

Paulo Yu

 Professional |  yup@uwplatt.edu |  +1 818 746 7295

EDUCATION

- 2018 - 2022 **Doctor of Philosophy - Mechanical Engineering**
University of Idaho (UI)
Dissertation Title: "Application of Modal Decomposition to Study Unsteady Flow in Aneurysms" | Major Professor: Dr. Vibhav Durgesh
- 2015 - 2018 **Master of Science - Mechanical Engineering**
California State University, Northridge (CSUN)
Thesis Title: "Experimental Study on Impact of Inflow Conditions on Large-Scale Flow Structures in an Aneurysm" | Major Professor: Dr. Vibhav Durgesh
- 2011-2015 **Bachelor of Science - Mechanical Engineering**
California State University, Northridge (CSUN)
- 2007 - 2013 **Associate of Arts - General Studies with STEM Emphasis**
Los Angeles Pierce College (LAPC)

ACADEMIC APPOINTMENT

- 2024-Present **Assistant Professor**
Department of Mechanical and Industrial Engineering, University of Wisconsin-Platteville
Platteville, Wisconsin, USA

JOURNAL PUBLICATIONS (IN PREPARATION)

- **Yu P.**, Durgesh V. Modal analysis in aneurysm flow using Proper Orthogonal Decomposition (POD), Dynamic Mode Decomposition (DMD), and Spectral POD. *Spring Nature Journal* (2024).
- **Yu P.**, Baker M., Taslakyan L., Strawn D., Möller G. Reactive Filtration Water Treatment: A retrospective analysis of sand filtration re-engineered for advanced nutrient removal and recovery, micropollutant destructive removal, and net negative CO_2e emissions. *MDPI*. (2024).

JOURNAL PUBLICATIONS

- **Yu P.**, Baker M., Crump A., Vogler M., Strawn D.G., Möller G. Biochar integrated reactive filtration of wastewater for P removal and recovery, micropollutant catalytic oxidation, and negative CO_2e : Process operation and mechanism. *Water Environment Research* (2023) (**Cover Article in September 2023 issue**).
- Madkour F., Lowry M., Ahmed I., Hammad A., Durgesh V., **Yu P.** Analysis of Wind Force on Cyclists from Passing Vehicles. *Journal of Transportation Research Record* (2023).
- Anderson M., Durgesh V., Baker M., **Yu P.**, Möller G. Biomimetic crossflow filtration with wave minimal surface geometry for particulate water treatment. *PLOS Water* 2.1 (2023): e0000055.
- **Yu P.**, Durgesh V. Experimental study of flow structures' impact to the fluid parameters in saccular aneurysm models. *Experimental Thermal and Fluid Science*. 2022; p. 110675. (**Editor's Choice in 2023**)

- **Yu P.**, Durgesh V. Modal Decomposition Techniques: Application in Coherent Structures for a Saccular Aneurysm Model. *Fluids*. 2022;7(5):165.
- **Yu P.**, Durgesh V. Comparison of Flow Behavior in Saccular Aneurysm Models Using Proper Orthogonal Decomposition. *Fluids*. 2022;7(4):123.
- **Yu P.**, Durgesh V. Application of Dynamic Mode Decomposition to Study Temporal Flow Behavior in a Saccular Aneurysm. *Journal of Biomechanical Engineering*. 2022;144(5).
- **Yu P.**, Durgesh V., Xing T., Budwig R. Application of proper orthogonal decomposition to study coherent flow structures in a saccular aneurysm. *Journal of Biomechanical Engineering*. 2021;143(6).

CONFERENCE PUBLICATIONS

- Durgesh V., Padilla R., **Yu P.** Experimental Study: Aerodynamics of a Flexible Membrane in a Uniform Flow. In: *AIAA AVIATION 2020 FORUM*; 2020. p. 3080.
- **Yu P.**, Durgesh V. Experimental study of large-scale flow structures in an aneurysm. In: *Fluids Engineering Division Summer Meeting*. vol. 51555. American Society of Mechanical Engineers; 2018. p. V001T02A009.
- Garcia E., **Yu P.**, Durgesh V., Johari H. Experimental study of thin and thick airfoils at low Reynolds numbers. In: *54th AIAA Aerospace Sciences Meeting*; 2016. p. 0854.

CONFERENCE PRESENTATIONS

- **Yu P.**, Durgesh V. Modal decomposition application to study large-scale flow structures in an aneurysm. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2021. p.E20–003.
- **Yu P.**, Durgesh V. Framework for unsteady flow analysis in a circular cavity using Dynamic Mode Decomposition. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2020. p.T07–005.
- **Yu P.**, Durgesh V. Pressure Field Estimation on Flow over a Sidewall Aneurysm. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2019. p.Q11–007.
- **Yu P.**, Durgesh V., Johari H. Experimental Study of Flow Behavior in Aneurysm with Varying Bottleneck Factor. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2018. p.G18–004.
- **Yu P.**, Durgesh V., Johari H. Impact of Inflow Conditions on Coherent Structures in an Aneurysm. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2017. p.D5–003.
- Conlin W., **Yu P.**, Durgesh V. Application of Dynamic Mode Decomposition: Temporal Evolution of Flow Structures in an Aneurysm. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2017. p.E3–006.
- **Yu P.**, Choi C., Durgesh V. Experimental Study of Fluid Flow in an Aneurysm for Varying Shape Indices. In: *APS Division of Fluid Dynamics Meeting Abstracts*; 2014. p.G7–006.

