Andrea Serani

Curriculum Vitae

National Research Council
Institute of Marine Engineering
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Personal Info

Date of birth May 18, 1986

Current city Rome, Italy

Identifiers **ORCID** 0000-0002-8814-1793, **ResearcherID** D-3872-2016

Languages Italian (native), English (full professional proficiency)

Interests Simulation-based design • Shape optimization • Optimization algorithms • Dimensionality reduction methods • Surrogate modelling • Multi-fidelity methods • Machine Learning • Computational Fluid Dynamics

Current Position

since 2019 ***Research Scientist*** **(tenured)**, *CNR-INM, National Research Council-Institute of Marine Engineering*, Rome, Italy.
Multi-disciplinary analysis and design optimization.

Research Experience

2018 – 2019 ***Postdoctoral Research Fellow***, *CNR-INM, National Research Council-Institute of Marine Engineering*, Rome, Italy.
Design optimization in environmental and operational stochastic conditions, based on numerical computer simulations.

2018 ***Visiting PostDoc***, *IIHR Hydroscience & Engineering, University of Iowa*, Iowa City, USA.
Evaluation of Prediction Methods for Ship Performance in Heavy Weather.

2016 – 2018 ***Postdoctoral Research Fellow***, *CNR-INSEAN, National Research Council-Marine Technology Research Institute*, Rome, Italy.
Study and development of reliability-based and robust design optimization techniques in ship hydrodynamics for real ocean environment.

2013 – 2015 ***PhD Fellow***, *CNR-INSEAN, National Research Council-Marine Technology Research Institute*, Rome, Italy.
Study and development of theoretical and numerical methodologies in multidisciplinary robust design optimization.

Education

2016 **PhD, Mechanical and Industrial engineering**, *Roma Tre University*, Rome, Italy.
Dissertation title: "Hybrid global/local optimization methods in simulation-based shape design"

2015 **Visiting PhD student**, *IIHR Hydroscience & Engineering, University of Iowa*, Iowa City, USA.
Topic: "Design space assessment for ship design optimization by CFD simulations"

2012 **Master of Science, Aeronautical engineering**, *Roma Tre University*, Rome, Italy.
Dissertation title: "RANS aerodynamics analysis of non conventional airfoil via OpenFOAM"

2009 **Bachelor of Science, Mechanical engineering**, *Roma Tre University*, Rome, Italy.
Dissertation title: "Numerical characterization of a cylindrical cavity"

Fellowships & Awards

2018 ***Short Term Mobility Award*** by National Research Council, Italy for the research project "High-fidelity Simulations of Ship Performance in Heavy Weather". Host Institution: The University of Iowa; host: Prof. Frederick Stern

2018 ***Best Paper Award Candidate*** by Springer for the paper "Augmented Design-space Exploration by Nonlinear Dimensionality Reduction Methods" presented at the *Fourth International Conference on Machine Learning, Optimization, and Data Science, LOD 2018* in Volterra, Italy.

2017 ***Best Paper Award Candidate*** by Springer for the paper "Nonlinear methods for design-space dimensionality reduction in shape optimization" presented at the *Third International Conference on Machine Learning, Optimization, and Data Science, MOD 2017* in Volterra, Italy.

2013 – 2015 ***PhD Fellowship*** by the Engineering, ICT and Technologies for Energy and Transportation Department, National Research Council-Marine Technology Research Institute (CNR-INSEAN), Italy.

Research Projects

International

2021 – 2024 ***FORWARD*–Improving Knowledge, Prediction, and Forecasting of Ships in Waves via Hybrid Machine Learning Methods**, US Department of the Navy Office of Naval Research (ONR) Global, Naval International Cooperative Opportunities in Science and Technology Program (NICOP), grant N62909-21-1-2042. Funding: 180k$. Position: Co-Principal Investigator.

2020 – 2023 ***MDO*–High-Fidelity Multi-Phase Sharp-Interface Code Development and V&V for High Fr Small Craft FSI and MDO**, US Department of the Navy, Office of Naval Research (ONR), University of Iowa sub-award. Funding: 63k$. Position: Co-Principal Investigator.

