**Syed Murtaza Arshad**

*3rd Year Ph.D. Candidate  
Electrical & Computer Engineer*

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| **EDUCATION** | | | | |
| 2026  (Expected) | | **Ph.D.** Electrical & Computer Engineering **|** Post-candidacy  *Advisors: Rizwan Ahmad, Ph.D. & Lee C. Potter, Ph.D.*  **The Ohio State University, Columbus**, OH, US | GPA: **4/4** | |
| June 2024 | | **M.S.** Electrical & Computer Engineering,  **The Ohio State University, Columbus**, OH, US | GPA: **4/4** | |
| May 2019 | | **B.S.** Electrical Engineering with Honors **|** Gold Medalist  **University of Engineering and Technology, Lahore**, Pakistan | GPA: **3.95/4**  Rank: **1/142** | |
| **RESEARCH INTERESTS** | | | | |
| Optimization techniques, Bayesian modeling, signal processing, machine learning, deep learning, robust regression, variable splitting, inverse modeling, outlier rejection, dynamic imaging, image reconstruction, biomedical imaging. | | | | |
| **SKILLS** | | | | |
| **Programming Languages:** Python, MATLAB, Java, C, C++ | | | | |
| **Programming Libraries:** PyTorch, Optuna, OpenCV, TensorFlow, Scikit-learn, NumPy | | | | |
| **Relevant Courses:** Signal Processing, Machine Learning, Medical Imaging & Processing, Optimization, Probability, Linear Mathematics, Convex & Stochastic Optimization, Stochastic Processes & Estimation. | | | | |
| **PUBLICATIONS & RESEARCH WORK** | | | | |
| **Journal Articles** | | | | |
| 2024 | **Motion-robust free-running volumetric cardiovascular MRI. |** [**Paper**](https://doi.org/10.1002/mrm.30123) **|** [**Code**](https://github.com/OSU-MR/motion-robust-CMR)  Authors: **S.M. Arshad,** L. C. Potter, C. Chen, Y. Liu, et al.  Journal: *Magnetic Resonance in Medicine* ***(MRM)***, 92(3).   * Developed an **image reconstruction** method integrated with **outlier rejection** to recover high-quality 3D cine and 4D flow cardiovascular MR images at rest and under in-magnet exercise. | | | |
| 2024 | **Expectation-Maximization (EM) algorithm-based motion correction and outlier rejection in XD CMR. | (Manuscript in-progress, targeted journal: IEEE TMI)**  Authors: **S.M. Arshad**, L.C. Potter, R. Ahmad   * Proposing an image reconstruction technique for dynamic MRI, ‘EMORe,’ to recover motion robust XD CMR. | | | |
| 2024 | **Motion-Guided Deep Image Prior for Cardiac MRI |** [**Preprint**](https://arxiv.org/abs/2412.04639)Authors: M. Vornehm, C. Chen, M.A. Sultan, **S.M. Arshad**, et al.  Targeted journal: *Magnetic Resonance in Medicine* ***(MRM).*** | | | |
| 2024 | **Accelerated real-time cine and flow under in-magnet staged exercise. |** [**Preprint**](https://arxiv.org/abs/2402.17877)  Authors: P. Chandrasekaran, C. Chen, Y. Liu, **S.M. Arshad**, et al.  Journal: Under review in *Journal of Cardiovascular Magnetic Resonance* ***(JCMR)****.* | | | |
| **Peer-reviewed Abstracts** | | | | |
| 2024 | **EMORe: Motion-robust XD-CMR reconstruction using Expectation-Maximization (EM) algorithm. |** [**Link**](https://buckeyemailosu-my.sharepoint.com/:b:/g/personal/arshad_32_buckeyemail_osu_edu/Ec4sHLz3GnJPg2s9cUgYFJABXyiXWCLEi9TjcGZyCmwn5Q?e=ITdH8G)  Authors: **S. M. Arshad,** L. C. Potter, Xuan Lei, R. Ahmad  Conference: Accepted for ***SCMR 2025***, ***Washington, DC.*** To be Published in ***JCMR.*** | | | |
| 2024 | **Motion-robust 3D cine imaging using compressive recovery with outlier rejection (CORe). |** [**Link**](https://www.journalofcmr.com/article/S1097-6647(24)00306-5/fulltext)  Authors: **S.M. Arshad**, L.C. Potter, C. Chen, et al.  Conference: ***SCMR 2024*** *Annual Scientific Sessions,* ***London, UK****.* Published in ***JCMR Vol. 26.*** | | | |
| 2024 | **Motion-Guided Deep Image Prior for Dynamic Cardiac MRI.** Authors: M. Vornehm, C. Chen, M.A. Sultan, **S.M. Arshad**, et al.  Conference: Submitted for ***ISMRM 2025*** *Annual Meeting, Honolulu, Hawaiʻi* | | | |
| 2024 | **Motion-Guided Deep Image Prior for 3D Real-Time Cine (M-DIP-3D).**  Authors: C. Chen, M. Vornehm, M.A. Sultan, **S.M. Arshad**, et al.  Conference: Submitted for ***ISMRM 2025*** *Annual Meeting, Honolulu, Hawaiʻi* | | | |
| 2024 | **Free-Running Time-Resolved 3D+t CMR at 40 Hz Under 2 Minutes using Cartesian Sampling and CMR-MOTUS.**  Authors: T.E Olausson, M.L. Terpstra, E. Versteeg, **S.M. Arshad,** et al.  Conference: Submitted for ***ISMRM 2025*** *Annual Meeting, Honolulu, Hawaiʻi* | | | |
