

# DAVID LAWRENCE PEARSON

## MECHANICAL SYSTEMS ENGINEER

Broussard, LA 70518 | (305) 710-3050 | david.pearson@pearsondynamics.co  
www.linkedin.com/in/davidlawrencepearson

U.S. Citizen - Able to Obtain Security Clearance

### PERSONAL PROFILE

I am a solution driven Engineer, working in the commercial unmanned surface vehicle industry. I provide technical research and guidance for rapid systems integration and prototyping with an innovative multidisciplinary team to design, develop, fabricate, implement, test and operate advanced unmanned systems for oil & gas, and government projects. My overall passion and the mix of practical experience in advanced mechatronics engineering projects make me a preferred candidate for an engineering career role in the mechanical systems field.

### CAREER OBJECTIVE

To specialize in Mechanical Systems Engineering for advanced systems and platforms with an emphasis on the holistic technical development of products for research and development.

### PROFICIENCIES

Function	Skills & Tools	Level
Operating Systems	MICROSOFT: Office Products & Various Engineering Software Tools	Advanced
	Linux: Terminal Systems Operations, Testing, Troubleshooting	Intermediate
Logic & Programing	MATLAB & SIMULINK: Data Analysis, Mathematical Modeling, Simulation, Controls, Algorithm Development, Dynamic System ID	Advanced
	PYTHON, C, C++	Basic
CAD	SOLIDWORKS: Mechanical / Fabrication / Weldment Drawings, Part Modeling, Assemblies	Advanced
	DRAFTSIGHT: 2D Mechanical Drawings and Electrical Schematics	Intermediate
FEA & CFD	SOLIDWORKS: Structural Analysis	Advanced
	ANSYS: Structural & Thermal-Fluids	Basic
Mechanical Design	Practical use of industry standards, DNV-GL, Lloyd's, ABS, MIL-SPEC	Intermediate
	High fidelity modeling, simulation, and analysis	Intermediate
Mechatronics	DC/Stepper Motors, Linear Actuators & Hydraulic systems	Intermediate
	Potentiometers, Encoders, Transducers, Switches, Relays, Thermocouples, RTD, Pressure transducers, 4-20 mA & Low Voltage DC Components	Advanced
Electronics Tech.	Component Layout, Cable Management, Soldering, Multi Meter, Oscilloscope	Advanced
	Depth rated cable splice, Waterproofing enclosures, Heat Sinking	Intermediate
Fabrication & Machine Work	Drill press, Band Saw, Miter Saw, Table Saw, Bench Grinders, Lathe, Mill	Intermediate
	Hand Drill, Jigsaw, Circular Saw, Die Grinder, Dermal, Tapping, Hole Saws, Files, Sanding, Bending, Rivets,	Advanced
	Materials:Aluminum alloys, Mild Steels, Stainless Steels	Advanced
Unmanned Marine Vehicles & Autonomy	M&S: Rigid Body Kinematics, RAOs, State Estimation, Kalman Filtering	Intermediate
	Navigation Equip.: GNSS, GPS, IMU/INS/MRU, Mag/Sat/Gyro Compass, DVL/ADCP, LBL, USBL, Radar, ENC's (S-57/63, Raster, Geotiff)	Advanced
	Guidance & Control: Mission Planning, Controls Tuning, Maneuvering, Heading, Course, Speed, Steering, PID, Fuzzy Logic, Sliding Mode	Intermediate
	Comms: NMEA 0183/2000, UDP, TCP, Serial, J1939, LAN	Intermediate
	Radios: 5-30W UHF, 1-5W IP Mesh Radios (900 MHz, 1.3, 2.4, 5 GHz)	Intermediate
Payloads: SBES, MBES, USBL, ADCP, SSS, CTD/SV, Acoustic Modems,	Intermediate	

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## PROFESSIONAL EXPERIENCE

### Ocean Engineer

Nov. 2014 - Present

ASV, LLC. Broussard, LA

Perform duties, which require technical/mechanical support in the areas of training, systems support, installation, development, manufacturing, testing, data analysis, and establishing procedures.