2017 – 2020 ***HOLISHIP*–Holistic optimization of ship design and operation for life cycle**, European Commission, HORIZON 2020 program. CNR-INSEAN WP Funding: 208k$. Position: Research staff.

2016 – 2020 ***PRICO*–Analytical and Numerical Methods for Identifying Principal Components of Heterogeneous Physical Data**, US Department of the Navy Office of Naval Research (ONR) Global, Naval International Cooperative Opportunities in Science and Technology Program (NICOP), grant N62909-18-1-2033. Funding: 225k$. Position: Co-Principal Investigator.

2018 – 2019 ***EXTREME*–High-Fidelity CFD/CSD of Delft Catamaran Wet Deck Slamming and CFD of 5415M Large Amplitude Motions in Extreme Waves**, Korea Institute of Science and Technology, The University of Iowa sub-award. Funding: 25k$. Position: Co-Principal Investigator.

2017 – 2019 ***FSI*–Fluid-structure interaction studies for semi-planing hulls**, US Department of the Navy, Office of Naval Research (ONR), University of Iowa sub-award. Funding: 50k$. Position: Research staff.

2015 – 2017 ***RDO II*–Stochastic SBD for Reduction of Added-Powering/Motions/Slamming for Surface Ships in Real Seas**, US Department of the Navy Office of Naval Research (ONR) Global, Naval International Cooperative Opportunities in Science and Technology Program (NICOP), grant N62909-15-1-2016. Funding: 140k$. Position: Co-Principal Investigator.

2013 – 2015 ***RDO*–Stochastic Variable Physics Simulation-Based Design (SBD) for High Speed Waterjet Ships**, US Department of the Navy Office of Naval Research (ONR) Global, Naval International Cooperative Opportunities in Science and Technology Program (NICOP), grant N62909-11-1-7011. Funding: 205k$. Position: Research staff.

National

2020 – 2023 ***ATOM*–Advanced meThods for prediction and Optimization of ships and Marine applications operating in realistic scenarios**, National Research Council of Italy. Funding: 42k€. Position: Co-Investigator.

2019 – 2022 ***DDX*–Numerical and experimental studies for the definition of the new naval destroyer units**, Italian Navy. Commessa 01CT19, Subtask 1 "Design optimization," Funding: 20k€. Position: Principal Investigator.

2019 – 2021 ***OPTIMAE*–OPTImisation methods and applications in Marine Engineering**, National Research Council of Italy. Funding: 41k€. Position: Co-Investigator.

2019 – 2021 ***RdS*–Ricerca di Sistema**, Italian Ministry of Economic Development. Funding: 112k€. Position: Co-Investigator.

2019 – 2021 ***ARES*–Autonomous robotics for the extended ship**, Italian Ministry of University and Research, National Operative Program (PON). Funding: 1.4M€. Position: Co-Investigator.

2016 – 2019 ***IBRHYDRO*–Hybrid wing hydrofoil**, Italian Ministry of Transport and Infrastructures. OR.4 "Hydrodynamics optimization," Funding: 398k€. Position: Co-Principal Investigator.

2013 – 2016 ***RITMARE*–Flagship Project**, Italian Ministry of Education, University and Research, National Research Program 2011-2013. Subproject 1 "Maritime Technologies," WP2 "Environmental sustainability," Funding: 1.8M€. Position: Research staff.

HPC Resources

2020 – 2021 ***ESODADR*–Enabling high-fidelity Shape Optimization by Design-space Augmented Dimensionality Reduction**, CINECA-Italian SuperComputing Resource Allocation (ISCRA-C) grant HP10CRM564. Funding: 100kCPUh. Position: Principal Investigator

International Research Groups

Technical team member

2020 – 2022 ***NATO-AVT-351* Research Task Group**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel, "Enhanced Computational Performance and Stability & Control Prediction for NATO Military Vehicles"

2020 – 2022 ***NATO-AVT-354* Research Workshop**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel, "Multi-fidelity methods for military vehicle design"

