

# Duane Edgington

## *Curriculum Vitae*

Monterey Bay Aquarium Research Institute  
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### PROFESSIONAL EXPERIENCE

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Monterey Bay Aquarium Research Institute (MBARI), Moss Landing, CA. 1999 – present  
Senior Software Engineer / Group Lead Software Engineering. Software engineering for research systems, vehicles, instruments, and data systems. Principal Investigator: (1) application of machine vision to underwater video and image analysis, (2) NSF grants on Ocean Observatory Instrument Interface Software.

Sun Microsystems Computer Company (Sun), Palo Alto, CA. 1994 – 1997

Manager, Electronic Design Automation (EDA) software and Design for Test (DFT).

VLSI Technology/Compass Design Automation (VLSI), San Jose, CA. 1983 – 1994

Manager, CAE Software; Principal Software Engineer. Second- and first-line management of software applications group; responsible for budget, hiring, development roadmap, new product development, and quality assurance.

Applied Micro Circuits Corp. (AMCC), Cupertino, CA. 1981 – 1983

Engineer, ASIC development, CMOS and Bipolar Design Assurance.

### EDUCATION

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Post-doctoral Research Fellow, Department of Neurobiology, Stanford University, CA. 1978 – 1981

Muscular Dystrophy Association Fellow. Research on nerve growth and regeneration to muscle.

Ph.D., Medical Sciences – Neurobiology, Harvard University, Cambridge, MA. 1973 – 1978

Research in electrophysiology of vision and mechanisms of visual information processing.

B.S. (with Honor), Biology, California Institute of Technology (Caltech), Pasadena, CA. 1972 – 1973

B.S. (with Honor), Engineering and Applied Science, California Institute of Technology (Caltech), Pasadena, CA. 1968 – 1972

### SELECTED PUBLICATIONS

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#### **Recent Publications (2018–2026)**

Sananikone, T., Haddock, S.H.D., Edgington, D.R., and Cline, D.E. (2026) KLP: Kelp Location Profiling Using Segmentation of Aerial Drone Imagery for Assessing Percent Kelp-Canopy Coverage. Ocean Sciences Meeting 2026, Glasgow, Scotland. <https://osm26.ipostersessions.com//?s=CC-FE-AB-34-8E-36-FC-D0-65-EB-28-D3-D0-72-C1-8D>

Sharma, T., Cline, D.E., and Edgington, D.R. (2024) Making use of unlabeled data: Comparing strategies for marine animal detection in long-tailed datasets using self-supervised and semi-supervised pre-training. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2024), pp. 1224–1233.

Edgington, D.R., Cline, D.E., O'Reilly, T., Haddock, S.H.D., Ryan, J.P., Touryan-Schaefer, B., Kirkwood, W.J., McGill, P.R., and McEwen, R.S. (2024) Accelerating Marine UAV Drone Image Analysis with Sliced Detection and Clustering (MBARI SDCAT). EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-2934. <https://doi.org/10.5194/egusphere-egu24-2934>

- Aguzzi, J., Chatzievangelou, D., Marini, S., Fanelli, E., Danovaro, R., Flögel, S., Lebris, N., Juanes, F., De Leo, F.C., Del Rio, J., Thomsen, L., Costa, C., Riccobene, G., Tamburini, C., Lefevre, D., Gojak, C., Poulain, P.M., Favali, P., Griffa, A., Purser, A., Cline, D., Edgington, D., et al. (2019) New High-Tech Flexible Networks for the Monitoring of Deep-Sea Ecosystems. *Environmental Science & Technology*, 53: 6616–6631. <https://doi.org/10.1021/acs.est.9b00409>
- Cline, D.E., Edgington, D.R., Ruhl, H., Durden, J.M., Hosking, W.B. (2018) Analysis of convolution detection architectures for deep-water benthic imagery. American Geophysical Union, Ocean Sciences Meeting, Abstract OD44B-2804, 11–16 February 2018, Portland, Oregon, USA.

