Zachary del Rosario

Curriculum Vitae

December 2018

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Education and Qualifications

2014 BS Olin College of Engineering
2018 MS Stanford University
2020 PhD Stanford University (Eagerly Anticipated)
Co-advisors: Gianluca Iaccarino and Art B. Owen

Honors and Awards

2015 NSF Graduate Research Fellowship
2017 AIAA Jefferson Goblet Best Student Paper
2017 Stanford MECON Oral Presentation award, 1st place
2018 VPGE Diversifying Academia, Recruiting Excellence (DARE) Fellowship

Grants

2015	NSF Graduate Research Fellowship	Personal	~$300,000
2017	Statistical Perspectives on UQ travel award	Personal	$500
2017	Stanford Speaker's Bureau Co-sponsorship	ASEE	$1,500
2018	Stanford VPGE SPICE Grant	ASEE	$2,500
2018	Stanford VPTL Teaching Advancement Grant	ASEE	~ $800
2018	Stanford VPGE DARE Fellowship	Personal	~$112,000

Publications

Refereed research papers

1. del Rosario, Z., R. W. Fenrich, and G. Iaccarino (Accepted). Cutting the Double Loop: Theory and Algorithms for Reliability-Based Design Optimization with Statistical Uncertainty. *International Journal for Numerical Methods in Engineering*.

Pre-prints

1. del Rosario, Z., M. Lee, and G. Iaccarino (2018, In review). Lurking Variable Detection via Dimensional Analysis. *arXiv preprint arXiv:1711.03918*.
2. Constantine, P. G., Z. del Rosario, and G. Iaccarino (2017, Forthcoming in JCP). Data-driven dimensional analysis: algorithms for unique and relevant dimensionless groups. *arXiv preprint arXiv:1708.04303*.
3. Constantine, P. G., Z. del Rosario, and G. Iaccarino (2016). Many physical laws are ridge functions. *arXiv preprint arXiv:1605.07974*.

Invited talks

1. del Rosario, Z. (October 19, 2018). The Curse of Dimensionality: Problems and Strategies. In: von Karman Institute: Uncertainty Quantification in Computational Fluid Dynamics (STO-AVT 326).
2. del Rosario, Z. (September 6, 2018). Lost in Hyperspace: The Curse of Dimensionality. In: Wellesley College student seminar.
3. del Rosario, Z., A. Towne, and G. Iaccarino (2018c). Dimension Reduction for Shape Design Insight. In: Aerospace Computational Design Lab (ACDL) seminar, MIT.

Papers in conference proceedings

1. del Rosario, Z., P. Constantine, and G. Iaccarino (2017c). Developing Design Insight Through Active Subspaces. In: 19th AIAA Non-Deterministic Approaches Conference, pp.1090.
2. del Rosario, Z., A. Towne, and G. Iaccarino (2018b). Dimension Reduction for Shape Design Insight. In: 2018 AIAA Aerospace Sciences Meeting.

Conference talks

1. del Rosario, Z. and G. Iaccarino (2016). Pi Active Subspace. In: Thermal and Fluid Science Affiliates Conference.
2. del Rosario, Z., P. Constantine, and G. Iaccarino (2017a). Algorithm-Driven Insight. In: Thermal and Fluid Science Affiliates Conference.
3. del Rosario, Z., P. Constantine, and G. Iaccarino (2017b). Data-Driven Dimensional Analysis. In: CompFest.
4. del Rosario, Z., M. Lee, and G. Iaccarino (2017). Discovering Hidden Controlling Parameters using Data Analytics and Dimensional Analysis. In: 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics.
5. del Rosario, Z., A. Towne, and G. Iaccarino (2017). Handling Classes of Variables in Dimension Reduction. In: SIAM Workshop on Parameter Space Dimension Reduction (DR17).
6. del Rosario, Z., A. Towne, and G. Iaccarino (2018a). Dimension Reduction for Shape Design Insight. In: Thermal, Fluid science Sponsors, and Affiliates conference (TFSA).

Poster presentations

1. del Rosario, Z. and G. Iaccarino (2017). Hidden Parameter Hypothesis Testing. In: Statistical Perspectives on Uncertainty Quantification.
2. Torres, H., Z. del Rosario, and G. Iaccarino (2017). MCRT. In: WEST Conference.

Employment

Summer 2017	Northrop Grumman Corporation, Research intern

Teaching Experience

2011 - 2014	Teaching Assistant at Olin College
2016	Course Assistant: AA 200 Applied Aerodynamics
2017	Course Assistant: CME 200 Linear Algebra (Volunteer/Pro Bono)
2018	Guest Lecturer: ME 470 Uncertainty Quantification (Two lectures)

Outreach and Service

2014-2016	Chair of Teacher Development for Stanford Splash
2014-2016	FIRST (FRC) Robotics Mentor for Team 751
2017-2018	Financial Officer for ASEE Stanford Chapter
2017-Present	Founder and Director of Curriculum of SeeME, Stanford Mechanical Engineering's research outreach program
2018-Present	President of ASEE Stanford Chapter
2018-Present	Stanford VPTL Teaching Consultant

Licenses and Certifications

- Private Pilot, Single engine land, Certificate Number 3386055
- Amateur radio operator, Technician Class, callsign KC3HMT

Skills

Academic	Linear Algebra, Aerodynamics, Optimization, Statistics, User-Centered Design
Computer	Python, R, c++, MATLAB, MPI, Legion/Regent, Unix, SolidWorks, LaTeX
Machine Shop	Manual and CNC milling, Manual turning, Laser cutting, MIG welding

Interests

Music	Performing (bass guitar and vocals), Composing, Recording, Mixing
Writing	Creative writing, Worldbuilding, Tabletop gaming, Voracious reading
Social Dance	Waltz, Swing / Lindy Hop

The Engineer's Entreaty:
"Grant me the Insight to abstract the things I do not need,
Tenacity to understand the things I require,
And Wisdom to know the difference."