2020 – 2022 ***NATO-AVT-348* Research Task Group**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel, "Assessment of Experiments and Prediction Methods for Naval Ships Manoeuvring in Waves"

2020 – 2022 ***NATO-AVT-331* Research Task Group**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel (former ET-185), "Goal-Driven, multi-fidelity and multidisciplinary analysis for military vehicle system level design"

Contributing author

2017 – 2019 ***NATO-AVT-280* Research Task Group**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel, "Evaluation of Prediction Methods for Ship Performance in Heavy Weather"

2016 – 2018 ***NATO-AVT-252* Research Task Group**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel (former ET-142), "Stochastic Design Optimization for Naval and Aero Military Vehicles"

2012 – 2015 ***NATO-AVT-204* Research Task Group**, NATO Science and Technology Organization (STO), Applied Vehicle Technology (AVT) panel, "Assess the Ability to Optimize Hull Forms of Sea Vehicles for Best Performance in a Sea Environment"

Professional Services

Organization of scientific meetings

2023 **Invited-session organizer and chair**, MARINE 2023, X International Congress on Computational Methods in Marine Engineering; Invited Session on "Simulation-driven design optimization in marine engineering" (Web page), Madrid, Spain, June 27-29

2022 **Program Committee Member**, 8th International Conference on Machine Learning, Optimization and Data Science (Web page), Certosa di Pontignano, Siena, Italy, September 18-22

2021 **Program Committee Member**, 7th International Conference on Machine Learning, Optimization and Data Science (Web page), Grasmere, UK, October 5-8

2020 **Program Committee Member**, 6th International Conference on Machine Learning, Optimization and Data Science (Web page), Certosa di Potignano, Italy, July 19-23

2019 **Program Committee Member**, 5th International Conference on Machine Learning, Optimization and Data Science (Web page), Certosa di Potignano, Italy, September 10-13

2018 **Program Committee Member**, 4th International Conference on Machine Learning, Optimization and Data Science (Web page), Volterra, Italy, September 13-16

Editorial activities

since 2022 **Editor Board Member**, *Scientific Reports* (Nature)

since 2021 **Guest Editor**, *Algorithms* (MDPI), Special issue on "Simulation-Based Optimization: Methods and Applications in Engineering Design"

Reviewing activities

since 2020 **Topics Board Member**, *Applied Science* (MDPI); *Mathematics* (MDPI)

since 2019 **Reviewer Board Member**, *Algorithms* (MDPI); *Remote Sensing* (MDPI)

since 2014 **Reviewer**, *Algorithms* (MDPI) • *Applied Ocean Research* (Elsevier) • *Applied Science* (MDPI) • *Applied Soft Computing* (Elsevier) • *Array* (Elsevier) • *Computers, Environment and Urban Systems* (Elsevier) • *Data* (MDPI) • *Designs* (MDPI) • *Energies* (MDPI) • *Electronics* (MDPI) • *Engineering Applications of Computational Fluid Mechanics* (Taylor & Francis) • *Engineering Optimization* (Taylor & Francis) • *Entropy* (MDPI) • *Expert Systems with Applications* (Elsevier) • *IEEE Access* (IEEE) • *Information Processing & Management* (Elsevier) • *International Journal of Intelligent Systems* (Wiley) • *International Journal of Naval Architecture and Ocean Engineering* (Elsevier) • *Journal of Marine Science and Engineering* (MDPI) • *Journal of Marine Science and Technology* (Springer) • *Journal of Ship Research* (SNAME) • *Materials* (MDPI) • *Mathematics* (MDPI) • *Mathematics and Computers in Simulation* (Elsevier) • *Modelling and Simulation in Engineering* (Hindawi) • *Ocean Engineering* (Elsevier) • *Operations Research Perspectives* (Elsevier) • *Optimization and Engineering* (Springer) • *Processes* (MDPI) • *Remote Sensing* (MDPI) • *Science Progress* (SAGE Publishing) • *Sustainability* (MDPI) • *Symmetry* (MDPI)

Teaching activities

since 2014 **Lecturer**–*Simulation-based design methodologies*, Aircraft Design and Structures, Rome Tre University, Italy