Based on each project's need, I work with clients and payload sensor experts on determining project requirements, mechanical design and specifications, CAD (SolidWorks), Structural FEA, fabrication and drawings, electrical systems, hardware/software testing, tuning system controllers, offshore operations, hydrodynamic modeling, failure analysis, data analysis, procedure development, technical proposal drafting, proposal budgeting, and project management.

## PROJECTS

ASV GLOBAL, LLC	Dates
<b>C&amp;C Technologies, Gulf of Mexico NOAA Charting – Project Engineer / Operator</b>	<b>Feb. – May 2015</b>
<i>C-Worker 6 – Hydrographic Payload Development</i>	<b>Aug. – Oct. 2015</b>
<ul style="list-style-type: none"><li>• Towed Side Scan Sonar - Modeling &amp; Simulation to produce winch design parameters</li></ul>	
<b>Terrasond 2015, Alaska Bering Strait NOAA Charting – Project Engineer</b>	<b>May – July 2015</b>
<i>C-Target 3 USV – Hydrographic Payload</i>	
<ul style="list-style-type: none"><li>• Modified for survey work and extend survey endurance</li><li>• Integrated Client Payload equipment</li><li>• Developed Single Beam Sonar Hull mount with safety break-away shear-pin</li></ul>	
<b>University of Louisiana Lafayette GOMRI – Project Engineer / Project Management</b>	<b>July 2015</b>
<i>C-Worker 6 &amp; C-Enduro – Passive Acoustic Monitoring Payload</i>	
<ul style="list-style-type: none"><li>• 100m &amp; 50m PAM Cable Payload integration</li><li>• PAM cable Drag, Tension, Layback, Depth and Catenary Simulations</li><li>• Trials, Testing, and Project Management Duties</li></ul>	
<b>University of Washington, APL – Engineer / Operator</b>	<b>Oct. 2015</b>
<i>C-Enduro – Towed Body, Hydrophone, FL-IR camera Testing</i>	
<ul style="list-style-type: none"><li>• Integrated payload for Trials and endurance testing</li><li>• Post processing vehicle data from trials for client analysis</li></ul>	
<b>Subsea 7, LBL Compatt LBL Array – Project Engineer / Operator</b>	<b>Nov. 2015</b>
<i>C-Worker 6 – USBL Payload</i>	
<ul style="list-style-type: none"><li>• Payload system configuration, Testing</li><li>• Operations, Launch and Recovery Operator</li></ul>	
<b>ASV, C-Worker 5 Support Vessel Launch and Recovery System – Lead Design Engineer</b>	<b>Feb. – Apr. 2016</b>
<ul style="list-style-type: none"><li>• Designed to DNV Standard 2.22, with an P.E. sign off on all designs</li><li>• Steel welded constructed, with stainless steel pins and engineered deck attachments</li><li>• Modular design to fit (with USV) in standard 20' container for road transportation</li><li>• Integrated the deck cradle into the LARS to secure the USV while onboard/ in transit</li><li>• LARS is actuated by a self-contained hydraulic power unit to drive the davit arm pistons and winch motors</li><li>• Designed lightweight USV mounted lift-beams to reduce four-point to two-point lift</li></ul>	
<b>ASV, C-Worker 5 Road Trailer Boat Launch – Lead Design Engineer</b>	<b>Feb. – Apr. 2016</b>
<ul style="list-style-type: none"><li>• Designed special launch and recovery trailer for common boat launch ramps</li><li>• Designed to easily and safely launch and recover the USV while protecting sensitive hull mounted sonar equipment and hull from potential grounding accidents.</li></ul>	

