VAIBHAV CHAVALI

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Google Scholar, Linkedin

EDUCATION

George Mason University, Fairfax, Virginia — **Advanced to Candidacy in June 2021**
Doctorate (Ph.D.) in Electrical and Computer Engineering — (expect to defend dissertation by Dec 2024)

George Mason University, Fairfax, Virginia — **May 2017**
M.S. Electrical Engineering

University of Mumbai, Mumbai, India — **June 2012**
B.E. Electronics Engineering

WORK EXPERIENCE

George Mason University, Fairfax, Virginia — **August 2013 – Present**
Research Assistant, Ocean Acoustic and Signal Processing Group

- Collaborated with Prof. Kathleen E. Wage (GMU) and Prof. John R. Buck (UMass Dartmouth) on several ONR funded research grants; Coprime array basic research challenge, Random Matrix Theory (RMT) and adaptive beamforming. Presented and published research findings in several IEEE and JASA conferences and journals.

George Mason University, Fairfax, Virginia — **August 2015 – May 2016**
Graduate Teaching Assistant, Electrical and Computer Engineering Department

- Responsible for recitations and grading for Signals and Systems class (ECE 220) taught by Prof. Llyod Griffiths, Prof. Monson H. Hayes and Prof. Jill K Nelson.

Bhabha Atomic Research Centre, Mumbai — **August 2011 – October 2011**
Summer Research intern, Image Processing Laboratory

- Performance analysis of various face recognition and tracking algorithms in video sequences for enhancing security protocols.

Indian Institute of Technology, Mumbai — **May 2011 – June 2011**
Summer intern, Mechanical Engineering Department

- Designed a robot to follow directional instructions using speech commands communicated via RF.

LITERARY WORK

Master's Thesis

- V. Chavali, "Coprime and Nested Array Processing of the Elba Island Sonar Data Set", Master's thesis, George Mason University. DOI:10.13021/G8JX0W.

Publications and Conference Abstracts

- V. Chavali and K. E. Wage, Analysis of Cross Terms in Toeplitz Rectified Sample Covariance Matrices, submitted to IEEE Sensors Array and Multichannel Signal Processing Workshop, July 2024.
- V. Chavali and K. E. Wage, Analysis of Cross Terms in Toeplitz Rectified Sample Covariance Matrices, in IEEE Underwater Acoustic Signal Processing Workshop, Oct. 2023. (Conference abstract).
- J. Tucker, V. Chavali, K. E. Wage, and J. K. Nelson, Multiple Objective Optimization for Fully Adaptive Sonar, IEEE OCEANS, Hampton Roads, pp. 1-9, 2022. DOI:10.1109/OCEANS47191.2022.9977227
- V. Chavali and K. E. Wage, Cross Term Decay in Multiplicative Processors, IEEE SPL, vol. 27, pp. 56–60, 2020, DOI:10.1109/LSP.2019.2955815.
- V. Chavali and K. E. Wage, Statistical Characterization of Cross Terms in Snapshot-Averaged Multiplicative Processors, JASA, vol. 145, no. 3, p. 1733, May. 2019. DOI:10.1121/1.5101362. (Conference abstract).
- V. Chavali, K. E. Wage, and J. R. Buck, Multiplicative and Min Processing of Experimental Passive Sonar Data from Thinned Arrays, JASA, vol. 144, no. 6, pp. 3262–3274, Dec. 2018. DOI:10.1121/1.5064458.

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- V. Chavali and K. E. Wage, Comparison of multiplicative and min processors for coprime and nested geometries using the Elba Island data set, JASA, vol. 141, no. 5, p. 3843, May 2017. DOI:10.1121/1.4988561. (Invited conference abstract)
- V. Chavali and K. E. Wage, Design of nested and coprime arrays for the North Elba sea trial, in IEEE Underwater Acoustic Signal Processing Workshop, Oct. 2015. (Conference abstract).
- V. Chavali, K. E. Wage and J. R. Buck, Coprime processing for the Elba Island sonar data set, in 48th Asilomar Conference on Signals, Systems and Computers, Nov. 2014, pp. 1864–1868. DOI:10.1109/ACSSC.2014.7094791.
- V. Chavali, K. E. Wage and J. R. Buck, Design of a coprime array for the North Elba sea trial, JASA, vol. 136, no. 4, p. 2147, Oct. 2014. DOI:10.1121/1.4899754. (Conference abstract).

ACADEMIC SERVICES AND AWARDS

- Received "Best Young Presenter Award in Signal Processing" at the 177th Meeting of the Acoustical Society of America at Louisville, Kentucky. Link.
- Reviewer for IEEE Signal Processing Letters, Journal of the Acoustical Society of America (JASA), Signal Processing Elsevier.
- Chaired a poster session "Topics in Underwater Acoustics" at the Acoustical Society of America meeting in June 2017.
- Co-chaired "General Signal Processing" session at the Acoustics Virtually Everywhere in December 2020.

Professional Society Memberships

- Student Member, Acoustical Society of America (since 2013)
- Student Member, Institute of Electrical and Electronics Engineers (since 2013)

TECHNICAL SKILLS

Languages: Python, MATLAB, R, LaTeX, C++, Java,
Operating Systems: Mac OS, Linux, Windows
Tools: Tensorflow, Tableau, SQL, OpenCV, Xilinx, Altera Quartus II, Logic Pro X

ACADEMIC PROJECTS

Hardware Performance evaluation of AES-256 hardware cipher candidates from the CAESAR contest
Beamforming of Dolphin Whistles using a Sparse Three-element Towed Array
Performance Evaluation of Adaptive Echo Cancellation Algorithms in Commercial VOIP
Speech Control for Adaptive Robotic applications (Bachelor's Final Year project)

Other projects - Automatic Room Light Controller with Visitor Counter, VHDL code for 16-bit barrel shifter, 3-band Graphic Equalizer with Karaoke

SPECIALIZATION COURSES

Machine Learning Specialization - Supervised Machine Learning: Regression and Classification, Advanced Learning Algorithms, Unsupervised Learning, Recommenders, Reinforcement Learning, Machine Learning with MATLAB

Digital Signal Processing; Adaptive Signal Processing; Advanced Digital Signal Processing; Optimum Array Processing; Digital System Design w/ VHDL; Information Theory; Modern Systems Theory; Systems Identification; Numerical Linear Algebra; Probability and Random Processes; Sparse Optimization and Compressive Sensing; Statistical Inference; Complex Analysis I & II; Random Matrix Methods

Google Data Analytics Certificate: Link, Machine Learning Certificate: Link