2021 **Adjunct Professor**–*Simulation-based design for efficient hull forms*, Advanced Training Course for "Nautical and naval R&D experts", Project TRIM (Tecnologia e Ricerca Industriale per la Mobilità Marina within Italian Transport Cluster 2020

2017 **Lecturer**–*Reliability-based robust hull-form optimization of a naval destroyer in waves*, Master (II level) in Advanced Skills in Safety Environment and Security at Sea (ASSESS), Università degli studi di Trieste, Italy

2016 **Lecturer**–*Overview on Simulation-based Design Optimization Methods, Dimensionality reduction via KLE - Single-objective optimization algorithms and applications*, Doctoral School in Aeronautical and Aerospace Engineering, Università Sapienza di Roma, Italy

Institutional responsibilities

since 2021 **Member**–*Technical Committee on "Manoeuvring"*, 30th ITTC (International Towing Tanks Conference association)

since 2017 **Examination Committee Member**–*Aircraft Design and Structures*, Rome Tre University, Italy

Academic Advising

PhD students

2021 *D'Agostino D.* – Operations Research, "Nonlinear Machine Learning Methods for Design-Space Dimensionality Reduction in Shape Optimization," co-advisor with Prof. Stefano Lucidi, Sapienza University of Rome and Dr. Matteo Diez, CNR-INM

MSc students

2021 *Vulpio I.* – Aeronautical Engineering, "Reiforcement Learning Applied to Derivative-free Optimization: Development of an Evolutionary Variant of the Q-Learning Algorithm" co-advisor with Prof. Umberto Iemma, Roma Tre University

2021 *Schneider A.* – Aeronautical Engineering, "Nonlinear design-space dimensionality reduction methods for simualtion-based optimization," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INM

2021 *Milano C.* – Aeronautical Engineering, "Development of surrogate models based on artificial neural networks for aeroacoustic applications," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INM

2021 *D'Orazio E.* – Aeronautical Engineering, "Development of non-hierarchical multi-fidelity metamodels based on Gaussian process," co-advisor with Prof. Umberto Iemma, Roma Tre University

2019 *Antognoli L.* – Aeronautical Engineering, "Development of an Adaptive Multi-fidelity Metamodel for Hydrofoil Shape Optimization," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INM

2019 *Ficini S.* – Aeronautical Engineering, "Development of Adaptive Gaussian Processes for Design Optimization in the Presence of Numerical Noise," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INM

2019 *Montagliani L.* – Aeronautical Engineering, "Comparative study of Radial Basis Function Kernels and Use of Cross-validation in Stochastic Simulation-Based Design and Uncertainty Quantification," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INM

2017 *D'Agostino D.* – Management Engineering, "Nonlinear Methods for Design-Space Dimensionality Reduction in Shape Optimization," co-advisor with Prof. Stefano Lucidi, Sapienza University of Rome and Dr. Matteo Diez, CNR-INSEAN

BSc students

2017 *D'Ascenzo N.* – Mechanical Engineering, "Fluid dynamics analysis of a competition kayak based on potential flow theory," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INSEAN

2014 *Lombardi L.* – Mechanical Engineering, "Hull-form modification methodologies in simulation-based ship design optimization," co-advisor with Prof. Umberto Iemma, Roma Tre University and Dr. Matteo Diez, CNR-INSEAN

Publications

Journal Articles

[1] Khan, S., Kaklis, P., Serani, A., Diez, M, "Geometric moment-dependent global sensitivity analysis without simulation data: application to ship hull form optimisation," *Computer-Aided Design*, 103339 2022.

[2] Khan, S., Kaklis, P., Serani, A., Diez, M., Kostas, K., "Shape-supervised dimension reduction: Extracting geometry and physics associated features with geometric moments," *Computer-Aided Design*, 103327, 2022.

[3] Piazzola C., Tamellini L., Pellegrini R., Broglia R., Serani A., Diez, M., "Comparing multi-index stochastic collocation and multi-fidelity stochastic radial basis functions for forward uncertainty quantification of ship resistance," *Engineering with Computers*, 1-29, 2022.