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<b>PROJECTS – ASV GLOBAL, LLC (CONTINUED)</b>	<b>Dates</b>
<b>Terrasond 2016, Alaska Eliton Straight NOAA Charting – Project Engineer / Operator</b> <i>C-Worker 5 - LARS, Multibeam &amp; Sidescan Soar Hydrographic payload</i> <ul style="list-style-type: none"><li>• Designed aluminum welded deck tie-down clips, deck installation plan, operations procedure and provided heeling moment calculations for S/V Qualifier 105</li><li>• Designed mounting interface for Multibeam and local sound velocity mount</li><li>• Designed universal INS Mounting Plate with known offsets to GPS and Sensor mount</li><li>• Designed USV GPS Deck Mounting Interface for GNSS/INS payload</li><li>• Provided expected drag, powering and endurance specifications</li></ul>	<b>June – Aug. 2016</b>
<b>NOAA 2016 USV Hydrographic USV Demonstration – Project Engineer</b> <i>C-Worker 5 – Single Point Crane LARS, Multibeam &amp; CTD Hydrographic payload</i> <ul style="list-style-type: none"><li>• Multibeam &amp; GNSS/INS Payload Integration</li><li>• Design and Fabricated an AML-X CTD Cage for Casting and Recovery</li></ul>	<b>July – Sept. 2016</b>
<b>ONR BAA Proposal - Subcontractor Proposal Lead</b> <ul style="list-style-type: none"><li>• Provided technical data and information to proposal team</li><li>• Worked closely with proposal team for concept generation and task lists</li><li>• Provided Work Breakdown Structure and Costing Estimates</li><li>• Submitted Subcontractor costing estimates to ONR</li></ul>	<b>Aug. - Sept. 2016</b>
<b>ASV, 40' Utility Boat Conversion – Project Engineer</b> <ul style="list-style-type: none"><li>• Researched USCG &amp; Navy Utility Boat Technical papers, and Blueprints</li><li>• Modeled Hull from researched historical blueprints and photos</li><li>• Extracted hull form parameters and computed hull form coefficients</li><li>• Used SNAME Small Craft tow tank model resistance data and applied the ITTC-1978 method to estimate resistance and power curves</li><li>• Used Holtrop-Mennen for additional verification of powering predictions</li><li>• Used estimate propeller diameter, pitch, and overall drive efficiencies</li><li>• Outfitted modeled hull with, engines, drives, fuel tanks and auxiliary equipment for hydrostatics and stability calculations.</li><li>• Solidworks Modeling of entire retrofit system and superstructure architecture</li><li>• Instrumentation &amp; Feedback systems Integration - Temperature, Pressure, Fluid Level, Navigation, and RF Communications.</li></ul>	<b>Oct. 2016 - Oct. 2017</b>
<b>University of New Orleans GOMRI Consortium Technical Proposal - Proposal Lead</b> <ul style="list-style-type: none"><li>• Provided technical data and information to UNO, LSU, USM &amp; NRL proposal team</li><li>• Co-Authored Concept of Operations</li><li>• Developed ASV's scope of work and provided proposal budget</li><li>• Co-Authored supportive project white papers</li></ul>	<b>Dec. 2016 - Feb. 2017</b>
<b>ASV, R&amp;D Autonomous Diesel Engine Oil Change System - Project Lead</b> <ul style="list-style-type: none"><li>• Developed Engineering Concept and Requirements for team</li><li>• Maintain project documents, research, designs, tests, reports and budget</li><li>• Developed hydraulic system simulation in Simulink to test various designs</li><li>• Currently in testing and evaluation of requirements</li></ul>	<b>Oct. 2017 - Present</b>

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## EDUCATION

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### Masters of Science, Ocean Engineering

Florida Atlantic University, SeaTech Dania Beach Campus

Jan. 2013 - Dec. 2014

GPA: 3.753 /4.0

#### Thesis & Research Objective:

Design and development a high-level fuzzy logic guidance controller for a WAM-V 14 USV in order to autonomously launch and recover a REMUS 100 AUV. The approach to meeting this objective is to develop ability for the USV to intercept and rendezvous with an AUV that is in transit in order to maximize the probability of a final mobile docking maneuver.