### ***Earlier Selected Publications (reverse chronological)***

- Shafit, F., Harvey, E.S., Shortis, M.R., Mian, A., Ravanbakhsh, M., Seager, J.W., Culverhouse, P.F., Cline, D.E., Edgington, D.R. (2017). Towards automating underwater measurement of fish length: a comparison of semi-automatic and manual stereo-video measurements. *ICES Journal of Marine Science*, 74(6), 1690–1701. <https://doi.org/10.1093/icesjms/fsx007>
- Shafit, F., Mian, A., Shortis, M., Ghanem, B., Culverhouse, P.F., Edgington, D.R., Cline, D., Ravanbakhsh, M., Seager, J., Harvey, E.S. (2016). Fish identification from videos captured in uncontrolled underwater environments. *ICES Journal of Marine Science*, 73(10), 2737–2746. <https://doi.org/10.1093/icesjms/fsw106>
- Del Rio, J., Toma, D., O'Reilly, T.C., Bröring, A., Dana, D.D., Bache, F., Headley, K.L., Lázaro, A.M., and Edgington, D.R. (2013) Standards-based Plug & Work for Instruments in Ocean Observing Systems. *IEEE Journal of Oceanic Engineering*, 39(3), 430–443. <http://dx.doi.org/10.1109/JOE.2013.2273277>
- Gomes, K., Cline, D.E., Edgington, D.R., Godin, M., Maughan, T., McCann, M., O'Reilly, T., Bahr, F., Chavez, F., Messie, M., Das, J., Rajan, K. (2013). ODSS: A Decision Support System for Ocean Exploration. Proceedings, ICDEW 2013. DOI: 10.1109/ICDEW.2013.6547450
- Cline, D.E., Edgington, D.R., Smith, K.L., Vardaro, M.F., Kuhnz, L. (2009). An Automated Event Detection and Classification System for Abyssal Time-Series Images of Station M, NE Pacific. MTS/IEEE Oceans 2009 Conference Proceedings, Biloxi, Mississippi.
- Edgington, D.R., Randal Butler, Terry Fleury, Kevin Gomes, John Graybeal, Robert Herlien, Von Welch. (2009). Observatory Middleware Framework (OMF). INGRID 2009. Published in: Remote Instrumentation Services on the e-Infrastructure. Springer, 2011. ISBN: 978-1-4419-5573-9.
- Cline, D.E., Edgington, D.R., Mariette, J. (2008). An Automated Visual Event Detection System for Cabled Observatory Video. VISAPP 2008, Funchal, Madeira Portugal.
- Edgington, D.R., Cline, D.E., Kerkez, I., Mariette, J. (2007). Detecting, Tracking and Classifying Animals in Underwater Video. VideoRec'07, Montréal, Canada.
- Edgington, D.R., Davis, D., and O'Reilly, T. (2006). Ocean Observatory Instrument Software Infrastructure. MTS/IEEE Oceans 2006 Conference Proceedings, Boston, MA.
- Walther, D., D.R. Edgington, C. Koch. (2004). Detection and Tracking of Objects in Underwater Video. Proceedings IEEE CVPR, Oral Session 2B, 1:544–549, Washington, D.C.
- Walther, D., Edgington, D., Salamy, K., Risi, M., Sherlock, R.E., Koch, C. (2003). Automated video analysis for Oceanographic Research. IEEE CVPR Proceedings, Madison Wisconsin.
- Edgington, D., Walther, D., Salamy, K., Risi, M., Sherlock, R.E., Koch, C. (2003). Automated Event Detection in Underwater Video. MTS/IEEE Oceans 2003 Conference Proceedings, San Diego, CA.
- U.J. McMahan, D.R. Edgington, D.P. Kuffler. (1980). Factors that influence regeneration of the neuromuscular junction. *J. exp. Biol.*, 89, 31–42.
- D.R. Edgington, A.E. Stuart. (1979). Calcium channels in the high resistivity axonal membrane of photoreceptors of the giant barnacle. *J. Physiology*, 294, 433–445.

D.R. Edgington, A.E. Stuart. (1981). Properties of tetraethyl-ammonium ion-resistant K<sup>+</sup> channels in the photoreceptor membrane of the giant barnacle. *J. General Physiology*, 77, 629–646.

### **EXTERNAL RESEARCH FUNDING (GRANTS)**

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PI. NSF OCE-0330429 "SENSORS: Ocean Observing System Instrument Network Infrastructure" \$745,447  
9/1/03–8/31/09

Co-PI. (Subaward) UCSC – NOAA NA16OC2936 "Mooring Technology Efforts in support of the Center for Integrated Marine Technologies" \$1,701,946 08/01/02–07/31/07

PI. (Subaward) NSF – "SDCI NMI: Observatory Middleware Framework" \$236,539 10/1/07–9/30/10

PI. (Subaward) NSF OCE-0957938 OCE-10056697 "Ocean Observatory Initiative" \$362,960 09/01/07–08/31/15

PI. NSF 1148213 Collaborative Research: SI2-SSI: Empowering the Scientific Community with Streaming Data Middleware \$161,585 08/01/12–07/31/15

### **PATENTS**

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Puck interface adapter including drivers for interfacing serial device to host. United States Patent 6901464.  
Awarded May 31, 2005.

### **COMMITTEES AND PANELS**

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Co-chair, Remote Instrumentation Services in Grid Environment research group (RISGE-RG), Open Grid Forum (OGF). 2007–2010.

Program committee member, ICPR 2014, 2016, 2018. Workshop: Computer Vision for Analysis of Underwater Imagery.

Program committee member, ICMR 2015. International Workshop on Environmental Multimedia Retrieval.

Expert Panel Member, NOAA Fisheries Automated Image Analysis Strategic Initiative. Advise NOAA on Computer Vision technology for fisheries image analysis.