[4] Pellegrini R., Serani A., Liuzzi G., Rinaldi F., Lucidi S., Diez, M., "A Derivative-Free Line-Search Algorithm for Simulation-Driven Design Optimization Using Multi-Fidelity Computations," *Mathematics*, 10(3), 481, 2022.

[5] Serani A., Diez M., van Walree F., Stern F., "URANS analysis of a free-running destroyer sailing in irregular stern-quartering waves at sea state 7," *Ocean Engineering*, 237, 109600, 2021.

[6] Leotardi C., Serani A., Diez M., Campana E. F., Fasano G., Gusso R., "Dense conjugate initialization for deterministic PSO in applications: ORTHOinit+," *Applied Soft Computing*, 104, 107121, 2021.

[7] Serani A., Stern F., Campana E. F., Diez M., "Hull-form stochastic optimization via computational-cost reduction methods," *Engineering with Computers*, 1-25, 2021.

[8] Pellegrini R., Serani A., Liuzzi G., Rinaldi F., Lucidi S., Diez M. "Hybridization of Multi-Objective Deterministic Particle Swarm with Derivative-Free Local Searches," *Mathematics*, 8(4), 546, 2020.

[9] D'Agostino D., Serani A., Diez M., "Design-space assessment and dimensionality reduction: An off-line method for shape reparameterization in simulation-based optimization," *Ocean Engineering* 197, 106852, 2020.

[10] Serani A., D'Agostino D., Campana E. F., Diez M., "Assessing the Interplay of Shape and Physical Parameters by Unsupervised Nonlinear Dimensionality Reduction Methods," *Journal of Ship Research*, 64(4), 313-327, 2019.

[11] Serani A., Pellegrini R., Wackers J., Jeanson C. E., Queutey P., Visonneau M., Diez M., "Adaptive multi-fidelity sampling for CFD-based optimisation via radial basis function metamodels," *International Journal of Computational Fluid Dynamics*, 33(6-7), 237-255, 2019.

[12] Campana E.F., Diez M., Liuzzi G., Lucidi S., Pellegrini R., Piccialli V., Rinaldi F., Serani A., "A Multiobjective DIRECT algorithm for ship hull optimization," *Computational Optimization and Applications*, 71(1), 53-72, 2018.

[13] Pellegrini R., Serani A., Leotardi C., Iemma U., Campana E.F., Diez M., "Formulation and parameter selection in multi-objective deterministic particle swarm for simulation-based optimization," *Applied Soft Computing*, 58, 714-731, 2017.

[14] Serani A., Leotardi C., Iemma U., Campana E. F., Fasano G., Diez M., "Parameter selection in synchronous and asynchronous deterministic particle swarm optimization for ship hydrodynamics problems," *Applied Soft Computing*, 49, 313-334, 2016.

[15] Serani A., Fasano G., Liuzzi G., Lucidi S., Iemma U., Campana E.F., Diez M., "Ship hydrodynamic optimization by local hybridization of deterministic derivative-free global algorithms," *Applied Ocean Research*, 59, 115-128, 2016.

[16] Leotardi C., Serani A., Iemma U., Campana E.F., Diez M., "A variable-accuracy metamodel-based architecture for global MDO under uncertainty," *Structural and Multidisciplinary Optimization*, 54(3), 573-593, 2016.

[17] Campana E.F., Diez M., Iemma U., Liuzzi G., Lucidi S., Rinaldi F., Serani A., "Derivative-free global ship design optimization using global/local hybridization of the DIRECT algorithm," *Optimization and Engineering*, 17(1), 127-156, 2015.

Book Chapters

[1] Diez M., Serani A, "From Uncertainty Quantification to Shape Optimization: Cross-Fertilization of Methods for Dimensionality Reduction," In: Vasile, M., Quagliarella, D. (eds) *Advances in*

Uncertainty Quantification and Optimization Under Uncertainty with Aerospace Applications. UQOP 2020. Space Technology Proceedings, 8, pp. 3-19 Springer, Cham, 2021.