#### Peer Reviewed Publication:

D. Pearson, E. An, M. Dhanak, K. von Ellenrieder and P. Beaujean, "High-level fuzzy logic guidance system for an unmanned surface vehicle (USV) tasked to perform autonomous launch and recovery (ALR) of an autonomous underwater vehicle (AUV)," *2014 IEEE/OES Autonomous Underwater Vehicles (AUV)*, Oxford, MS, 2014, pp. 1-15. doi: 10.1109/AUV.2014.7054403

#### Related Course Work

- Unmanned Vehicle Navigation Instrumentation
- Maneuvering and Control of Surface and Underwater Vehicles
- Kalman Filtering for Navigation
- Advanced Hydrodynamics
- Computational Thermo-Fluid Dynamics (ANSYS-FLUENT)
- Physical Aspects of Oceanography
- Advanced Data Analysis
- Mathematical Methods in Ocean Engineering
- High-Level Guidance Control of Unmanned Marine Vehicles

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### Bachelors of Science, Mechanical Engineering

Florida Atlantic University, Boca Raton Campus

Aug. 2008 - Dec. 2012

GPA: 3.206 /4.0

- Senior Design Project: 3-DOF Robotic Arm, Belts driven by Brushed DC Motors, with Arm Joints coupled to potentiometers for orientation feedback to PID Controllers for linkage orientation control.
- Undergraduate Research: Advanced Heat Sink Research Project using Phase Change Material and Open Cell Aluminum Foam. Designed and fabricated the experiment apparatus to test high power dissipation at varying operating frequencies.

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## ORGANIZATIONS & ACTIVITIES

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- IEEE/OES – Member
- SNAME - Associate Member
- AUVSI / ONR RobotX Competition FAU – Alumni Team Member 2016
- AUVSI / ONR RobotX Competition FAU-Villanova Team 2014
- AUVSI RoboBoat Competition FAU Team 2013
- Sigma Phi Epsilon, FL Xi
- Order of Omega FAU

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### PRE-PROFESSIONAL EXPERIENCE

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#### Graduate Student Researcher - FAU ACCeSS Project

May 2013 - July 2014

*Florida Atlantic University, College of Engineering & Computer Science  
Ocean & Mechanical Engineering Department*

Graduate Ocean engineering student collaboration to develop a mobile launch and recovery system for a REMUS-100 (UUV) placed on a WAMV-14 (USV).

- Researched and developed a High-level Guidance System for the WAMV-14 USV using Fuzzy Logic to rendezvous with the AUV for the Autonomous Launch and Recovery Mission.
  - Developed MATLAB/Simulink simulations to test the mission controller and Fuzzy Logic Guidance.
  - Conducted open-water/intercostal testing of the developed high-level mission and guidance controller, along with UUV static docking trials (M. Miranda), USV Low-Level controller tests (W. Klinger).
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#### STEM Middle School Magnet Program Teaching Assistant

Nov. 2012 - Mar. 2013

*Florida Atlantic University, College of Engineering & Computer Science*

Provided engineering expertise and mentoring to inspire students to pursue STEM careers using project based learning.

Developed student activities and projects that required applying mathematics along with some basic physics and engineering principles to show students viable applications of STEM curriculum and careers.

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#### Intern/ Co-Op

Sept. 2011 - Dec. 2011

*Aerospace Technologies Group*

Under minimal guidance, I worked in the Document Control Department where my daily duties included,

Scanning and managing company documents, electronic and hardcopy file management of, sales, orders, shipping, engineering drawings and test reports.

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#### Electrician Assistant

May 2008 - Aug. 2008

*TCE Tech/Tri-City Electric*

Under the guidance and supervision of a Licensed Electrician I would assist in the required tasks which included,

Installation of lighting fixtures and electrical sockets. Installation of low/high voltage transformers. Built and installed voltage meter housings for Data/IT centers. Conduit bending and installation for power and data transmission

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