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Tyler E. Ellis

Ocean Engineer

Security Clearance: Secret
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Experience

Current Position: Naval Architect, DDG(X) Next-Generation Destroyer (GS-12) Jul 2021 - Present

↪ NAVSEA, Naval Surface Warfare Center (NSWC) Carderock Division, *Bethesda, MD*

- Model and balance ship concept designs using Rhino 3D and Navy-developed software. Create ship hullforms, decks, deckhouses, and subdivisions. Develop and organize a ship concept database comparing the characteristics of 100+ ship concept design excursions. Plots from the database used to brief OPNAV-N96 and a 3-star admiral at the Pentagon.
- Conducted a cargo logistics systems integration study for the Marine Corps Warfighting Laboratory (MCWL). Wrote a project study guide and project schedule. Ensured integration compliance with military standards and good engineering practices. Briefed findings to MCWL, NAVSEA 05D Director, and Navy future concepts technical warrant holder.
- Led engineering design team on a future concept ship design. Utilized a "clean sheet" approach iterating through the ship design spiral from: parent hull, 2D stack-up, 3D modeling, A/V, weights, EPLA, resistance, power est., machinery, fuel est., stability, and seakeeping. Coordinated working relationships with technical warrant holders and subject matter experts.
- Leading hand on a formalized “General Arrangements Best Practices Handbook” promulgated across NSWC Carderock.
- Supported systems integration feasibility studies for NSWC Panama City Division. Applied Navy-developed software to model ship concepts, conduct seakeeping, and load calculations. Authored technical reports delivered to NSWC Panama.

Journal of Scientific Reports, Co-Author, *Published* Apr 2023

Transient use of Hemolymph for Hydraulic Wing Expansion in Cicadas

Mary K. Salcedo, Tyler E. Ellis, Michael L. Madigan, John J. Socha, Et Al.

- Tracked hydraulic process of wing unfurling during cicada wing expansion.
- Promising area of study for bio-inspired microfluidic devices and soft deployable robotics.

Design Team Member - Virginia Tech (VT) Human Powered Submarine (HPS), *Blacksburg, VA* Sep 2017 - June 2021

- Designed and fabricated control surfaces for human powered submarine, wet layup and 3D part design experience.
- Leading hand on 2nd place finish of maneuvering and control design report at 2021 Intl. Submarine Races.

Naval Research Intern - Naval Research Enterprise Internship Program, NSWC Carderock, *Bethesda, MD* June - Aug 2020

- 3D modeled boat to International Maritime Organization stability standards. Estimated resistance and fuel consumption.

Undergraduate Researcher - Virginia Tech, *Blacksburg, VA*

Control Surfaces: Control Surface Geometry and Hydrodynamic Performance, VT HPS Aug - May 2020

- Researched and designed teams’ control surfaces for size, geometry, and resistance reduction.
- Coded MATLAB script to run performance tests on airfoils using Xfoil. Used comparative naval architecture and fluid dynamic principles to calculate desired actuation range, stall angle, and pivot location, span, and chord.

Hull Slamming: Pressure Distribution on Rigid Wedge Hulls, Sponsored by the Office of Naval Research Aug - Dec 2018

- Conducted experiments studying the effects of hull slamming on the pressure distribution across rigid hullforms.
- Analyzed the peak pressure exerted on rigid hulls to improve construction methods.

Engineering Intern - Dominion Mechanical Contractors Inc, *Springfield, VA* June - July 2018

- Reviewed mechanical and architectural drawings to identify change orders. Presented findings to senior engineers.

Education

Bachelors of Science Ocean Engineering - Virginia Tech, *Blacksburg, VA* Aug 2017 - May 2021

Naval Engineering (Minor)

Software Tools/Languages

Rhino 3D, Autodesk Inventor, SolidWorks, Microsoft Office Suite, Morpheus, RSDE, IHDE, MATLAB, Python, LaTeX

Projects

Gas Powered Wood Boat, Refabricator Jan 2023 - Present

Electric Powered Plywood Boat, Designer/Builder May - July 2022

- Designed, modeled, and constructed a 6.5 ft flat bottom plywood inboard electric boat.

Seafloor Mapping UUV, Virginia Tech Senior Design Project August - May 2021