[2] Diez M., Volpi S., Serani A., Stern F., Campana E.F., "Simulation-Based Design Optimization by Sequential Multi-criterion Adaptive Sampling and Dynamic Radial Basis Functions," *Computational Methods in Applied Sciences* 48, 213-228, 2019.

[3] D'Agostino D., Serani A., Campana E.F., Diez M., "Augmented Design-space Exploration by Nonlinear Dimensionality Reduction Methods," *Lecture Notes in Computer Science* (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) LNCS, 2019.

[4] Serani A., Diez M., "Dolphin Pod Optimization: A Nature-Inspired Deterministic Algorithm for Simulation-Based Design," *Lecture Notes in Computer Science* (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 10710 LNCS, 2018, pp. 50-62.

[5] Pellegrini R., Serani A., Liuzzi G., Rinaldi F., Lucidi S., Campana E.F., Iemma U., Diez M., "Hybrid Global/Local Derivative-Free Multi-Objective Optimization via Deterministic Particle Swarm with Local Linesearch," *Lecture Notes in Computer Science* (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 10710 LNCS, 2018, pp.198-209.

[6] D'Agostino D., Serani A., Campana E.F., Diez M., "Nonlinear methods for design-space dimensionality reduction in shape optimization," *Lecture Notes in Computer Science* (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 10710 LNCS, 2018, pp. 121-132.

[7] Serani A., Diez M., "Dolphin Pod Optimization," In: Tan Y., Takagi H., Shi Y. (eds) *Advance in Swarm Intelligence*, 8th International Conference, ICSI 2017, Fukuoka, Japan, July 27 - August 1, 2017, Proceedings, Part I. Lecture Notes in Computer Science, vol 10385 Springer, Cham.

[8] Diez M., Serani A., Leotardi C., Campana E.F., Fasano G., Giusso R., "Dense Orthogonal Initialization for Deterministic PSO: ORTHOinit+," *Advances in Swarm Intelligence*, Lecture Notes in Computer Science, 9712 LNCS, 2016, pp. 322-330.

[9] Serani A., Diez M., Campana E.F., Fasano G., Peri D., Iemma U., "Globally Convergent Hybridization of Particle Swarm Optimization Using Line Search-Based Derivative-Free Techniques" *Recent Advances in Swarm Intelligence and Evolutionary Computation, Studies in Computational Intelligence*, vol. 585, Yang, Xin-She (Ed.), Springer, 2015.

[10] Diez M., Serani A., Leotardi C., Campana E.F., Peri D., Iemma U., Fasano G., Giove S., "A proposal of PSO particles' initialization for costly unconstrained optimization problems: ORTHOinit," *Advances in Swarm Intelligence*, Lecture Notes in Computer Science Volume 8794, 2014, pp 126-133.

Conference Proceedings

[1] Diez, M., Serani, A., Gaggero, M., Campana, E. F., "Improving knowledge and forecasting of ship performance in waves via hybrid machine learning methods, *Proceedings of the 34th Symposium on Naval Hydrodynamics*, Washington DC, USA, 2022.

[2] Wackers, J., Pellegrini, R., Diez, M., Serani, A., Visonneau, M., "Improving active learning in multi-fidelity hydrodynamic optimization," *Proceedings of the 34th Symposium on Naval Hydrodynamics*, Washington DC, USA, 2022.

[3] Serani A., Diez M., "Super-Parametrizing CAD Models for Efficient Shape Optimization via Parametric Model Embedding," *21st International Conference on Computer Applications and Information Technology in the Maritime Industries, COMPIT* 2022.

[4] Wackers, J., Pellegrini, R., Serani, A., Diez, M., Visonneau, M. "Multi-fidelity Active Learning for Shape Optimization Problems Affected by Noise," ECCOMAS 2022.

[5] Khan S., Kaklis P., Serani A., Diez, M, "Supporting Expensive Physical Models With Geometric Moment Invariants to Accelerate Sensitivity Analysis for Shape Optimisation," *AIAA SCITECH Forum* (p. 2093), 2022.

