Tyler E. Ellis

Ocean Engineer

Herndon, VA | tyler.emerson.ellis@gmail.com | (571) 358-0245 | Secret Clearance | https://tyleremersonellis.github.io/portfolio

Experience

Current Position: Naval Architect 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. Develop and organize a ship concept database comparing the characteristics of ship concept design excursions.
- Conduct systems integration studies. Wrote a project study guide and project schedule. Ensured integration compliance with military standards and good engineering practices. Briefed findings to technical director and senior engineers.
- Led engineering design team on 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 experts.
- Leading hand on a formalized “General Arrangements Best Practices Handbook”.
- Supported systems integration feasibility studies. Applied Navy-developed software to model ship concepts, conduct seakeeping, and load calculations. Authored technical reports.

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 competition 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.

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

- 3D modeled boat to International Maritime Organization stability standards. Estimated boat 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 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. Showed 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, Navy Software, Autodesk Inventor, SolidWorks, Microsoft Office Suite, 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