Daniel Fernández

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Strengths

Academic: Applied Marine Field Robotics, Path Planning under Uncertainty, Wave Energy Conversion Vehicle Station-Keeping, Model Predictive Control, Robotic Search, Electronics Hardware Integration, Coastal Oceanography, Neural Networks, Genetic Algorithms, Machine Learning

Software: Solidworks, Pro/E, Python, C++, MATLAB, Labview, ANSYS AQWA, WAMIT, HTML, CSS, Ruby on Rails, MS Windows, Visual Studio, Office Suite, Linux, OS X

Industrial: Lean/6-Sigma Operations, Tool Design, Defect Control, Visual-Based Process Planning Technical Writing, Ordnance Handling, Training, Government Customer Satisfaction, Silver Solder, Oxy Braze, TIG Welding, CNC Machining, Molybdenum Laser Welding

Field Work R/V Elakha (11 Cruises), R/V Coral Sea (1), R/V Oceanus (2), R/V Atlantic Explorer (1)

Professional Experience

Oregon State University — *Corvallis, OR*

Graduate Research Assistant, Robotic Decision Making Laboratory — Sep 2014 – Present

Working student supporting grants with marine robotics focus under Dr. Geoffrey Hollinger. Investigating methods of supporting marine renewable energy arrays with autonomous robotic vehicles. Aquatic platforms include: SeaBotix vLBV300 ROV, openROV, and several Slocum gliders. Selected Contributions:

- Designed a model predictive controller for the laboratory ROV to compensate for water wave forces. The algorithm showed a 74% reduction in position error when compared to traditional feedback control. It was also found resistant to noisy sensor observations of observed wave parameters.
- Supporting W. M. Keck Foundation Award for a cross-disciplinary approach to installing bio-acoustic sensors on Slocum Gliders. RDML focus involves applying path-planning optimization methods to maximize information gain in tracking macrofauna off the Oregon Coast.
- Built a workflow optimizer for a local industrial partner using robotic decision making techniques. Results yielded a 61% increase in efficiency for their investment casting area.
- Served as openROV team leader, investigated robotic solution potential for ultra-low cost platforms.

Assistant Glider Tech, CEOAS Glider Research Group, R/V Elakha — July 2014 – June 2015

Support deployment and retrieval of SeaGlider and Slocum 200m/350m ocean-going gliders for Oregon State College of Earth Ocean, and Atmospheric Sciences. Operations include ballast trimming, battery and hardware replacements, operational code updates, off-site piloting, and on-site handling via OSU support vessel, R/V Elakha, based in Newport, OR.

Engineering Technician, O.H. Hinsdale Wave Research Laboratory — Summer 2014

Served as engineering liaison for visiting scientists in the tsunami wave basin and long wave flume. Assisted in beach construction, instrument layout, and wavemaker assembly, among other tasks.

Lockheed Martin Missiles and Fire Control — *CA/AL/FL*

Engineering Contractor, Santa Barbara Focalplane, Santa Barbara, CA — Feb 2013 – Mar 2014

Supported SBF External Defense and Joint Strike Fighter Customers in a mechanical engineering role. Worked on projects in both a development and manufacturing role and used MFC engineering experience to provide creative solutions for tooling, automation, rework, and technical documentation issues. Selected Contributions:

- Led all productionalization efforts for the MS-177 Project, a high orbit, angled dectector assembly with uniquely specific design considerations.
- Designed browser-based HTML applets as production aids including: epoxy weight/volume convertors, cure time recorders, reminders, and precision measurement calculators for design-driven assembly.

- Justified use of automated "rapid" pump down vacuum baking stations on the JSF dewar assembly, where the large air volume draw was a concern. Along with joint stress analysis, designed resulting procedure, an automated process which aims to realize $1,800,000 in savings over the contract life.
- Provided mistake-proofing procedures in response to a failed tooling audit. Standardizing SBF tool ordering process and updated 15 year old tool records accordingly.

Production Support Engineer, Pike County Operations, Troy, AL June 2010 – May 2012
Supported MFC Troy's Javelin and AGMS programs; responsible for designing and updating visual-based manufacturing and test procedures. Addressed defects qualitatively and implemented mistake-proofing strategies where possible. Interacted with government customer daily. Selected Contributions:

- Modeled and implemented tools in the Javelin assembly building, earning experience with GD&T drawing practices as well as fabrication negotiations. Coordinated change requests with Orlando-based TechOps.
- Performed a Gage R&R statistical analysis in conjunction with DCMA remarks about the variance in the production of a rubber environmental seal. Used results to overhaul assembly process and tooling.
- Diagnosed and reworked quality-rejected missiles. Designed test procedures for all vibration test cells. Rebuilt Racal Dana switch controllers and Elgar power supplies at all sensor BIT/Alignment test station.
- Programmed a weekend PLC spray process plan and evening standby plan for an automated paint spray robot in AGMS using proprietary assembly encoder.
- Certified Greenbelt and contributing member of MFC Troy PMT of the year, 2010, which realized savings of $606,000 in 2010 and over $800,000 in 2011.

