Jose T. Gonsalves

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EDUCATION

MSc. Mechanical Engineering
Cumulative GPA: 3.90 / 4.0
University of British Columbia (UBC)
Vancouver, British Columbia, Canada
Class of 2023

B.S. Aerospace and Ocean Engineering Double Major
Minor: Naval Engineering
Cumulative GPA: 3.85 / 4.0 *(Summa Cum Laude)*
Class Rank: 7 / 137
Virginia Tech (VT)
Blacksburg, Virginia, USA
Class of 2016

ACADEMIC HONORS & AWARDS

- **The Gartshore Fellowship**, UBC Mechanical Engineering Department, April 2020
- **The Chester L. Long Graduate Scholarship**, The Society of Naval Architects and Marine Engineers (SNAME), May 2020
- 1st Place AOE Department Senior Design Competition, Virginia Tech, May 2016

EMPLOYMENT EXPERIENCE

Freelance Consultant, Canada — *January 2024 – July 2024*
Naval Architect and Marine Engineer

- Provided technical support running simulations and developing toolboxes within the OpenFAST ecosystem as part of a wider feasibility study project involving semi-submersible FOWTs operating in the challenging (rough sea state, icy conditions) North Atlantic environment. Multiphysical operations and mooring analyses included coupled aero, hydro, and structural dynamics effects.

NETSCo. Inc., Cleveland, Ohio — *May 2017 – August 2019*
Naval Architect and Marine Engineer

- Developed GLMs for bulk carrier loading ops and analyzed multi-body interactions during dry-dockings and load-offs using GHS.
- Developed conversion concepts through to regulatory type approval (synthesizing class rules, generating renderings, performing calcs, projecting feasibility, producing drawings and arrangements), including an OSV to both an LNG Tanker and a WT Installation Vessel.
- Lead NETSCo's engineering, coordination, technology development, and patent filing efforts in tandem with various industry partners (owners, operators, scientist, regulatory bodies, and community representatives) to bring a feasible BWMS to the Great Lakes.
- Performed structural analysis studies using Creo Simulate and ATB configuration optimization studies using Simerics-MP+.

MiNO Marine, LLC, New Orleans, Louisiana — *October 2016 – May 2017*
Junior Naval Architect

- Performed dynamic stability (wind, sea state) and moment calcs for the jack-up and lifting operations of a fleet of brownfield liftboats.
- Coordinated salvage and restoration efforts for a 40' steam-powered yacht aided by tools such as drone photogrammetric point clouds.
- Developed in-house tools for EPLA, preliminary weight estimating, vessel loading and, operational condition and stability analyses.
- Supported the development of CAD drawings, Ops. Manuals, Subchpt. M compliance docs, Dry-docking pre-award calculations, etc.

Tsunami Marine Ltd., Port of Spain, Trinidad — *Summer 2014, 2015*
Naval Architect Intern and Extern

- Participated in 3 ISM Code and SMS workshops and assisted in CMID and OVID Audits onboard 10 offshore supply vessels.
- Audited FSS and drafted Fire Control Plans for over 10 vessels of varying classification per the amended SOLAS regulations.
- Performed detailed fire damage inspections, operations audits, cost estimates, and reconstruction recommendations for 4 gutted ships, summarizing them into technical reports on behalf of vessel owners/operators to be used for insurance claims upward of $2M.

TEACHING EXPERIENCE

University of British Columbia, Vancouver, Canada
(Lead) Teaching Assistant*

- PHYS 159 – Physics Laboratory for Engineers — *Spring 2023*
- STAT 200 – Elementary Statistics for Applications — *Spring 2021 & 2022*
- STAT 305 – Introduction to Statistical Inference — *Summer II 2021*
- MECH 325 – Machine Design: Design with Mechanical Components* — *Fall 2021, 2022 & 2023*

COMMERCIAL SOFTWARE SKILLS

- Solidworks
- ShipConstructor
- ANSYS Fluent & LS-DYNA
- Simerics-MP+ & STAR-CCM+
- Creo Simulate
- MathCAD / NavCAD
- HECSALV
- MOSES & Maxsurf
- MAESTRO & FEMAP
- GHS
- SimScale
- ModelCenter
- Autodesk Design Suite: Inventor, AutoCAD, Navisworks
- Rhinoceros: Orca3D, OrcaFlex, Grasshopper, Flamingo nXt
- Microsoft Office Suite: Word, Excel, Project, Visio, PowerPoint, Teams, One Note.

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RESEARCH EXPERIENCE

UBC Institute of Applied Mathematics, Vancouver, BC *January 2024 – July 2024*
Visiting Research Scientist

- Developed a localized interface tracking and extended Kalman filtering inspired error correction strategy for partitioned FSI simulations involving oscillating elastic beams that improves each time step's preliminary estimate of the interface's equilibrium spatial configuration.
- Developed a reduced order method for approximating the spatio-temporal gradient of an FSI problem's interface via the Taylor expansion of the interface's individual nodal trajectories each described by a finite summation of strategically selected Fourier modes.