[6] Pellegrini R., Odetti A., Serani A., Caccia M., Diez M., Ficini S., Iemma, U., "A Multi-fidelity Adaptive Gaussian Process for the Uncertainty Quantification of an Autonomous Surface Vehicle," *PROCEEDINGS OF SIMAI 2020+ 21*, 2021.

[7] Khan S., Kostas K., Kaklis P., Serani A., Diez, M., "Bayesian shape optimization in high dimensional design spaces using IGA-enabled solvers," *Virtual International Conference on Isogeometric Analysis*, 2021.

[8] Ficini S., Iemma U., Pellegrini R., Serani A., Diez M., "Assessing the Performance of an Adaptive Multi-Fidelity Gaussian Process with Noisy Training Data: A Statistical Analysis," *AIAA AVIATION FORUM*, (p. 3098), 2021.

[9] Ficini S., Pellegrini R., Odetti A., Serani A., Iemma U., Caccia M., Diez M., "Uncertainty Quantification of an Autonomous Surface Vehicle by Multi-fidelity Surrogate Models," *9th edition of the International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2021)*.

[10] D'Agostino D., Serani A., Stern F., Diez M., "Recurrent-type neural networks for real-time short-term prediction of ship motions in high sea state," *9th Conference on Computational Methods in Marine Engineering (Marine 2021)*, Virtual event, 2021.

[11] Diez M., Serani A., Campana E. F., Stern, F., "Data-driven Modelling of Ship Maneuvers in Waves via Dynamic Mode Decomposition," *9th Conference on Computational Methods in Marine Engineering (Marine 2021)*, Virtual event, 2021.

[12] Pellegrini R., Wackers J., Serani A., Visonneau M., Diez, M., "Towards automatic parameter selection for multi-fidelity surrogate-based optimization," *9th Conference on Computational Methods in Marine Engineering (Marine 2021)*, Virtual event, 2021.

[13] Liuzzi G., Lucidi S., Rinaldi F., Pellegrini R., Serani A., Diez M., "Derivative-Free Line-Search Algorithm for Multi-Fidelity Optimization," *AIAA SciTech Forum* (p. 1237), 2021.

[14] Khan S., Serani A., Diez M., Kaklis P., "Physics-informed feature-to-feature learning for design-space dimensionality reduction in shape optimisation," *AIAA SciTech Forum* (p. 1235), 2021.

[15] D'Agostino D., Andre M., Bardet P., Serani A., Felli M., Diez M., "Observing PIV Measurements Through the Lens of Data Clustering," *33rd Symposium on Naval Hydrodynamics*, Osaka, Japan, 2020.

[16] Wackers J., Visonneau M., Serani A., Pellegrini R., Broglia R., Diez M., "Multi-Fidelity Machine Learning from Adaptive-and Multi-Grid RANS Simulations," *33rd Symposium on Naval Hydrodynamics*, Osaka, Japan, 2020.

[17] van Walree F., Serani A., Diez M., Stern F., "Prediction of heavy weather seakeeping of a destroyer hull form by means of time domain panel and CFD codes. *33rd Symposium on Naval Hydrodynamics*, Osaka, Japan, 2020.

[18] Pellegrini R., Serani A., Ficini S., Broglia R., Diez M., Wackers J., Visonneau M., "Adapt, Adapt, Adapt: Recent Trends in Multi-fidelity Digital Modelling for Marine Engineering," *19h International Conference on Computer Applications and Information Technology in the Maritime Industries, COMPIT 2020*.

[19] Beran P. S., Bryson D., Thelen A. S., Diez M., Serani A., "Comparison of Multi-Fidelity Approaches for Military Vehicle Design," *AIAA AVIATION FORUM* (p. 3158), 2020.

[20] Piazzola C., Tamellini L., Pellegrini R., Broglia R., Serani A., Diez M., "Uncertainty Quantification of Ship Resistance via Multi-Index Stochastic Collocation and Radial Basis Function Surrogates: A Comparison," *AIAA AVIATION FORUM* (p. 3160), 2020.

