 2020 54th Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, USA, 2020

Y. Park and P. Gerstoft, "Compressive 2-d Off-grid DOA Estimation for Propeller Cavitation Localization," 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Barcelona, Spain, 2020

M. Wagner, P. Gerstoft, and **Y. Park**, "Gridless DOA Estimation via. Alternating Projections," 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brighton, United Kingdom, 2019

Awards

Best paper award, Acoustical Society of Korea meeting, Changwon, Korea, 2017

Best paper award (CNO, Chief of Naval Operation in the R.O.K Navy),
Naval Weapon Systems Symposium, Jeju, Korea, 2017

Scholarships

Brain Korea 21 Plus Research Scholarship, Naval Architecture and Ocean Engineering, Seoul National University, 2015 – 2019

Education and Research Foundation College of Engineering SNU Scholarship, Seoul National University, 2014 – 2015

Education and Research Center for Creative Offshore Plant Engineers Scholarship, Seoul National University, 2014

Scholarships granted by Engineering college, Naval Architecture and Ocean Engineering, Seoul National University, 2013 – 2014

Superior Academic Performance, Seoul National University, 2012

SNU Development Fund Scholarship, Seoul National University, 2012

Superior Academic Performance, Seoul National University, 2011

Eminence Scholarship, Seoul National University, 2011

Superior Academic Performance, Seoul National University, 2010

National Scholarship for Science and Engineering, Korea, 2009

Professional Activities

Journal referee for:

- Journal of the Acoustical Society of America
- IEEE Transactions on Signal Processing
- IEEE Signal Processing Letters
- Signal Processing (Elsevier)
- IEEE Transactions on Communications
- IEEE Transactions on Aerospace and Electronic Systems
- IEEE Transactions on Audio, Speech and Language Processing
- IEEE Transactions on Vehicular Technology
- IEEE Access
- ISIF Journal of Advances in Information Fusion
- Mechanical Systems and Signal Processing (Elsevier)
- Nature Scientific Reports
- Shock and Vibration
- Journal of Theoretical and Computational Acoustics
- International Journal of Naval Architecture and Ocean Engineering
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)

Meeting organizing committee:

- 178th Meeting of the Acoustical Society of America, San Diego, 2019

Invited talks:

- Eco-friendly smart ship seminar, Seoul National University, 2020
- Applied Ocean Science (AOS) seminar, Scripps Institution of Oceanography, 2020
- Sejong University, 2019

Conference Presentations

Y. Park, F. Meyer, and P. Gerstoft, "Learning-aided initialization for variational Bayesian DOA estimation," 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Singapore, Singapore, 2022

Y. Park, F. Meyer, and P. Gerstoft, "Variational Bayesian inference for beamforming," 181th Meeting of the Acoustical Society of America (ASA), Seattle, USA, 2021

Y. Park, F. Meyer, and P. Gerstoft, "Sequential sparse Bayesian learning for beamforming," 180th Meeting of the Acoustical Society of America (ASA), Virtual, 2021 [*Invited*]

Y. Park and P. Gerstoft, "Alternating projections gridless covariance-based estimation for DOA," 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Toronto, Canada, 2021

Y. Park, F. Meyer, and P. Gerstoft, "Sparse Bayesian learning for Time-Varying DOA estimation," 179th Meeting of the Acoustical Society of America (ASA), Virtual, 2020 [*Invited*]

F. Meyer, Y. Park, and P. Gerstoft, "Variational Bayesian Estimation of Time-Varying

DOAs," 2020 IEEE 23rd International Conference on Information Fusion (FUSION), Rustenburg, South Africa, 2020

Y. Park, F. Meyer, and P. Gerstoft, "Sequential sparse Bayesian learning for DOA," 2020 54th Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, USA, 2020 [*Invited*]

Y. Park and P. Gerstoft, "Compressive 2-d Off-grid DOA Estimation for Propeller Cavitation Localization," 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Barcelona, Spain, 2020

Y. Park, P. Gerstoft, and W. Seong, "Compressive two-dimensional beamforming for localization of tip vortex cavitation," 178th Meeting of the Acoustical Society of America (ASA), San Diego, USA, 2019

M. Park, W. Seong, Y. Choo, and Y. Park, "Block-sparse compressive localization for incipient tip vortex cavitation noise," 178th Meeting of the Acoustical Society of America (ASA), San Diego, USA, 2019

M. Wagner, P. Gerstoft, and Y. Park, "Gridless DOA Estimation via. Alternating Projections," 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brighton, United Kingdom, 2019

Y. Park, M. Wagner, W. Seong, and P. Gerstoft, "Grid-free compressive DOA estimation via alternating projection," 176th Meeting of the Acoustical Society of America (ASA), Victoria, Canada, 2018

Y. Park, P. Gerstoft, and W. Seong, "Compressive normal mode extraction in shallow water," 176th Meeting of the Acoustical Society of America (ASA), Victoria, Canada, 2018

Y. Park, Y. Choo, and W. Seong, "Off-the-grid direction-of-arrival estimation with multiple measurement vectors," 174th Meeting of the Acoustical Society of America (ASA), New Orleans, USA, 2017

Y. Choo, Y. Park, and W. Seong, "Compressive time-domain beamforming," Proc. IEEE OES International Symposium on Underwater Technology (UT), Busan, Korea, 2017

Y. Park, Y. Choo, and W. Seong, "Off the grid time delay estimation for sparse translation-invariant signals," 4th International Workshop on Compressed Sensing Theory and its Applications to Radar, Sonar and Remote Sensing (CoSeRa), Aachen, Germany, 2016

Y. Choo, J. Park, Y. Park, M. Park, and W. Seong, "Grid-free channel estimation of acoustic measurement data from SAVEX15," 172th Meeting of the Acoustical Society of America (ASA), Honolulu, USA, 2016

Y. Park and W. Seong, "High resolution direction-of-arrivals using extended multipath matching pursuit," 3rd International Workshop on Compressed Sensing Theory and its Applications to Radar, Sonar and Remote Sensing (CoSeRa), Pisa, Italy, 2015

Y. Park and W. Seong, "Direction-of-arrival estimation using compressive sensing," 1st Conference on New Advances in Acoustics (NAA), Shanghai, China, 2015

PROJECTS

Project on application of compressive sensing to sonar signal processing, supported by the Agency for Defense Development, Korea (October 2016 – September 2019)

Project on multi-beam signal processing and compressive sensing, supported by the Defense Acquisition Program Administration, Korea (March 2019 – September 2019)