Student Technical Specialist, Ocala Operations, Ocala, FL Summers 2009, 2007
Summer Internships as a manufacturing engineer supporting production and tooling of AGMS and Javelin circuit-card assemblies, sensor groups, and guidance assemblies.

Doma Ventures, LLC *Miami, FL*

Development Engineer, South Miami Office June 2012 – Sep 2013
Supported a startup ecommerce firm as a technical lead. Analyzed product lines for potential failures and gave engineering approval for all product launches. Used CADD skills in a product design role and worked with offshore-based manufacturing facilities to ensure quality. Provided web development support across multiple platforms. Selected Contributions:

- Led design and fabrication effort for SlickFroth 2.0, which used a more robust 6V DC motor as well as a more ergonomically friendly handle than its predecessor. Design improvements realized a net $110,000 gain in yearly sales.
- Introduced an industry-style tiered meeting and deadline structure to organize projects into one of four timeframes: weekly, monthly, quarterly, and yearly. Visually aided by using trello project cards.
- Headed European operations; supported all sales and inventory on British, German, French, and Spanish amazon.com channels. Provided metrics for nation-specific market strategies.
- Designed kuissential.com product pages using a combination of CSS, HTML, RoR, and WordPress.

Education

Oregon State University — Corvallis, OR

M.S. Robotics Engineering, September 2015
Minor in Coastal/Ocean Engineering
Cumulative GPA: 3.7/4.0

Relevant Coursework:
Robotic Sequential Decision Making, Linear Controls, Marine Glider Dynamics, Wave/Fluid Mechanics, Coastal Hazards, Coastal Oceanography, ROV Operation

University of Florida — Gainesville, FL

B.S. Mechanical Engineering, May 2010
Cumulative GPA: 3.2/4.0

Heat Transfer, Finite Element Method, Mechanical Vibrations, Solar Utilization, Computer Aided Draft and Design

Research Grants Supported

Department of Energy: Autonomous Support for Marine Renewable Energy Arrays ($233,427)

W.M. Keck Foundation: Bioacoustic Sensors and Path Planning on Webb Slocum Gliders ($128,786)

Office of Naval Research: Adaptive Decision Making, Autonomous Exploration/Exploitation ($510,000)

PCC Structurals, Inc: Investment Casting Work Schedule Optimization ($110,000)

Organizations and Certifications

National Northwest Marine Renewable Energy Center	Member: 2015 – present
Institute of Electrical and Electronics Engineers	Member: 2015 – present
Robotics and Automation Society	Member: 2015 – present
Oregon State University Robotics Club	Member: 2014 – present
American Society of Mechanical Engineers	Member: 2011 – present
Engineers Without Borders	Member: 2007 – 2013
Society of Automotive Engineers	Member: 2007 - 2012
R/V Elakha Sea Safety & Survival Certified	April 2015
First-Aid, and SCUBA Certified, C.P.R. Trained	Various Dates
Languages: English and Spanish fluency, French basic	

Reports

1. **D. Fernández**, G. A. Hollinger, "Model Predictive Control for Underwater Robots in Ocean Waves" In: *Proceedings of the IEEE International Conference of Robotics and Automation (ICRA), 2016,* (under review), 2016
2. **D. Fernández**, G. A. Hollinger, "Summary of Autonomous Underwater Path Planning Techniques and Applications", *Department of Energy Internal Circulation*, 2015
3. B. McCay, **D. Fernández**, L. Premuda, "Automated Vacuum Bake Procedure for the JSF Dewar Assembly", *Department of Defense Internal Circulation*¸2013
4. **D. Fernández**, R. Himoto, A. Soto, "Vaccum-Induced Stress Analysis for the JSF Coldfilter/Coldshield Joint Structure", *Lockheed Martin Missiles and Fire Control Internal Circulation*, 2013
5. **D. Fernández**, "A Gage Repeatability and Reproducibility Analysis for the Javelin Forward Environmental Seal", *Lockheed Martin Missiles and Fire Control Internal Circulation*, 2011

Awards

Santa Barbara Focalplane Performance Management Team of the Year, Dewar Test and Integration, 2013
Malcolm Baldridge National Quality Award Recipient, 2012
Pike County Operations Spot Recognition Award, January 2012
Pike County Operations Employee of the Month, November 2011
Pike County Operations Performance Management Team of the Year, Javelin, 2011
Florida Bright Futures Scholarship Recipient, 2005 – 2010
College Board AP Scholar with Distinction Award, June 2005

References

Geoffrey Hollinger Assistant Professor of Mechanical Engineering, Robotics, Oregon State University,
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Karen Achey Program Manager, Lockheed Martin MFC Santa Barbara Focalplane
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Executive résumé available; please see http://dferna.ndez.me