[21] Wackers J., Visonneau M., Ficini S., Pellegrini R., Serani A., Diez, M., "Adaptive N-Fidelity Metamodels for Noisy CFD Data," *AIAA AVIATION FORUM* (p. 3161), 2020.

[22] Quagliarella D., Serani A., Diez M., Pisaroni M., Leyland P., Montagliani L., Iemma U., Gaul N. J., Shin J., Wunsch D., Hirsch C., Choi K. K., Stern F., "Benchmarking Uncertainty Quantification

Methods Using the NACA 2412 Airfoil with Geometrical and Operational Uncertainties," *AIAA Aviation Forum* (p. 3555), 2019.

[23] Wackers J., Serani A., Pellegrini R., Diez M., Visonneau M., "Adaptive multifidelity shape optimization based on noisy CFD data," *International Conference on Adaptive Modeling and Simulation* ADMOS 2019.

[24] Antognoli L., Bibuli M., Diez M., Durante D., Ficini S., Marrone S., Odetti A., Santic I., Serani A., "A Synergetic Design Study of a Passenger-Hydrofoil Flapped Surface: Experimental and Computational Fluid Dynamics, Optimization, and Control," *8th International Conference on Computational Methods in Marine Engineering* (Marine 2019) (pp. 334-345).

[25] Serani A., Pellegrini R., Broglia R., Wackers J., Visonneau M., Diez M., "An Adaptive N-Fidelity Metamodel for Design and Operational-Uncertainty Space Exploration of Complex Industrail Problems," *8th International Conference on Computational Methods in Marine Engineering* (Marine 2019) (pp. 177-188).

[26] Antognoli L., Ficini S., Bibuli M., Diez M., Durante D., Marrone S., Odetti A., Santic I., Serani A., "Hydrodynamic Design Procedure via Multi-Objective Sampling, Metamodeling, and Optimisation," *18h International Conference on Computer Applications and Information Technology in the Maritime Industries, COMPIT 2019*, Tullamore, Ireland, 25-27 March.

[27] Serani A., Durante D., Diez M., D'Agostino D., Clement S., Badra J., Andre M., Habukawa M., Bardet, P., "PIV data clustering of a buoyant jet in a stratified environment," *AIAA SciTech Forum* (p. 1830), 2019.

[28] Serani A., Diez M., Wackers J., Visonneau M., Stern F., "Stochastic shape optimization via design-space augmented dimensionality reduction and RANS computations," *AIAA SciTech Forum* (p. 2218), 2019.

[29] Serani A., D'Agostino D., Campana E. F., Diez, M., "Assessing the interplay of shape and physical parameters by nonlinear dimensionality reduction methods," *32nd Symposium on Naval Hydrodynamics*, Hamburg, Germany, 2018.

[30] Serani A., Diez M., "Shape Optimization under Stochastic Conditions by Design-space Augmented Dimensionality Reduction", *19th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Atlanta, USA, 25-29 June 2018

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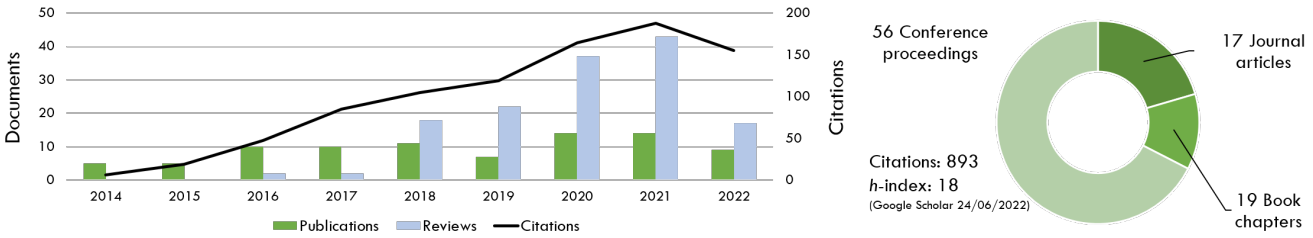

Figure: *Overview of publications, reviews (Publons), citations, and metrics (Google Scholar) – Jun. 24th, 2022.*