UBC Computational Multiphysics Laboratory (CML) *August 2020 – December 2023*
Graduate Research Assistant – Dr. Rajeev Jaiman

- Developed a robust and efficient quasi-Newton coupling algorithm to stabilize and accelerate the iterative convergence of (partitioned) low mass-ratio fluid-structure interaction (FSI) simulations based on an adaptively regularized Anderson Acceleration and eigenmode filtering strategy. Integrated these algorithms (and additional tools) into the lab's MPI parallelized HPC research code base.
- Developed from scratch my own suite of OpenMP parallelized 2/3D high-fidelity FSI packages in MATLAB (w/ mexified C++ files) to investigate the numerical properties of partitioned multiphysics simulations (i.e. HO temporal and DG spatial discretization schemes).
- Supported the data (numerical and empirical) analysis efforts for the lab's Intelligent and Green Marine Vessels (IGMVs) project; mainly the investigation into the intentional manipulation of cavitation and vortex shedding frequencies to control ship radiated propeller noise.

Virginia Tech Experimental Aero/Hydroacoustics Laboratory *Spring 2016*
Undergraduate Researcher- Dr. William Alexander

- Designed and conducted a set of experiments using the Anechoic Wall-Jet Wind Tunnel to characterize the unsteady aerodynamic properties of near-wall flows over canopy shrouded surfaces as part of a larger effort to understand roughness noise suppression.

Conference Proceedings

- 74th American Physic Society – Division of Fluid Dynamics — Anderson-Type Mixing for the Convergence Acceleration of Partitioned Fluid Structure Interaction (FSI) Algorithms — *November 21st – 23rd, 2022*

TECHNICAL EXPERIENCE

Technical & Research (T&R) Program Involvement (SNAME)
Contributing Member

- M – 16 Panel: Propulsion Shafting *Spring 2018 – Present*
- SC – 2 Panel: Sailing Craft *Fall 2018 – Spring 2020*
- HS – 4 Panel: Design Procedure and Philosophy *Spring 2019 – Present*
- SD – 5 Panel: Advanced Marine Vehicles *Fall 2019 – Fall 2023*

SailBOT @ Virginia Tech *August 2013 – June 2016*
Project Manager (Commodore)

- Directed the development of a 2-meter class fully autonomous sailboat to compete in the annual International Robotic Sailing Regatta.
- Grew the team's size (27 → 40) and budget ($25k → $30k), negotiated for academic credit and research opportunities, increased sponsorship and community outreach participation, implemented documentation procedures, and redesigned the leadership structure.

Future Guided Missile Trimaran Corvette Design Team *Fall 2015 – Summer 2016*
Team Member

- Detailed concept exploration and development engaging the full design spiral from PSO informed hullform selection to lifecycle cost and risk analyses. Presented our work to DOD stakeholders and won an honorable mention in the Lisnyk ship design competition.

PROFESSIONAL SOCIETY MEMBERSHIP

- The Society of Naval Architects and Marine Engineers (SNAME)
- The Pacific Institute for the Mathematical Sciences (PIMS)
- The American Society of Mechanical Engineers (ASME)
- American Physics Society (APS)
- American Institute of Aeronautics and Astronautics (AIAA)
- U.S. Association for Computational Mechanics (USACM)
- Tau Beta Pi Engineering Honors Society (TBP)
- American Society of Naval Engineers (ASNE)

RESEARCH SOFTWARE SKILLS

- Simulink / LabVIEW
- MATLAB
- Mathematica
- TensorFlow
- Open MPI, OpenMP, CUDA
- FEniCS
- Calculix /Abaqus
- deal.ii
- OpenFAST
- OpenFOAM, foam-extend, SU2
- Programming Languages: C++, Fortran, Python, R, Julia, Rust, VBA
- Pre/Post-Proc: GMSH, Pointwise, Paraview, Tecplot, GiD, SALOME

  Multiphysics Packages: SimFlow, Kratos, Comsol, preCICE, CoCoNuT

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LEADERSHIP EXPERIENCE

President	MECH Graduate Student Association	*Spring 2022 – Spring 2023*
Vice-Chair	UBC CACSE Chapter	*Fall 2021 – Spring 2022*
Graduate Student Body Representative	MECH Sustainability Committee	*Fall 2021 – Spring 2022*
Electronic Media Chair	SNAME HQ Student Steering Committee	*Spring 2021 – Fall 2021*
Treasurer	SNAME UBC Student Section	*Fall 2021 – Present*
Volunteer Staff	United Way T&T	*February 2020 – August 2020*
SMC Short Course Planning Committee	SNAME Young Professionals Section	*Spring 2019 – Fall 2019*
Communications Chair	SNAME Great Lakes Section	*Fall 2017 – Fall 2019*
Commodore	VT SailBOT	*Fall 2015 – Spring 2016*
Hull Construction Captain	VT SailBOT	*Fall 2014 – Spring 2015*
Vice-President and Service Chair	VT Caribbean Student Organization	*Spring 2014 – Spring 2016*
Student Engineering Council Representative	SNAME VT Student Section	*Spring 2015 – Spring 2016*
Treasurer	Tau Beta Pi Engineering Honors Society	*Fall 2015 – Spring 2016*
Senior Global Ambassador	VT Cranwell International Center (CIC)	*Fall 2014 – Spring 2016*
Student Ambassador	Aerospace and Ocean Engineering Department	*Spring 2015 – Spring 2016*
Undergraduate Student Body Representative	CIC Program Review Committee	*Fall 2014 – Spring 2015*