| 2023 | **Motion artifact reduction in self-gated CMR 4D flow imaging under exercise stress. |** [**Link**](https://buckeyemailosu-my.sharepoint.com/:b:/g/personal/arshad_32_buckeyemail_osu_edu/ER8qqlP5UvtPrxqvxORy2aQBxbGotMs9scV8hAeaoRfy1Q?e=J2cahV)  Authors: **S.M. Arshad,** C. Chen, Y. Liu, et al.  Conference: *ISMRM & ISMRT 2023 Annual Meeting & Exhibition,* ***Toronto, ON, Canada*** | | | |
| 2023 | **Biventricular and hemodynamic assessment under multi-stage exercise using real-time CMR.** P. Chandrasekaran, C. Chen, Y. Liu, C. Crabtree, **S.M.** **Arshad**, et al.  Conference: *2023 ISMRM & ISMRT Annual Meeting & Exhibition,* ***Toronto, ON, Canada.*** | | | |
| **INVENTIONS & PATENTS** | | | | |
| 2024 | **Systems and Methods for Cardiovascular Magnetic Resonance Imaging.** | ***Patent-pending***  EM-based optimization for CMR image reconstruction | Application Number: 63/466,088 | | | |
| 2023 | **Motion Robust Cardiovascular Imaging.** | ***Patent-pending***  Optimization with outlier rejection for volumetric CMR imaging | Application Number: 63/663,874 | | | |
| 2019 | **iSight: Computer Vision & Ultrasonic Sensor based Smart Cane & Glasses for the Visually Impaired**  Prototype developed for [B.S. Thesis](https://drive.google.com/file/d/1pXGO2iGQgEcW_CEDXDH_ueFbqgRKNnPi/view) using OpenCV and TensorFlow **|** [**Video**](https://www.youtube.com/watch?v=wlyYk-eeM3M)  IEEE Humanitarian Project Award winner at *54th IEEE Annual Meeting,* ***Baltimore, MD.*** | | | |
| PRESENTATIONS & POSTERS | | | |
| 2025 | (Upcoming Oral presentation) **"EMORe: Motion-robust XD-CMR reconstruction using Expectation-Maximization (EM) algorithm."** *SCMR ’25,* ***Washington, DC.*** | | |
| 2024 | (Oral presentation) **"Motion robust 3D cine imaging using Compressive Recovery with Outlier Rejection (CORe)."** *CMR ’24 Rapid Fire: Dealing with Motion,* ***London, UK.*** | | |
| 2024 | (Poster presentation) **“EMORe: Motion-robust XD-CMR reconstruction using Expectation-Maximization (EM) algorithm.”** *Kraus Memorial Poster Competition ’24, The Ohio State University,* ***Columbus, OH.* | 2nd Position Winner** | | |
| 2023 | (Oral presentation) **"Motion artifact reduction in self-gated CMR 4D flow imaging under exercise stress."** *ISMRM’23: Advanced Flow & Angiography Power Pitch,* ***Toronto, Canada.*** | | |
| 2023 | (Poster presentation) **"Motion-robust free-running volumetric cardiovascular MRI."** *Kraus Memorial Poster Competition’23, The Ohio State University,* ***Columbus, OH.*** | | |
| HONORS & AWARDS | | | |
| 2024 | 2nd Position, Kraus Memorial Poster Competition, The Ohio State University. | | |
| 2024 | [Graduate Associate Leadership Award (GALA)](https://gradsch.osu.edu/news/2024/04/11/leadership-celebrated-2023-24-graduate-associate-leadership-award), The Ohio State University. | | |
| 2024 | Judge for the Ray Travel Award, The Ohio State University. | | |
| 2023 | Mentor, GUIDE Peer Mentoring Program, The Ohio State University. | | |
| 2023 | Judge, Career Development Grant (CDG), The Ohio State University. | | |
| 2023 | Judge, HackOHI/O Hackathon, The Ohio State University. | | |
| 2021 | Explore Challenge Winner, innovative idea competition, ICI Pakistan Ltd. | | |
| 2019 | 6 Gold Medals for Academic Excellence, University of Engineering and Technology, Lahore, Pakistan. | | |
| 2019 | Best Student Performance Award, Electrical Engineering Class of 2019, University of Engineering and Technology, Lahore, Pakistan. | | |
| 2019 | 1st Position, DICE Virtual Innovation National Competition, Pakistan. | | |
| 2019 | Best Project in Computer Engineering Award, Department of Electrical Engineering, University of Engineering Technology, Lahore, Pakistan. | | |
| 2015-2019 | Dean's Merit Scholarship Award, awarded to the top 10 undergraduates each semester, University of Engineering and Technology, Lahore, Pakistan. | | |
| REFERENCES | | | |
| **Prof. Rizwan Ahmad, Ph.D.** (Advisor)  *Associate Professor*  *Electrical & Computer Engineering and Biomedical Engineering, The Ohio State University.*  Email: [ahmad.46@osu.edu](mailto:ahmad.46@osu.edu) **|** Website: [https://u.osu.edu/ahmad](https://u.osu.edu/ahmad/) | | | |
| **Prof. Lee C. Potter, Ph.D.** (Advisor)  *Professor*  *Electrical & Computer Engineering, The Ohio State University.*  Email: [potter.36@osu.edu](mailto:potter.36@osu.edu) **|** Website: <https://ece.osu.edu/people/potter.36> | | | |