BOOK CHAPTERS (IN REVIEW)

- Padilla R., **Yu P.**, Swenson M., Durgesh V. Application of 3D printing in the Experimental Aerodynamic Research. *Digital Manufacturing in Industry 5.0*. Springer Nature Journal (2024).

RESEARCH EXPERIENCE

2021-2024 **Post-Doctoral Researcher**

Department of Soil and Water Systems, University of Idaho

Advisors: Dr. Gregory Möller and Dr. Vibhav Durgesh

Project: Phosphorus Removal to Oligotrophic Levels Innovating Three High-Flow Water Technologies using Reactive Filtration, Biochar Adsorption, and Nanobubble-Enhanced Biomimetic Separations

Funding amount: \$1,000,000

2018-2021 **Graduate Research Assistant**

Department of Mechanical Engineering, University of Idaho

Advisor: Dr. Vibhav Durgesh

2016-2018 **Graduate Research Assistant**

Department of Mechanical Engineering, California State University, Northridge

Advisor: Dr. Vibhav Durgesh

2013-2016 **Undergraduate Research Assistant (Volunteer)**

Department of Mechanical Engineering, California State University, Northridge

Advisor: Dr. Vibhav Durgesh

TEACHING EXPERIENCE

University of Idaho

ME 541 Mechanical Engineering Analysis (Graduate) - *Fall 2020, Fall 2021*

ME 330/L Experimental Methods for Engineers (Undergraduate) - *Fall 2019, Spring 2020, Fall 2020, Spring 2021, Spring 2023*

California State University, Northridge

ME 335/L Mechanical Measurements (Undergraduate) - *Fall 2017, Spring 2018*

ADVISING EXPERIENCE (CAPSTONE)

University of Idaho

2023-2024 Prandtl-D Wing Demonstration

2023-2024 Oil-Film Interferometry

2023-2024 Fisheries Wastewater Recapture

2023-2024 C-Arm Relocation Guidance

2024 Controlled Velocity Projectile Acceleration

MENTORSHIP EXPERIENCE

MS Piyush Basnet (2021-2023), Rodrigo Padilla (2019-2021)

PhD Rodrigo Padilla (2021-Present)

INDUSTRY EXPERIENCE

2015-2016 **Mechanical Engineering Intern**

MeasureTech, Chatsworth, California

ACCOLADES

Fellowships	ASME Foundation Graduate Teaching Fellowship <i>American Society of Mechanical Engineers (ASME)</i>	2019-2021
Awards	Outstanding Graduate Student for Scholarly Work <i>College of Engineering and Computer Science California State University, Northridge (CSUN)</i>	2018
	Graduate Engineering Presenter (2nd Place) <i>32nd Annual CSU Statewide Competition</i>	2018
	Graduate Engineering Presenter (1st Place) <i>21st Annual Student Research and Creative Works CSUNposium</i>	2017
Scholarships	William J. and Marijane E. Adams Jr. <i>American Society of Mechanical Engineers (ASME)</i>	2013
	The Boeing Company Annual Scholarship <i>College of Engineering and Computer Science (CSUN)</i>	2013
Certifications	Engineer-In-Training, California <i>Board for Professional Engineers, Land Surveyors, and Geologists</i>	2014
	Professional Engineering License (In Preparation) <i>Board for Professional Engineers, Land Surveyors, and Geologists</i>	2024
	Technical Writing Essentials for Engineers <i>American Institute of Aeronautics and Astronautics</i>	2023

SKILLS

Computer	Design: SolidWorks (including FEA Package), ANSYS Fluent Software: Matlab (including Simulink), NI LabView, Python, Visual Basic for Applications, Engineering Equation Solver (EES), RStudio Productivity: MS Office, L ^A T _E X, TecPlot, Adobe Lightroom Systems: Windows (all versions), Macintosh Remote: Zoom, MS Teams
Hardware	Particle Image Velocimetry (PIV), Laser Doppler Velocimetry (LDV), Oil-Film Interferometry (OFI), Planar Laser Induced Fluorescence (PLIF), Data acquisition systems, Strain gauges, Optics, Basic machining equipment, Laser cutting machine, 3D Printing machine, Optical comparators, wind tunnel, water tunnel
Analysis	Proper Orthogonal Decomposition (POD), Dynamic Mode Decomposition (DMD)

PROFESSIONAL MEMBERSHIP

- Member American Society of Mechanical Engineers (ASME)
- Member Tau Beta Pi Engineering Honor Society (TBP)
- Member American Physical Society (APS)
- Member American Institute of Aeronautics and Astronautics (AIAA)

LANGUAGES

Filipino (Native), English (Fluent), Spanish (Beginner)